Chapter 2 An introduction to Microeconomics and the role of markets

2.1 An introduction to microeconomics and the role of markets

This chapter focuses on a well-established model that can be applied to a range of markets. It is used to make predictions about the effect of changing economic circumstances on prices and quantities sold in product, factor and other markets, such as the money market and the foreign exchange market. This area of study is referred to as microeconomic analysis, where **microeconomics** is the branch of economics that looks at the behaviour of the individual economic agents (usually households and businesses) that make up the whole economy. In this area of study, we are interested, primarily, in the motivations of consumers and producers (or suppliers) and how they respond to changing incentives in individual markets. We are especially interested in the role of relative prices in allocating the scarce resources that were discussed in Chapter 1. The model discussed in this chapter gives us the opportunity to investigate and to analyse the potential consequences associated with the changing demand and supply conditions that frequently occurs in markets.

Microeconomics underpins the use of 'macroeconomic analysis, the study of which follows later in the course. By the end of the chapter, we will see how the market is the primary mechanism that our economy utilises to answer the three key questions of what to produce, how to produce and for whom to produce. It therefore has a huge influence on how scarce resources are allocated.

2.2 Perfect markets

A **market** is seen as any type of arrangement (which may or may not be a physical space) that facilitates exchange between buyers and sellers. The purchasers of goods and services may be households, businesses, governments or a range of other economic groups such as not-for-profit organisations. The suppliers of goods and services are generally businesses, but in the factor market, households supply businesses with their labour (this will be explored in more detail in Chapter 5). In Australia, government bodies also supply a wide range of goods and services. Buyers and sellers may meet in the same space, such as a shop, or they may communicate online, either domestically or internationally. Goods and services are sold in **product markets,** while the factors of production (inputs) are sold in **factor or resource markets**, such as the labour market. The model developed in this chapter can also be applied to the money market to determine interest rates, as well as the foreign exchange market to determine the exchange rate for a nation.

As we saw in Chapter 1 (Box 1.1), when economists develop theories about consumer and producer behaviour, they often make simplifying assumptions. When undertaking analysis of markets (demand and supply analysis), the model that will be used is based on the idea that the markets considered are highly competitive. This is a fundamental premise of the analysis that will be undertaken, and therefore it is important to keep it in mind when considering the information that follows. The word competition is used frequently in everyday language, especially by businesses, who would like you to believe that you are getting a good deal. When studying economics, however, the degree of **competition** is intrinsically linked to a set of key conditions.

The market structure that forms the basis of demand and supply analysis (to illustrate how the market mechanism works) is called **perfect competition.** It can also be referred to as a 'perfect market' or a 'perfectly competitive market'. The **three conditions** required for a perfect market are as follows:

- There is assumed to be a large number of buyers and sellers such that each economic agent acts independently in the market. No individual buyer or seller therefore has the market power to influence the price. This leads to the condition of **price taking** in the perfectly competitive market.
- It is assumed that the products being sold in a perfectly competitive market are **homogenous**, which means that they are virtually identical and easily substitutable. This encourages the suppliers to offer the products at the lowest possible price, because this is the main way to attract customers (rather than, for example, being a better brand).

- There is **ease of exit and entry** into this market. There are low set up costs in the industry, which means that if profit making opportunities exist (for example, because the good or service has increased in popularity), then new entrants can seek to capture a share of the market, possibly by undercutting the existing suppliers who may be making very high profits in the short term. These very high profits are referred to in economics as **'abnormal profits'** or **'super-normal profits'**. [See the Study Tip below for an explanation of how economists view profits and costs. [Economic costs were also considered in Application exercise 1h in Chapter 1.]

In addition, the perfectly competitive market is based on the following **assumptions** (some of which were discussed in Chapter 1):

- Buyers and sellers operate with **full information**. They are aware of what they are buying and selling and are able to easily compare prices. Based on this information, they make fully informed **rational choices**.
- Resources are **mobile** and will be reallocated towards those areas of production that generate the greatest benefit.
- Both the buyer and the seller seek to maximise their own wellbeing. For the seller this means to **maximise profit** and for the purchaser it means to **maximise utility** or satisfaction.

Study tip

'Economics costs' have a specific meaning that makes them quite different to the accounting costs. Economic costs are intricately related to opportunity cost and represent both the explicit (accounting) cost and implicit costs associated with any investment or production decision. To illustrate, if a small businesses makes sales of $180,000 and has expenses of $80,000, then the accounting cost is $80,000 and a profit of $100,000 is made. However, if the owner could have generated $100,000 in income by using her time working as an employee instead of owning and running the business, then the economic cost becomes $180,000 and the profit is zero. In this example, economists would say that the business owner is neither making an economic profit or loss. Instead, it is a normal profit and, ceteris paribus, is just enough to keep her in the business. If the owner makes less than normal profits (an economic loss) in the long run, then she is likely to exit the industry. When firms make economic profits above zero, it is likely to entice other producers to enter the industry in search of 'above normal profits' (also called super-normal profits).

In a perfectly competitive market, there is generally minimal intervention by the government. If the government intervenes in the market, it would distort the price mechanism and lead to a different set of relative prices and a change in the way resources are allocated. [Relative prices is an important concept that is defined later in Section 2.9 of this chapter.] The role of government in the market will be considered in Chapter 3, but for most of this chapter, the role of the government in influencing the market will generally be ignored.

The conditions for a free and perfectly competitive market are rarely met in the real world. The markets that are often seen to be the most competitive are those for commodities such as wheat, livestock and minerals like gold and coal. The share market and the foreign exchange markets are also highly competitive because each seller is relatively small compared to the size of the market (so they are price takers), the products they sell are almost identical and it is easy to enter and exit the market.

The fact that the market is based on what might appear to be unrealistic assumptions does not mean that it cannot be used to analyse less competitive markets. Economists expand on the ideas of the model to make predictions in other market structures. A monopolist, for example, will be the only seller of a good or service, but it will still consider how consumers are likely to react to changes in prices.

The behaviour of producers and consumers in a competitive market

In any **market**, consumers and businesses are assumed to be acting in their own self-interest at all times. The implication of this assumption is that consumers will want to obtain the amount of the good or service that will maximise their utility for the lowest possible price. If they are willing to purchase the good or service at a certain price, then they are giving the suppliers a clear signal that they value the good or service by at least that much. If they obtain the good or service for less than the maximum they are willing to pay, then they have obtained what is referred to as consumer surplus. **Consumer surplus** is therefore the difference between the price the consumer is willing to pay and the market price.

The assumption of profit maximization implies that the seller in a competitive market will try to sell their product at the highest price possible to maximise their **profits** (revenue less expenses). If they are able to sell the product at a price above their minimum selling price (which is linked to their economic costs) then they generate a **producer surplus** **(**the difference between the price the producer is willing to sell the product for and the market price). The price that is determined in any market is therefore a compromise between how much the consumers are willing to pay for the product and for how much suppliers are willing to sell the product.

In a perfectly competitive market, product homogeneity ensures that businesses compete against each other by offering the lowest prices. Consumers also compete against each other to gain access to the scarce products. When there is more demand for a product than supply, the consumers may bid up the prices which acts as a way to ration the scarce goods. Competition also takes place between individuals seeking to obtain the best job or between firms that compete against each other to gain access to the scarce inputs that are available in the market. Nations, which produce a wide range of similar goods and services, compete in international markets.

The remainder of this chapter is essentially concerned with an analysis of the **market mechanism** (or **price mechanism**) which describes how the forces of **demand** and **supply** determine the **relative prices** of goods and services, which then ultimately determine the way our productive resources (e.g. natural, labour and capital) are allocated in the economy.

2.3 The law of demand and the demand curve

As mentioned in the previous section, buyers in any market will generally want to obtain the product at the lowest price possible and will exchange the amount of money for what they see as equal to, or less than, the value they place on the product. It is logical therefore that at higher price levels, the demand for most goods and services will decrease. As the price rises, the opportunity costs associated with purchasing the product will increase, resulting in some buyers dropping out of the market. In simple terms, the willingness and ability to purchase the good or service diminishes as prices rise. (We should keep in mind, however, that there are always exceptions to most economic laws, so this will not be the case for every single good or service).

The law of demand

The **law of demand** states that there is an inverse relationship between the price (the independent variable) and the quantity demanded (the dependent variable). This relationship is based on the assumption that all other variables that could affect the demand for a product are held constant (the ceteris paribus condition discussed in Box 1.1 in Chapter 1). In other words, if we assume that nothing else in the market changes, just the price, then the quantity demanded will respond to the change in price.

As the price decreases, the quantity demanded increases

As the price increases, the quantity demanded decreases

It could be argued that the law of demand is based on economists' observations of human behaviour. As you read each of the following justifications for the law of demand, it is worth considering the extent to which each factor is relevant in the context of your own consumption behaviour:

- As the price increases some consumers may no longer be able to afford (as much of) the product because a greater percentage of income is required for its purchase. Economists commonly refer to this as the **'income effect'**. They will therefore reduce the quantity purchased or not purchase the product at all.
- Price is generally seen as an obstacle that may deter people from buying a product and an increase in price may mean that the supplier is now asking for an amount that exceeds what people think the product is worth. Given that each person is assumed to have an amount they are willing to pay for a good or service (based on its **perceived value** to them), it makes sense that at higher prices less will be demanded. More people will drop out of the market as the price exceeds its perceived value.
- Higher prices may also encourage consumers to look at the alternatives that are available in the market. When the price of one good increases (and it is assumed others do not), consumers will look towards cheaper substitutes, so quantity demanded is likely to fall. Economists commonly refer to this as the **'substitution effect'**.

Study tip

It is important for students of Economics to remember that, when we are talking about the law of demand, we are talking about the response of the quantity demanded to a change in price, not how changing demand affects the prices of goods and services. Consideration of factors other than price causing changes in demand will occur in the next section.

- Many products are subject to **diminishing marginal utility**. Diminishing marginal utility (also discussed in Box 1.1 in Chapter 1) recognises that each additional unit that is consumed (referred to as the 'marginal' unit) will add to a person's level of satisfaction (i.e. add to their 'utility'). However, the benefit received from each additional unit falls with each successive unit consumed. It may still be a positive experience, but the level of utility (satisfaction) is less for the second unit than the first and so on. In other words, diminishing marginal utility refers to the idea that each successive item of the product purchased yields less satisfaction. This affects a consumer's willingness to pay for a product. If the first apple you consume yields a certain amount of satisfaction, it would be expected that a second apple consumed straight after that would yield less satisfaction. Each successive apple will yield even less satisfaction, so the amount you are willing to pay for those extra apples tends to decrease. As a result, you will only buy the extra units if the price is lowered. This links to the second reason why the law of demand makes sense, because each successive unit of the good consumed is seen to have a lower perceived value for most consumers.

Box 2.1 The law of demand in action: 'House auction'

Attending a house auction is one way to witness the law of demand in action. There is one unique product available for sale (the house) and there are generally a number of possible buyers who are interested in the property. In this environment, the potential buyers will compete against one another. Bids may start low, with many people willing and able to pay the amount stated. As the price is bid up, the number of potential buyers decreases. The person who places the highest bid may or may not win the auction. They will only get to purchase the house if their bid is above the vendor's (seller's) reserve, the lowest price that the vendors will accept. Those who have dropped out of the race have either accepted that the price is above their budget (income effect) or have decided that the house is not worth the price that has been reached (beyond their perceived value). There may also be similar houses (substitutes) nearby which they believe may sell for less. If there is only one person who is interested in the property or the second highest bidder doesn't value it as much as the highest bidder, then the purchaser may obtain the house for less than what they were willing to pay (and hence gain some consumer surplus). Thankfully, the real estate agent is unable to read the mind of the potential buyers.

Constructing a demand curve

There are a range of factors that affect the quantity demanded in any market, but it is difficult to visualise more than two dimensions. Economists have therefore decided that it makes sense to choose the most important factor that influences the demand for most goods and services, namely price.

The demand curve shows the relationship between various possible prices for a product and the quantity that consumers in the market would be willing and able to buy at each of these prices.

This total demand in the market is based upon the total amount demanded by each individual consumer (i.e. the sum of all individual demand curves). It is important to be aware that demand is based on both the **ability** and **willingness** to purchase. You may want to purchase a new sports car, but unless you have the income to pay for it (and are willing to sacrifice this income) then it is not relevant for the construction of the demand curve. This is referred to as **effective demand**.

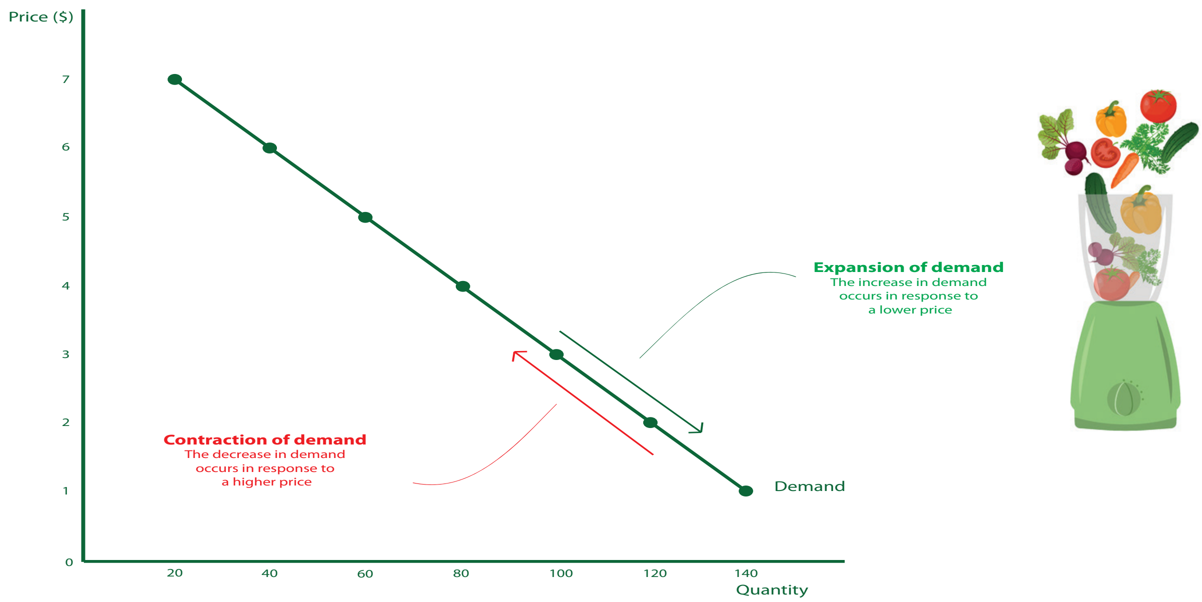
Consider the following hypothetical information about the market for green smoothies, represented in a **'demand schedule'**. Green smoothies have become increasingly popular in the twenty first century as consumers look to replace their sugary beverages with juices and smashed up (blended drinks of) fruits and vegetables (called smoothies). Table 2.1 shows the number of green smoothies that would be purchased at any given price on any given day in a hypothetical market. It is clear that the demand for green smoothies follows the law of demand. Lower prices result in an increase in the quantity demanded and higher prices result in a lower quantity demanded. For example, if the price of green smoothies increases from \$5.00 to \$7.00, demand for green smoothies **contracts** from 60 per day to 20 per day.

Table 2.1 Demand schedule for green smoothies

Price ($AUD) per 500 ml	Quantity demanded per day
1.00	140
2.00	120
3.00	100
4.00	80
5.00	60
6.00	40
7.00	20

The law of demand is represented in a two-dimensional diagram with the price on the vertical (y) axis and the quantity demanded on the horizontal (x) axis. This is represented in Figure 2.1.

Figure 2.1:
Demand for green smoothies



It is important to note that when the price of the product changes, there will be a **movement along the demand curve.** When prices increase, demand generally **contracts** (moves left along the demand curve). When prices fall, demand usually **expands** (moves right along the demand curve).

The difference between a movement along and a shift of the demand curve

Economists distinguish between a movement along the demand curve and a shift of the demand curve. In both cases the demand for a good or service will change, but the reasons for the change differ. A movement along the curve is due to a change in the good or service's own price. A movement along the demand curve to the left (a contraction) is caused by an increase in the price of the relevant good or service. A movement along the demand curve to the right (an expansion) is caused by a decrease in the price. A shift of the entire demand curve will occur when one of the other factors of demand (i.e. not price) have changed, resulting in either an increase or decrease in the quantity demanded at any given price. This essentially means that the previous demand curve is no longer relevant for the new set of circumstances. These demand factors are explored in Section 2.4.

Review questions 2.1 - 2.3

1. What are the conditions for a perfectly competitive market? How might these conditions influence the degree of competitiveness in the market?
2. Provide three examples of markets where you have been involved in the exchange of a good or service in the last month and discuss whether 'price' was a motivating factor behind the purchase.
3. Explain how consumers might compete against each other in a competitive market. Give an example from your own experience.
4. State the law of demand. With reference to the income and substitution effects, explain why the law of demand is a good explanation of human behaviour when faced with changing prices.
5. Distinguish between a movement along the demand curve and a shift of the demand curve.
6. Describe how the equilibrium price is achieved at an auction and link your response to the law of demand.
7. With reference to a snack you like to eat after school, explain what is meant by the concept of diminishing marginal utility.
8. Explain the link between diminishing marginal utility and the law of demand.

2.4 Non-price factors that affect demand

The demand curve depicts the relationship between price and its impact on the quantity demanded for a particular good or service. Other (non-price) factors that may affect the quantity demanded are held constant (ceteris paribus). However, changes in these non-price factors do occur, and such changes will cause the demand curve to shift – this effectively means that a ***new demand curve*** will now be relevant.

If the demand curve shifts to the right, this means that for each given price there is a greater quantity demanded, which is commonly expressed as an increase in demand. A shift of the demand curve to the left means that for each given price there is a lower quantity demanded, which is commonly expressed as a decrease in demand. The non-price demand factors that students need to learn as part of the VCE Economics course are explored below.

Disposable income

Disposable income is defined as the rewards received by households from their direct contribution (from working) and indirect contribution (from the provision of land or capital) to the production process, plus government transfers less direct (income) taxes. This represents the ***total amount that consumers have to spend on goods and services***. Disposable income could increase, for example, when a person gets a pay increase, the government cuts individual income tax rates or when a household receives dividends or makes capital gains from buying or selling assets. During periods of strong economic growth, there will also tend to be a lower unemployment level and hence the disposable income earned across the country will also tend to rise (wages and salaries are in most cases going to be higher than the income received from government benefits).

Disposable income

=

Factor income

[e.g. wages for contibuting labour]

+

government transfers

–

direct (income) taxes on factor income

An increase in disposable income is generally associated with an increase in the demand for **normal goods**. This will shift the demand curve to the right, as consumers may be willing and able to purchase a greater quantity at any given price. A normal good is therefore defined as one where consumption of the good increases when income increases.

An increase in disposable income is likely to have a negative effect on the demand for **inferior goods**. Goods that are often considered inferior include second-hand clothes, generic ('homebrand' or no-name) products sold in supermarkets and travel by bus. As income increases, consumers may choose to substitute away from inferior goods and towards new clothes, branded products or purchase their own mode of transport.

Study tip

It is important to distinguish between disposable income and discretionary income. Income tax increases will decrease disposable income but if the individual does not have savings, interest rate increases won't affect disposable income. This is because the individual will still receive the same rewards from their contribution to the production process. However, changes in interest rates is likely to affect discretionary income, especially for households who have loans with variable interest rates. Discretionary income is a measure of how much households have left over to spend on non-essential items after their core expenses have been paid.

With reference to green smoothies, if the government granted an income tax cut to all workers, disposable income across the country would tend to increase. Some of these workers may choose to spend their increased income on green smoothies, (assuming at this stage that the price remained the same). Not all people with the extra disposable income will purchase more green smoothies but it is reasonable to expect that some of them will. Therefore, the overall demand for green smoothies would increase and more would be demanded at each price level.

This would be represented by a shift of the demand curve to the right and the demand information might change as shown in Table 2.2 below.

Table 2.2 Demand schedule for green smoothies		
Price ($AUD) per 500 ml	Quantity demanded per day (D1)	NEW Quantity demanded per day after income tax cut (D2)
1.00	140	150
2.00	120	130
3.00	100	110
4.00	80	90
5.00	60	70
6.00	40	50
7.00	20	30

Figure 2.2:
Demand for green smoothies [Shift of demand curve]

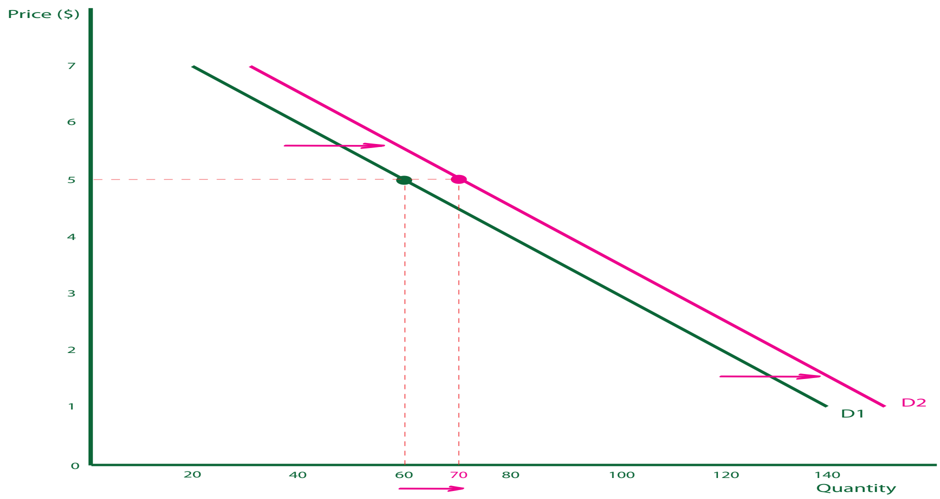


Figure 2.2 shows how a personal income tax cut affects the demand for green smoothies. For example, at a price of $5.00 the demand has increased by 10 drinks per day, from 60 to 70. This increase in quantity demanded occurs at every other price, which is why the demand curve has shifted to the right in a parallel fashion. The tax cut in this case is likely to result in an extra 10 green smoothies being demanded per day as some of the extra disposable income has been allocated to the consumption of green smoothies. People who like them might be buying more or those who could not afford them before the tax cut may now feel that it is within their budget. It is important to note that we can't yet predict how many smoothies will actually be sold, as this will depend on the supply conditions in the market at the time, which will be considered in the next section.

Interest rates and other factors affecting discretionary income

Interest rates represent the reward for lending (saving) or the cost of borrowing, expressed as a percentage of the **principal** (the amount lent or borrowed). Increases in interest rates are likely to have the greatest impact on the behaviour of those who are indebted. Most home loans in Australia are usually offered with variable interest rates, which means that the banks can adjust the interest rate payable in line with changing economic circumstances (usually, but not always when the RBA changes the cash rate). An increase in interest rates will mean that indebted households (and businesses) will have less **'discretionary income'** after paying interest. This is likely to result in a decrease in demand and a shift to the left of the demand curve for many goods and services (especially non-essential items). In this case, less will be purchased at each price. In the case of retirees, a fall in interest rates might result in a decrease in their disposable (and discretionary income) as the interest earned on their savings will be lower.

There are a number of other ways (called transmission channels) that changes in interest rates can affect the demand for goods and services. These will be discussed in more detail as part of the analysis of monetary policy in Chapter 9.

When using the term discretionary income, economists are referring to the amount of disposable income that is left over (or available) after households have paid their essential bills. The word **'discretionary'** indicates that there is some degree of choice involved for households. Therefore, spending on such non-essential items is often classified as 'discretionary spending'. For example, between 2021 and 2022 the price of petrol increased by approximately 40 to 50 cents per litre (due in part, to the Russian invasion of Ukraine). For some motorists, this represented a significant decrease in their discretionary income. The Federal Government responded by temporarily halving the excise tax on petrol, helping to quickly increase the discretionary income of those who had little choice but to keep driving. While their disposable income (income received after income tax) may not have changed, the increase in the petrol price meant they had less to spend on non-essential items.

Other key bills paid by households that would also influence discretionary income, in addition to interest on mortgages and fuel costs, may include utility bills such as gas, electricity and water, rates and rent (for those who do not live in a home they own).

The price of substitutes

A **substitute** is a viable good or service that may be used instead of the product in question. From the consumer's perspective, this means that substitutes provide the user with a similar experience or fulfil a similar need. Remember that one of the reasons for the demand curve being downward sloping is that when the price increases, it is assumed that some customers will switch to cheaper alternatives. If a substitute becomes cheaper, and the price of the good we are analysing doesn't change, then it is assumed that demand for the original good will decrease, resulting in a shift of the demand curve to the left as consumers substitute into the relatively cheaper good. For example, tea and coffee might be seen as viable substitutes by some customers. An increase in the price of tea might therefore encourage some consumers to increase their demand for coffee, resulting in a shift of the demand curve to coffee to the right.

You will find substitutes in most product categories and whenever there is a change in the price of one of these products it will have implications for another. Some may see Fuji and Pink Lady apples as substitutes (or apples and pears). For those who prefer sugary drinks, Coke and Pepsi are substitutes, and when seeking out new trainers one might see Adidas and Nike as viable substitutes.

The price of complements

Complementary products are generally consumed together but are usually sold separately. Therefore an increase in the price of a complementary good might be viewed by the consumer as an increase in the price of the combined experience for both goods. The resurgence of vinyl (records) in the 2010s surprised many analysts, especially those in Australia who had closed down all the vinyl factories. As the price of record players continued to decrease (due to being able to produce larger volumes), this helped to generate extra demand for records. Similarly, if the price of records was to decrease, then more people may be tempted to purchase this form of media and they would need a record player to play the records. Therefore, if vinyl records get cheaper (which may happen if the producers are able to manufacture on a larger scale), then demand for records would expand and the demand for the record players might increase. In the last two years, the price of records has actually increased, which suggests that there might be a decrease in the demand for record players.

Complementary products also highlight how markets can be interdependent. For example, the increase in the price of petrol over 2022, if prolonged, will lead to a decrease in the demand for traditional (petrol/diesel driven) motor vehicles and an increase in the demand for either fuel efficient vehicles (e.g. smaller vehicles) or those powered by more renewable energy sources (e.g. electric vehicles), or even an increased demand for public transport.

Preferences and tastes

Demand may be affected by an individual's **tastes, attitudes and preferences** towards each good or service. In recent times, greater media attention has been paid to the effect of diet on one's health. This has influenced many people to increase their consumption of green smoothies (as discussed earlier). Knowledge of the product's detoxification properties, for example, could influence tastes and preferences. As a result, the demand curve for green smoothies is likely to have shifted to the right over time and more smoothies have been demanded at each price point.

As mentioned in the section on complementary goods, the recent (and somewhat surprising) resurgence of vinyl as a musical source has been driven by people who prefer analogue recordings to the perceived coldness of digital audio. Commentators have also suggested that the movement back towards analogue products is a rejection of technological advancement, while others have called it a 'hipster fad'. Either way, consumers' tastes have been affected, and the demand curve for records has shifted to the right. This has occurred despite the fact that vinyl records are often twice as expensive as the equivalent CD and significantly more expensive than streaming services such as Spotify.

Recent reports conducted by Twitter highlighted the increasing role of influencers in affecting the tastes and preferences of consumers and hence their buying behaviour. People post reviews, warnings and provide advice on when to use certain products. If a post goes viral, then it could have a significant impact on the demand for a product.

When performance artists tour Australia, their music sales (both digitally and in physical form) tend to increase. Consumers are exposed to the music of the performer and the performer may become more fashionable. Going to see a music concert can influence the way the consumer considers and appreciates the music. The death of an artist also tends to have a positive effect on the demand for their art. Advertising is also designed to heavily influence tastes and preferences. Successful advertising campaigns can result in a significant shift in the demand curve to the right and could negatively impact the demand for substitute goods.

Population growth and demographic change

A **growing population** will generally need more goods and services, so it is not surprising that the production of goods and services will usually increase every year given that in most years Australia's population continues to grow. This is one reason why businesses often encourage governments to increase or at least maintain their high immigration targets. It has also been argued that Australia's relatively high immigration targets have contributed to the on-going increase in house prices as the demand for houses at each price point has increased.

The demographics of the population may also affect the range of goods and services that are sold in the market. Australia has an **ageing population** (an increasing percentage of the population are over 65) because there were more births per woman in the years between 1945 and 1965. The large increase in population at that time is referred to as the baby boomer generation. People from this generation are living longer, which means that demand for certain products increases, such as healthcare and aged care. Demand for retirement village living has also increased, with many projects selling out in a short period of time. The disproportionate number of people in this generation may skew production towards the types of goods and services that this group prefers.

A mini-baby boom that occurred in the early part of the 21st century may have contributed to the growing market for infant-related products and also created extra demand for child-care and education professionals. While 2020 saw a dramatic decrease in the fertility rate, with 1.58 births per woman being recorded, governments have responded with initiatives that are designed to boost population and participation in recent budgets. This includes the further increase in child-care subsidies and more generous paid parental leave arrangements, as announced in the October 2022-23 Budget (see Chapter 10) which should once again boost demand for products in the relevant industries.

Consumer confidence (sentiment)

Consumer sentiment (also called 'consumer confidence') is a measure of households' general expectations about the future state of the economy. Consumers' expectations may affect their marginal propensity to consume (which in turn affects their willingness to save) and their willingness to take on new debt. The **marginal propensity to consume** measures the change in consumption that would result from a one dollar increase in income. If consumers feel secure about their future employment opportunities, for example, they may be more willing to bring forward purchases and go into debt to purchase items. As a result, when consumer confidence is high, the marginal propensity to consume might increase. This means that for every extra dollar received, consumers may spend a greater percentage of it. This would particularly affect the purchase of discretionary items such as a new car or a holiday. When confidence is high this is often reflected in a low savings rate across the macroeconomy. During the early stages of the COVID-19 pandemic in 2020, consumer confidence fell to its lowest level in over thirty years. This was associated with an increase in the savings rate from approximately 5% in the March quarter of 2020 to just under 20% in the June quarter of 2020. Since then confidence has returned to higher levels as concern about the pandemic waned and the economy recovered (with the help of government support), evidenced by much stronger rates of economic growth and a reduction in the rate of unemployment to an extremely low 3.5% in the middle of 2022.

Overall, consumer confidence can be affected by a wide range of factors, including the unemployment rate and policy decisions of governments (as highlighted above), as well as changes in household wealth positions (e.g. one caused by a change in housing prices or share prices), prevailing economic conditions, climatic factors (such as the floods and bushfires affecting Australia during 2022) and decisions made in the rest of the world. For example, Russia's invasion of Ukraine and supply chain disruptions due to lockdowns in China in 2022, caused an increase in economic uncertainty across the globe. This resulted in a similar decrease in consumer sentiment which influenced the savings rate in Australia to increase from 14% to 18%.

Review questions 2.4

1. Distinguish between a normal good and an inferior good. List ten goods or services you have purchased recently and explain whether you would classify them as normal or inferior goods.
2. Explain what is meant by the term 'disposable income'. Identify and explain three factors that might contribute to an increase in disposable income.
3. Explain why some indebted households might be sensitive to changes in Australian interest rates.
4. Distinguish between 'disposable income' and 'discretionary income'.
5. Explain how an increase in disposable income or discretionary income will affect the position of the demand curve for laptop computers.
6. Identify two goods that would be considered viable substitutes for one another. Explain how an increase in the price of one would affect the demand curve of the other.
7. Identify two goods that would be considered complementary and discuss how an increase in the price of one would affect the demand curve of the other.
8. With reference to three specific products, identify and explain two factors that could influence the tastes and preferences and hence the demand curve for each good or service.
9. Explain how the closure of Australia's borders between 2020 and 2021 might affect the demand curve for specific goods or services.
10. Identify and explain how two industries may be affected by the ageing of the Australian population. Illustrate your answer with a diagram showing the shift in the demand curve.
11. Identify two factors that could cause consumer sentiment (confidence) to decrease.
12. Explain how a change in consumer sentiment can affect the marginal propensity to consume and the demand curve for a range of goods and services. Give specific examples.

Activity 2a: Analysing demand

Complete the following table. For each of the markets:

1. Identify the impact on the demand curve. Choose from the following options:
   - Expansion of demand (movement along the curve to the right)
   - Contraction of demand (movement along the curve to the left)
   - Increased demand (the curve shifts right)
   - Decreased demand (the curve shifts left)
2. Identify the relevant demand factor (price or non-price).

The first one has been done for you.

Relevant market	Change in economic circumstances	Impact on demand (expansion, contraction, increase or decrease)	Relevant demand factor
Milk	An increase in the price of milk	Contraction of demand	Change in price of the good itself
Tickets to a BTS concert	An announcement that this will be their last concert (ever)		
Sennheiser headphones	An increase in the price of Sony headphones		
Ice cream	An extended period of cold weather		
Calculators	The technology stores have a price war		
Electric vehicles	An extended period of high petrol prices		
Organic oranges	An increase in the price of organic apples		
Childcare services	A decrease in the birth rate to record lows.		
Houses	An increase in interest rates		
Cinema tickets	The Federal Government decreases income tax rates		
Weet Bix	An increase in the price of almond milk		

Activity 2b: The market for bubble tea

It might seem odd to some, but people are sometimes willing to queue for up to 30 minutes to purchase a large cup of bubble tea. Students might even try to order bubble tea to get through their afternoon classes. In fact, worldwide demand is surging. Bubble tea is a drink made from different types of tea, milk, ice and tapioca pearls (an extract from the cassava plant of South America). In some sections of the market, the quality of bubble tea is measured by how much Q power lurks in the tapioca pearls – which refers to the right amount of 'toothiness'. The right level of Q factor can have a significant impact on the demand for the product.

Changes in tastes and preferences

The growth of the bubble tea market is intrinsically linked to changes in tastes and fashion, as one of the many microeconomic factors influencing demand. Green and Black tea have been linked to improved cognitive function, reduced inflammation and in some cases, weight loss. Office workers and students looking for an afternoon 'pick me up' may turn to the drink as a viable alternative to coffee.

The bubble tea market has been able to expand as the sellers find ways to appeal to a wider range of tastes. Suppliers have been able to modify their drinks such that there is now a wide range of flavours, some which are sugary sweet, while others cater for the lactose intolerant consumer. Suppliers are also increasingly aware of the link between sugary drinks and preventable diseases, such as obesity and diabetes, which has resulted in an increase in the use of alternative sweeteners, such as agave and stevia. To appeal to a wider consumer audience, and therefore boost demand, suppliers have also tried to differentiate their products by using organic ingredients. Extensive research is being undertaken by major franchisers to find inventive ways to expand their offerings of low-glycaemic index versions to continually broaden the size of the market.

Complementing the experience

Another factor which has driven the growth of bubble tea demand around the world has been the link between sales and the café culture. In much the same way that people like to enjoy a cup of coffee in a café setting with friends and family, bubble tea sales have increased as cafes offer this as part of their range of products. While in the café, consumers typically purchase other products (such as cakes or biscuits), so it is in the café's best interest to offer bubble tea as one of its drink options. Starbucks, for example, has tried to jump on the bubble tea bandwagon and has added a 'Raspberry Milk Tea' to its range of offerings (although the key ingredient, tapioca pearls, is missing at this stage).

Competition and prices

The increase in demand has brought with it an increase in competition. In most markets, greater levels of competition should lead to lower prices which will induce an expansion along the demand curve as the lower price makes it more affordable for some and encourage others to consume bubble tea instead of the relatively more expensive alternatives.

Questions

1. **Explain how, in the market for bubble tea, tastes and preference have changed and describe the impact on the demand curve for bubble tea.**
2. **Define the law of demand.**
3. **Distinguish between a movement along the demand curve and a shift of the demand curve.**
4. **Explain why falling prices for bubble tea results in an expansion along the demand curve for bubble tea. In your answer, refer to income and substitution effects.**
5. **Explain why an increased demand for bubble tea at cafes can increase the demand for cakes and biscuits.**
6. **Outline why an increase in competition within the market for bubble tea exerts downward pressure on the price of bubble tea.**

2.5 The law of supply and the supply curve

While a higher price may act as a deterrent to the consumer, it tends to have a positive influence on the incentives of the supplier. Each unit sold represents an increase in their revenue (which is equal to the price multiplied by the quantity for each product sold). A higher market price is therefore likely to make the supply of the particular product more **profitable**. Assume, for example, a farmer can use their land to grow a range of crops, but they have decided to focus on the production of strawberries. An increase in the price of strawberries in the market (which could be driven by a change in tastes and fashion in the market) would tend to encourage this farmer, and possibly other farmers, to increase their supply of strawberries in the market. They might be able to achieve this by using up more of their available land (which may have been used to grow raspberries, for example) or by increasing productivity. They recognise more profits are likely to be made from strawberries than any alternative use of the land. As a result, the opportunity cost of producing a product that is not strawberries has increased.

In addition, a higher output level might be associated with higher per unit costs of production. When the volume of production increases beyond a certain point, the firm's capital resources may become crowded. The production facility becomes stretched, bottlenecks start to appear and efficiency declines. As a consequence, the costs associated with each additional unit of production start to rise so the prices needed to cover the costs also increase. To encourage an increase in supply, the supplier needs to receive a higher price per unit.

Law of Supply

The law of supply indicates that there is an positive relationship between the price (the independent variable) and the quantity supplied (the dependent variable).

As the price increases, the quantity supplied increases
As the price decreases, the quantity supplied decreases

It could be argued that the law of supply is an accurate description of business behaviour because:

- a higher price received for the product represents an increase in revenue for the supplier (assuming all else remains constant);
- a higher price increases the opportunity cost of using resources to supply an alternative product; and
- to increase production, the cost per unit might increase (i.e. in this model, the marginal cost is assumed to rise).

As part of our basic microeconomic model, we have intrinsically assumed that the business operates to maximise its profits. Therefore we assume that businesses will prefer to sell products at a higher price which means that they are incentivised to increase their supply in response to a higher price.

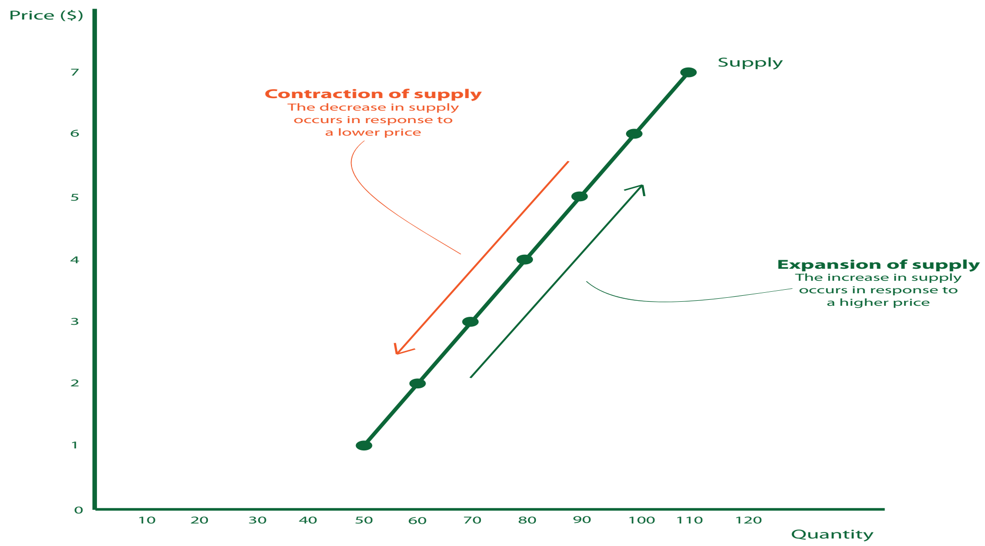
It is useful to think about supply in terms of what prices will be required to encourage producers to supply the market with a given quantity. At the very minimum they need to cover their economic costs. There are a range of factors that affect the quantity supplied in any market, but it is assumed that these are held constant (ceteris paribus) for each of the different price levels when the supply curve is constructed.

Constructing a supply curve

Table 2.3 shows the number of green smoothies that would be supplied at any given price in our hypothetical market. It is clear that the supply for green smoothies follows the law of supply. Lower prices decrease the quantity supplied and when price increases from $1 to $2, supply expands from 50 per day to 60 per day. Like the demand curve, the supply curve can be represented in a two-dimensional diagram with price on the vertical axis and quantity supplied on the horizontal axis. This is represented on the supply curve in Figure 2.3.

Table 2.3 Supply schedule for green smoothies	
Price ($AUD) per 500 ml	Quantity supplied per day
1.00	50
2.00	60
3.00	70
4.00	80
5.00	90
6.00	100
7.00	110

Figure 2.3:
Supply of green smoothies



The difference between a movement along and a shift of the supply curve

In a similar way to the demand curve, it is also necessary to be able to distinguish between a movement along the supply curve and a shift of the supply curve. In both cases the supply of a good or service will change, but the reasons for the change are different. A movement along the supply curve occurs when the product's price changes and this causes the quantity supplied to change. A movement along the supply curve to the left (a contraction) is caused by a decrease in the price of the good or service itself. A movement along the supply curve to the right (an expansion) is caused by an increase in the price. This can be seen when the price of green smoothies shown in Table 2.3 above increases from $4.00 to $5.00 - the supply will expand from 80 to 90.

A shift of the entire supply curve will occur when one of the other factors of supply have changed (i.e. not price), and, therefore, at any given price there is either an increase or decrease in the quantity supplied. If the supply curve shifts to the right, this is described as an increase in supply. If the supply curve shifts to the left, this is described as a decrease in supply.

2.6 Non-price factors that affect supply

There are a range of factors that will cause the supply curve to shift. When the supply curve is constructed, it is assumed that each of these supply factors (other than price) is held constant (the ceteris paribus conditions). Whenever one or more of them change, the position of the supply curve will change and a ***whole new supply curve is created.***

A change in a factor of supply (also called a supply factor) will cause a shift in the supply curve. If a supply factor causes supply to increase, the supply curve will shift to the right. If a supply factor causes supply to decrease, the supply curve will shift to the left.

Study tip

When trying to conceptualise the impact of a shift to the left of the supply curve, it can be useful to assume that quantities remain unchanged and then ask the following question: What price does the supplier now need to charge to justify supplying that particular quantity? The price needs to be higher at every quantity level or else the supplier will no longer be willing to supply. Consequently, this causes the whole supply curve to shift left.

We have already examined the relationship between price and supply in the previous section, where higher prices indicated that more profit can potentially be made by allocating more resources to production, which prompted a movement up along the supply curve as existing producers supplied more to the market. However, the willingness of producers to supply goods to a market (in the first instance) will ultimately depend on the expectations of profit (i.e. profitability) at any given price. For example, in the case of green smoothies, once producers of other products (or entrepreneurs more generally) believe that makers of green smoothies are making large profits, they will allocate productive resources to their production. This increases the number of sellers/producers in the market and necessarily results in more supply at every given price – shifting the supply curve to the right. This is how an increase in competition, or competitive pressures (which is covered in detail in Chapter 3), can lead to a reduction in prices. Of course, the actual or perceived profitability related to any product must also depend on actual or perceived changes in the costs of production. So if the price of a product remains unchanged over any given period, and the per unit costs of production fall, then by definition the profit from selling each unit will rise and producers will be willing to supply more to the market - i.e. the supply curve will shift to the right. The non-price supply factors that students need to learn as part of the VCE Economics course are explored below.

Changes in the costs of production

Each good and service that is produced in the economy requires resources, which are often referred to as the **factors of production** (i.e. land, labour and capital). The position of a firm's supply curve will depend on the costs involved in making a good or service as this will influence the price the producer is willing to accept in return for the good.

Referring back to the market for green smoothies, there are a number of resources that are needed to create the end product. The drink may be made from spinach, kale and something like an apple to provide the sweetness needed to entice many customers to consider the drink. A shortage of kale, for example, could result in its price increasing, leading to a higher cost of production for the smoothie supplier. Similarly, if the price of petrol increased then each smoothie would cost more to make as it would cost more to transport the ingredients to the store. If the owner of the building charged higher rent to the smoothie business, then the smoothie producer's costs of production would increase. As a result, the supply will decrease at each given price, which is represented by a shift to the left of the supply curve. In other words, the higher costs of production reduce the willingness and/or ability of the retailer to supply at a given price. Refer to Box 2.1 for further information about the common costs that can affect the supply curve of most businesses.

Study tip

One of the biggest challenges faced by students studying supply is that they start to discuss the reaction in terms of demand. This intrinsically makes sense because most of us are consumers, but few of us own businesses. Therefore, it is recommended when analysing supply that you seek to view the question from the perspective of an individual business owner. Ask yourself how the change in a relevant factor will influence their willingness and ability to supply (at each given price point). Try, at least to begin with, to analyse this independently of any change in demand.

Box 2.2 Common costs of production

The common costs of production faced by businesses include the following:

- Wages/Salaries and other on-costs such as superannuation and WorkCover premiums
- Rent and property expenses
- Interest on loans and overdraft facilities
- Utility bills such as electricity, water, telephone/internet and gas
- Delivery costs
- The cost of technology
- The rate of depreciation of assets
- The cost of raw materials used in the production process
- Financial and insurance services
- The level of government assistance or taxes and charges
- The value of the $AUD affects the cost of using imported components in the production process

Technological change and productivity growth

New technology is usually associated with an increase in productivity. **Productivity** measures the output per unit of input. One measure of productivity is **labour productivity**, which is measured by the total output (the volume of production) for each hour that is worked. The introduction of new and more advanced capital in the production process may result in a greater volume of goods and services produced for each hour worked. If the price of the resources used (such as labour) remains constant, this should result in a decrease in the cost per unit of output. Higher levels of productivity would therefore enable the supplier to supply more at each price level.

With reference to the market for smoothies, the introduction of robots in the production process could result in a reduction in the costs of production for the supplier (especially in the long run). With robots taking the orders, the additional costs associated with each order would decrease because the robots would not require compensation for each hour worked

Study tip

Remember that when demand or supply increases, the respective curves shift right, and when they decrease, the curves shift left. Avoid talking about moving the curves up or down.

New technology could also, over time, reduce the cost of operating a smoothie business. Electricity costs could decrease as solar technology improves and new technology could be introduced in the agricultural sector that increases the productivity of land. This could increase the supply of kale such that the supply of smoothies could increase. Therefore, technological improvement is likely to result in an increase in productivity and lower the costs of production, resulting in an increased supply at all price points (shifting the supply curve to the right).

Climatic conditions and other disruptions

Most goods and services rely upon nature for the provision of the raw materials required, either directly or indirectly. Some agricultural products are heavily dependent upon favourable **climatic conditions**. A drought, for example, reduces the availability of a key resource in the production process (i.e. water). This would decrease the availability of key resources in the production of green smoothies such as kale and spinach. This may push up their prices in the market, raising the cost of production. In some extreme circumstances, the smoothie operator may not be able to purchase as much kale as they need to meet demand, reducing the market supply of this offering.

Climate scientists predict that, as climate change worsens, there will be an increase in the occurrence of erratic weather patterns that cause disruptions to supply. Suppliers in regions affected by floods and bushfires have been significantly affected in the past and this has, in some cases, reduced supply to zero. For example, as a result of the extreme bushfires and floods over recent years, many businesses were completely destroyed and unable to supply any goods or services to the market. For example, the floods in eastern Australia over 2022 completely destroyed a number of fruit and vegetable crops in Queensland and NSW, causing farmers' costs to rise and prices to increase significantly.

Human actions and government intervention can also cause supply-side shocks. For example, acts of terrorism have disrupted transport infrastructure and added to costs for the airline and tourism industries. The Russian invasion of Ukraine caused significant supply shock disruptions in the markets for products like natural gas, oil, wheat, and other commodities. Further, state and federal government responses to the coronavirus pandemic led to significant disruptions to supply. An extensive number of businesses were unable to legally supply their goods or services due to lockdowns and other government-imposed restraints on trade. For example, the supply of haircuts, gym services, lawn mowing services and restaurant meals effectively disappeared. In 2022, lockdowns in Shanghai made it difficult for some residents to access basic necessities like food and medicine due to a lack of supply.

Number of suppliers

In a competitive market, firms may be able to make supernormal (excessive profits) in the short run. Given that entry and exit to the market is relatively easy in a perfectly competitive market, the high profits would incentivise new firms to enter the market. When there are more firms offering goods/services in the market then the supply will increase. This causes the supply curve to shift to the right. This might not be possible in the short run because resources might need to be purchased and the businesses would have to hire new staff. In the long run, however, the entry of new firms is possible because all resources can be moved from one area of production to another. In contrast, if firms in the industry are making a loss, then some firms may choose to leave the market and search for alternative uses of their resources that are more profitable. When firms leave an industry the supply curve will shift to the left.

Activity 2c: Analysing supply

Complete the following table. For each of the markets:

1. Identify the impact on supply. Choose from the following options:
   - Expansion of supply (movement along the curve to the right)
   - Contraction of supply (movement along the curve to the left)
   - Increased supply (the curve shifts right)
   - Decreased supply (the curve shifts left)
2. Identify the relevant supply factor (price or non-price).

The first one has been done for you.

Relevant market	Change in economic circumstances	Impact on supply (expansion, contraction, increase or decrease)	Relevant supply factor
Eggs	**Disease affecting poultry**	**Decrease**	**Climatic and other**
Tickets to the AFL Grand Final	An increase in ticket prices		
Bottle of kombucha	A drought		
Guitars	An increase in the price of wood		
Mini Cooper Vehicles	An increase in labour productivity in the factory		
Haircuts	People are replaced by robots in the hairdressing industry		
Coffee	A frost in Brazil		
Lawn mowing ser-vices	An increase in the profitability of providing this service		
Economists' services	An increase in the HECS fees required to study Economics at university		
Petrol	The invasion of Ukraine by Russia		
Airline flights	Introduction of fuel saving technology		

To illustrate how these factors may cause the supply curve to shift, we will continue with the example of green smoothies. Let's assume that the costs of production fall by an average of $1 per smoothie, perhaps because of lower raw material costs (e.g. cheaper fruit ingredients) or improvements in technology (cheaper and more efficient blenders). Table 2.4 below indicates that the suppliers will be willing to increase their supply of smoothies to the market at every price level. Alternatively, it means that for any given quantity of smoothies it produces, the producer is willing to supply them at a lower price (i.e. $1 less per smoothie). On this basis, the supply schedule will change as shown in Table 2.4 below:

Table 2.4 Supply schedule for green smoothies		
Price ($AUD) per 500 ml	Quantity supplied per day (S1)	NEW Quantity supplied per day after lower costs (S2)
1.00	50	60
2.00	60	70
3.00	70	80
4.00	80	90
5.00	90	100
6.00	100	110
7.00	110	120

Figure 2.4:
Supply of green smoothies [shift of supply curve]

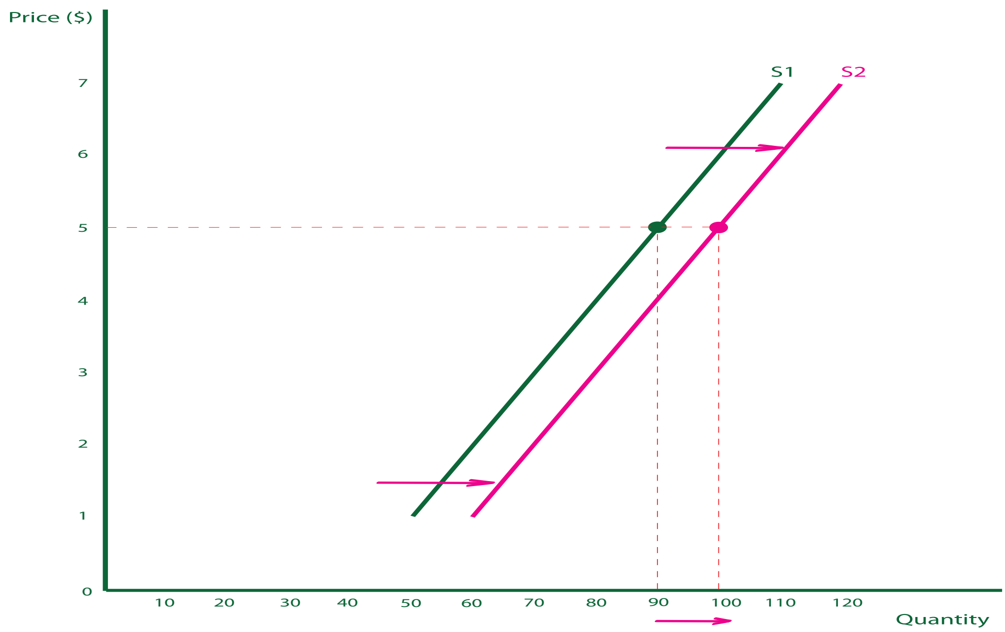


Figure 2.4 shows how the lower costs of production affects the supply curve for green smoothies. For example, at a price of $5.00 the supply has increased by 10 drinks per day, from 90 to 100. This increase in quantity supplied occurs at every other price, which is why the supply curve has shifted to the right in a parallel fashion.

Review questions 2.5 - 2.6

1. State the law of supply.
2. Explain, to someone who has never studied economics, how and why suppliers will react to an increase in the price of the product they are considering selling.
3. Distinguish between a movement along the supply curve and a shift of the supply curve. In your answer, make reference to the terms used to describe movements along and shifts of the supply curve.
4. Identify and explain two factors that may lead to a decrease in the cost of production for cleaning services.
5. Illustrate how the decrease in the cost of production will affect the position of the supply curve for cleaning services.
6. Explain how an increase in the price of bananas might affect the supply of pineapples (assuming they can be grown on the same land).
7. Explain how climate change may be associated with changes in the supply of certain products. Refer to at least three specific products as part of your answer. (This question may require some additional research)
8. Identify two recent technological changes that are not mentioned in the text and explain how they may be associated with an increase in supply for the relevant industries.
9. Describe a factor that might encourage new suppliers to enter a market and discuss the implications for price and quantities sold.

Activity 2d: Climate change and disruptions to supply

Extreme weather events tend to have a negative effect on supply. Firms are often willing but unable to supply. Australia regularly suffers from major weather events that temporarily lead to the destruction of infrastructure and the closure of key businesses. For example, in the summer of 2020, there were devastating bushfires in Victoria that led to the closure of key transport routes, key infrastructure like electricity wires and mobile phone towers were destroyed and businesses were unable to open because they had been burnt down. Similarly, the eastern Australian floods of 2022 destroyed an estimated 15,000 homes in Brisbane (significantly reducing the ability of the city to supply accommodation services) and created widespread damage to crops and infrastructure across Queensland and NSW.

According to the government website www.climatechangeinaustralia.gov.au, extreme weather events, like those mentioned in this case study, will become more prevalent due to climate change. Droughts are expected to last for longer periods and be more severe because they will be accompanied by hotter temperatures. Floods, bushfires and other erratic weather patterns are also expected to be more devastating to the nation's ability to supply.

Climate change is therefore expected to disrupt the ability of firms to supply. The impact on food production alone is hard to predict, but climate change scientists have suggested that the major regional food bowl, the Murray Darling Basin will experience increasing shortages of water (which is essential for irrigation). The lack of a key resource, such as water, will make it increasingly difficult to supply a large number of fruits and vegetables, as well as impose supply constraints on the production of wheat and dairy products. In 2022, the Great Barrier Reef experienced its sixth mass coral bleaching event. Bleaching occurs when the animal becomes stressed from above-average water temperatures. The bleaching of the coral has impacts for the whole ecosystem. Fish and other invertebrates that rely on coral for food and shelter are now more vulnerable. This could ultimately decrease the supply of fish and the decrease in marine activity is bound to flow through to the supply of lucrative tourism services which operate in the area. Coral reefs are also a valuable source of pharmaceutical compounds, another area where supply may be negatively affected.

Reponses to mitigate the effects of climate change will typically add to the costs of production for businesses (in the short run). Governments may also implement policies that seek to reduce carbon emissions (such as a carbon tax) which will also add to a firms cost of production (either directly or indirectly). Actions taken by firms to reduce their carbon footprint may, however, lower their costs of production in the long run. The installation of solar panels, whilst expensive in the short run, will reduce the amount that the firm has to pay for each future unit of electricity consumed. In the case of insurance costs, as insurers increasingly accept that climate change events are likely to be more frequent, then the risk of claims increases and the cost of insurance policies for businesses (and households) will rise.

Questions

1. **Identify and explain five different disruptions to supply that have occurred in recent years.**
2. **Explain how climate change might affect the supply curve for wheat.**
3. **Identify and explain a range of negative supply effects that arise from a bushfire or flood.**
4. **Explain how government and business responses to mitigate the effects of climate change might affect the willingness and ability of firms to supply.**
5. **Explain how business responses to climate change might result in an increase in supply in the long run.**

Activity 2e: How the coronavirus affected supply

Over the last four decades, a large percentage of the manufactured goods that we purchase have been made available via sophisticated global supply chains. Raw materials and intermediate goods are shipped around the world (often multiple times) and then assembled in another country. For example, Foxconn, an electronics contract manufacturer based in China, produces for many electronics companies including Apple, Intel and Sony. The infections associated with the coronavirus are believed to have begun in China, during December 2019. The Chinese authorities responded by restricting the movement of people, imposing curfews and quarantines. This led to the closure of many production sites so that contact between people could be minimised. These closures led to a significant drop in industrial production and an associated fall in both the import of raw ingredients and intermediate products, as well as a fall in exports sold to the rest of the world. Countries that would ordinarily source these final electronics goods from China were unable to do so.

The reaction to the coronavirus by governments also played a part in the disruption to supply. For example, in the state of Victoria, only essential businesses were allowed to remain open after the Government imposed Stage 4 lockdowns. This meant that it was effectively impossible to offer a wide range of goods and services. The supply of haircuts and beauty treatments was, for example, reduced to zero in metropolitan Melbourne, as was the supply of a host of other service products, including live entertainment and dine-in meals. Social distancing laws, curfews and the fear of infection also negatively impacted on the supply of labour to some businesses. These types of disruptions meant that the supply curves for the firms shifted dramatically to the left.The coronavirus did, however, have positive effects on the supply of some goods and services. There was a marked increase in the demand for personal protective equipment such as face masks, hand-sanitiser, alcohol and entertainment services (such as Netflix). This higher demand resulted in elevated prices (and higher profitability), which encouraged existing producers to supply more to the market (i.e. there was an expansion of supply or a movement up along the supply curve). In addition, the increased profitability of these products encouraged new producers to enter the market (as the barriers to entry were low) which led to an increase in supply that is represented by the supply curve shifting to the right. For example, a Melbourne gin distillery started to make gin-scented hand sanitiser. Similarly, there were numerous examples of individuals and businesses adapting to the market and adapting their resources to produce face masks.

Questions

1. **State and explain the law of supply.**
2. **Explain how the coronavirus might have affected costs of production in Australia**
3. **Explain two ways that government responses to the coronavirus led to supply disruptions.**
4. **Discuss the view that coronavirus had a positive impact on the supply of some products. Research at least one industry where supply grew during this period and in your answer distinguish the movement along the supply curve from a shift of the supply curve.**

2.7 Market equilibrium

The demand and supply curves have so far been considered in isolation. They have illustrated, respectively, the quantities that the consumers and firms are willing to buy and sell at each price. In order to determine the price and quantity sold in any market, the interaction of supply and demand is needed. It is this interaction that results in a market determined price, which then influences the quantity that is traded.

Remember that the consumer will want to obtain the good or service at the lowest price possible while the supplier will want to sell for the highest price to maximise their profits. The compromise that is reached in the market is referred to as the **equilibrium price** – the price where the quantity demanded is equal to the quantity supplied. The market therefore clears at the equilibrium price because every product that is made available for sale is sold and there is no excess demand or supply.

In Table 2.5, the demand for and supply of green smoothies is reproduced. The table shows the demand and supply schedules after the respective increases in demand (as a result of income tax cuts) and supply (as a result of lower costs of production) as outlined in Tables 2.2 and 2.4 above. The table also shows the points of disequilibrium, where the price is either above or below the market clearing level, resulting in either a surplus or a shortage of green smoothies in the market.

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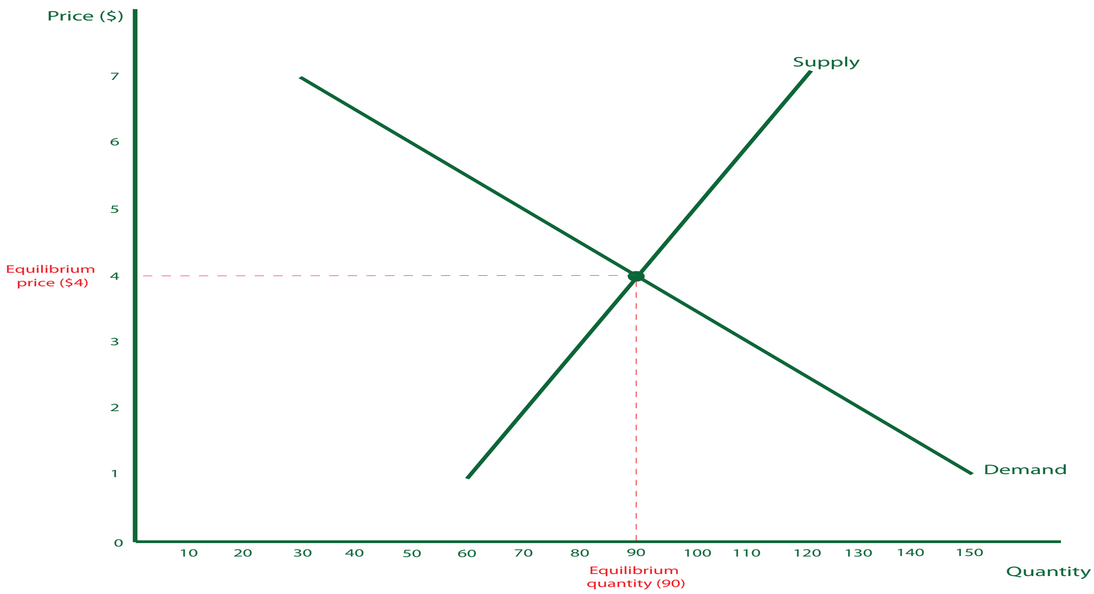
Table 2.5 Demand and supply schedule for green smoothies

Price ($AUD) per 500 ml	Quantity demanded per day	Quantity supplied per day	Surplus (+) or shortage (-)	Quantity traded
1.00	150	60	-90	60
2.00	130	70	-60	70
3.00	110	80	-30	80
4.00	90	90	0	90
5.00	70	100	+30	70
6.00	50	110	+60	50
7.00	30	120	+90	30

You will note that there is only one price and quantity at which the quantity supplied is equal to the quantity demanded. That price is $4.00 per smoothie – which is referred to as the equilibrium price. The quantity supplied and demanded at that price is 90 smoothies per day - which is the equilibrium quantity. Therefore, at that point, the market is 'in equilibrium'. At all other prices, there is either a **shortage** – where quantity demanded exceeds quantity supplied – or a **surplus** – where quantity supplied exceeds quantity demanded. The market in equilibrium is depicted in Figure 2.5 below:

Figure 2.5:
Market in equilibrium



When the market is in equilibrium, it is also referred to as being in a **state of rest**. In the case of smoothies, a price of $4 will ensure that there will be neither a surplus nor a shortage at the end of every trading day. There is no pressure for the price to change from $4 unless there is a change (or shift) in demand and/or supply such that one or both of the curves move to a new position. If this were to occur, the market would be in a temporary state of disequilibrium, with the price either being too high or too low, and surpluses or shortages would develop. Consumers and suppliers would alter their behaviour in response to the disequilibrium, which would return the market back to equilibrium.

Movement from disequilibrium to equilibrium

The market will always have a natural tendency to move towards equilibrium. When price is above equilibrium, normal market pressures will drive the price back down to the equilibrium price. Conversely, when price is below equilibrium normal market pressures will drive the price back up to the equilibrium price. Given that producers do not know precisely where the equilibrium price resides over any given period of time, it can become a process of trial and error, with producers changing prices until 'the right' price is achieved. This is often seen in fruit and vegetable markets around cities and towns, particularly towards the end of the day when impending shortages or surpluses become evident.

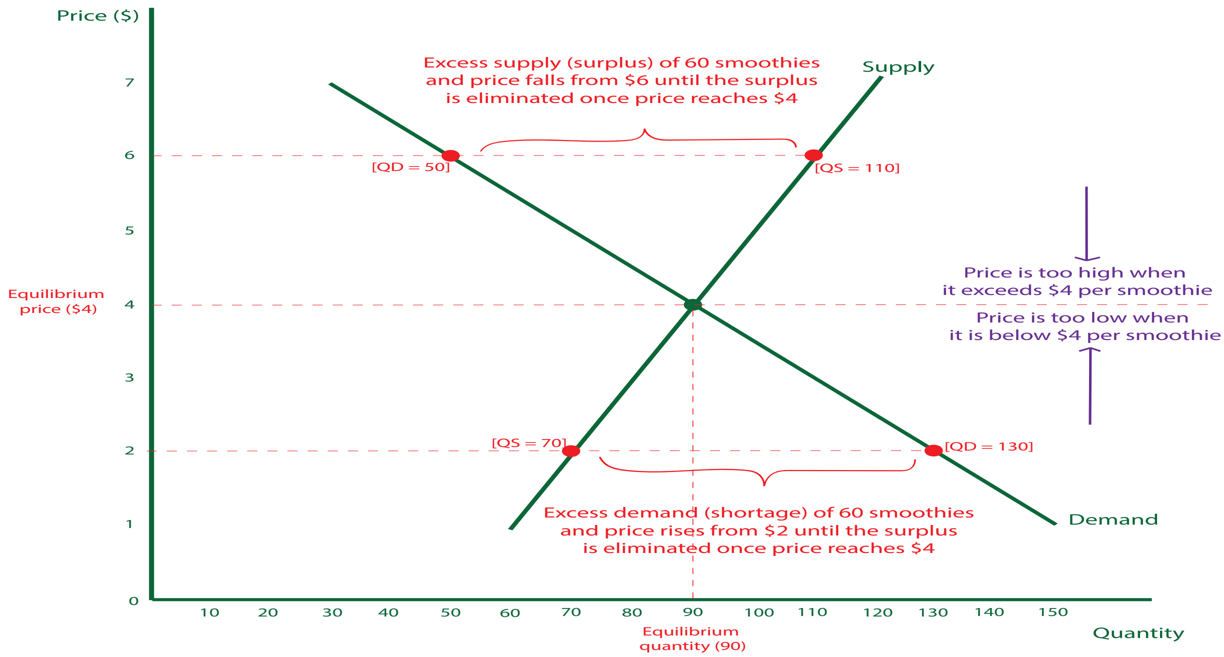
Price below equilibrium

When the market price is set *below* the **equilibrium price**, such as at $2.00 in our market for green smoothies, there will be a **shortage** of 60 smoothies per day. You will notice in Table 2.5 and Figure 2.5 above that at this low price, only 70 smoothies are supplied, but 130 smoothies are demanded, which means that only 70 smoothies will be traded at a price of $2.00. The price may be set at this level because the suppliers have entered a new market and are trying to ascertain buyer response. They may not yet know whether the price is appropriate to clear the market. It will soon become evident to the supplier that the price they are charging is too low because they will run out of stock relatively quickly (resulting in a shortage and, hence, a missed opportunity). The supplier is then likely to take advantage of this by raising the price in order to maximise profits. In some markets, the buyers may compete with each other and offer higher prices (outbid) to obtain the scarce products. As the price of the smoothies rises, some buyers will decide to leave the market because they are no longer willing or able to purchase the smoothies (due to the income and/or substitution effects). The higher price will also act as an incentive for the suppliers to make more smoothies available to the market because it is now more profitable than an alternative use of their resources. This will be represented by movements along the demand (contraction) and supply (expansion) curves, as the price rises. The price will therefore continue to increase until the shortage is eliminated, and the quantity demanded is equal to quantity supplied at $4.00 per smoothie. This is clearly demonstrated in Figure 2.6 below.

Price above equilibrium

If the price is initially set *above* the equilibrium price, the market will also move naturally towards its equilibrium. If, for example, the price was set at $6.00 then the suppliers would notice that they are not generating enough sales. Table 2.5 shows that, at this high price, 110 smoothies are supplied, but only 50 smoothies are demanded, which means that 50 smoothies will be traded at a price of $6.00. The suppliers may have overestimated the amount that people will pay for green smoothies and have set the price too high. This would create a **surplus** of 60 smoothies (quite a waste of resources), which should encourage suppliers to lower their selling price and entice new customers into the market. (This is often the motivation for stores who conduct regular sales to offload stock where prices were initially set too high.) When the price is lowered, however, it gives a clear signal to potential suppliers in the market that this product may not be as profitable as it first appeared. As a result, supply is likely to contract as the price falls and some manufacturers or retailers will decide to allocate their scarce resources to relatively more profitable areas. The price will continue to decrease (encouraging demand to expand and supply to contract) until there is no reason for suppliers to alter it, which means that the market has reached a state of equilibrium. This analysis is highlighted in Figure 2.6.

Figure 2.6:
Market in disequilibrium



2.8 The effects of changes in supply and demand on equilibrium prices and quantities traded

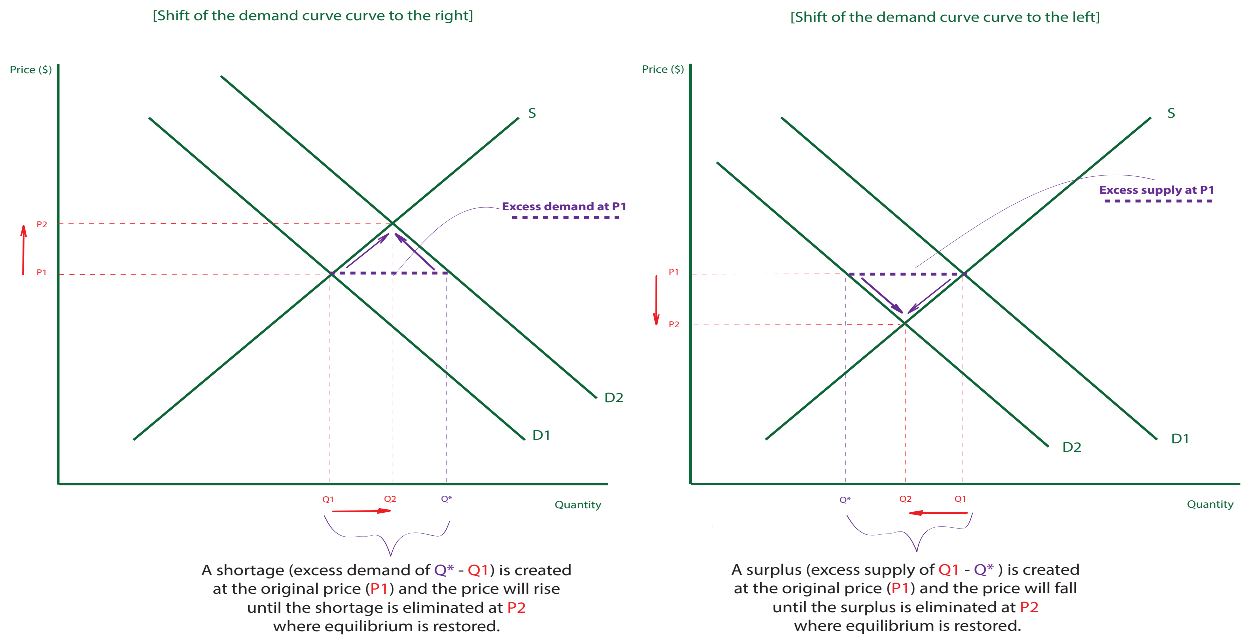
When the market is in equilibrium, there is no pressure for the price to change, unless there is a change (or shift) in the non-price factors that affect demand and/or supply, such that one or both of the curves move to a new position. Should this happen, the market will be in a temporary state of disequilibrium, with the price either being too high or too low, and where surpluses or shortages will develop. Over time, the market price will adjust to eliminate surpluses or shortages and equilibrium will be restored. A number of alternative outcomes are analysed below.

Changes in demand while supply remains constant

Suppose demand increases for green smoothies because the government undertakes an extensive education campaign to encourage citizens to eat more green vegetables. This could result in an increase in the demand for green smoothies at all price points, which is represented by a shift of the demand curve to the right. This is shown in the first diagram in Figure 2.7. The initial increase in demand causes a shortage at the original price (the suppliers may not have expected such a response from their customers). The popularity of the green smoothies may therefore encourage the suppliers to increase the price and/or the customers to compete against each other to obtain the scarce smoothies (they bid up the price). Therefore, as the price rises, the higher price alters the incentives for both the consumers and the producers. Some of the original increase in demand may contract as the price increases (some people may not be able to afford the smoothies), but the higher prices will act as an incentive to supply more, so supply expands. The end result is a higher equilibrium price and quantity traded for green smoothies.

Similarly, the demand for green smoothies may decrease. This may be caused by an increase in variable interest rates (indebted households would have less discretionary income to spend on smoothies), causing the demand curve to shift to the left. This is shown in the second diagram in Figure 2.7. When the demand curve shifts to the left, fewer smoothies will be demanded at each price level. This will initially create a surplus at the existing price and sellers may conduct a sale and lower their prices. In doing so the surplus is more likely to be eliminated. Some consumers will be enticed by the lower prices due to the income and/or substitution effect. Some suppliers will realise that the profitability of this market has fallen so will contract their supply. They may decide to pursue other, more profitable, areas of production. The new equilibrium price is therefore lower and the quantity traded also falls.

Figure 2.7:
Disequilibrium caused by a shift of the demand curve



Changes in supply while demand remains constant

Supply may increase due to technological advancements, for example, that makes it cheaper to produce each smoothie. This will result in an increase in the quantity supplied at each price level and is represented by a shift of the supply curve to the right. This is shown in the first diagram in Figure 2.8. The shift to the right will generally result in a surplus of stock available at the initial price. A surplus of stock creates the need for the seller to lower the price. By lowering the price new customers are drawn to the market (demand expands) and the supply contracts because firms realise that it is no longer possible to sell the smoothies at the previously high price. The increase in supply results in a lower equilibrium price and an increase in the quantity traded.

Conversely, a decrease in supply will result in a decrease in the quantity traded and a higher equilibrium price. This is shown in Figure 2.8. An increase in the cost of oil, for example, will have an impact on most goods and services consumed. The oil is used as an input in the production of conventionally-produced green vegetables (as a component in fertiliser), as well as in the transportation of the final product to the retail outlet. Therefore, less will be supplied at each price and the supply curve will shift to the left. The shortage that is created at the initial price will affect how the producers and consumers behave in the market. It is likely that those who really want the scarce smoothies may bid up the price and some consumers will therefore leave the market as they are no longer willing and/or able to purchase the product. The shortage will also be eliminated by a possible expansion of supply as some suppliers see the added profitability from supplying more. These dynamics are summarised in Table 2.6 on the next page.

Figure 2.8:
Disequilibrium caused by a shift of the supply curve

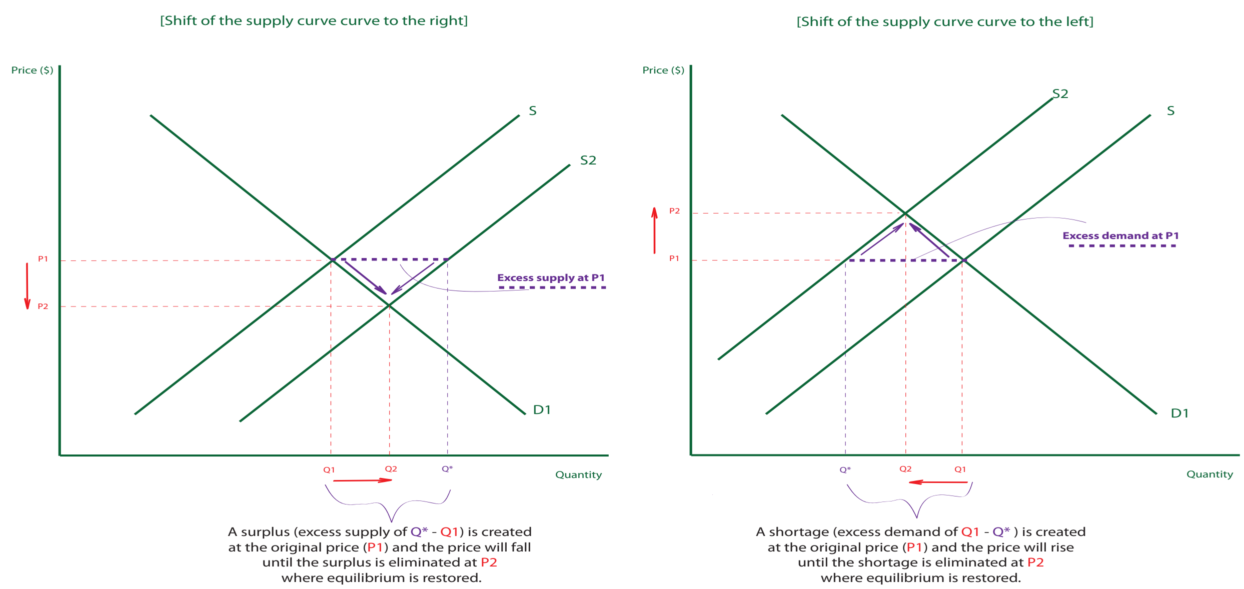


Table 2.6 Impact of changes in demand and supply		
Change in demand	**Change in supply**	**Impact on market**
Increase	Unchanged	P increase, Q increase
Decrease	Unchanged	P decrease, Q decrease
Unchanged	Increase	P decrease, Q increase
Unchanged	Decrease	P increase, Q decrease

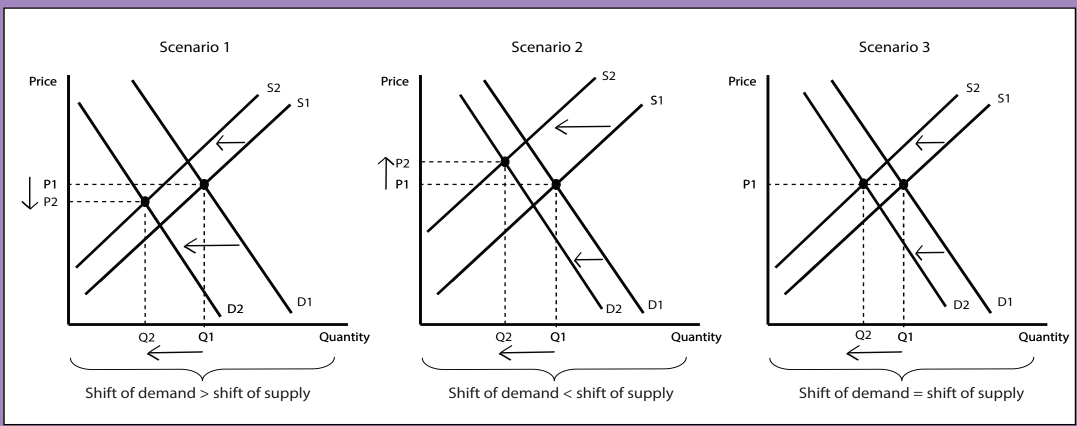
There are also four more complicated scenarios. Sometimes the factors of demand and supply can both change concurrently. This can happen when a factor of demand is also a factor of supply. For example, a decrease in interest rates will affect both the demand and supply curves for green smoothies. The lower interest rates will mean that indebted households will have more discretionary income to spend on a range of goods and services (such as green smoothies). This would shift the demand curve to the right. At the same time, the lower interest rates will tend to reduce the cost of production for firms who operate with some level of debt. [Even if firms have no debt, it reduces the opportunity cost of allocating the funds to the green smoothie business]. Their supply curve will therefore shift to the right. When the demand curve and the supply curve both shift to the right this will lead unambiguously to an increase in the quantity traded (because both demand and supply are increasing). However, the changes in demand and supply have conflicting effects on the price offered in the market. It may, at first glance, seem impossible to determine what impact this will have on the price of green smoothies. Further knowledge of the degree to which consumers and suppliers respond to changing interest rates is needed to make a meaningful prediction. The price change will therefore depend upon whether changes in interest rates will have a bigger effect on consumers or producers. At this stage, we would therefore suggest that the change in price is unknown. [Box 2.3 below includes an elaboration of possible outcomes of a scenario where demand and supply shift concurrently. It considers the relative impacts of each factor on the outcome for the market - the impact on price and quantity traded.]

Box 2.3 Shifts of demand and supply

Assume that there is a change in tastes and preferences that causes smoothies to go out of favour. At the same time, the cost of hiring labour increases. If the change in a demand and a supply factors are illustrated on a suitably labelled supply and demand diagram, both curves will shift to the left but there are three possible market outcomes:

- Scenario 1 – the demand curve shifts further to the left than the supply curve. In this case, the price will decrease, and the quantity traded will fall.
- Scenario 2 – the demand curve shifts to left by a smaller distance than the supply curve. In this case, the price will increase, and the quantity traded will fall.
- Scenario 3 – the demand and supply curves shift by a similar distance such that the equilibrium price remains unchanged and the quantity traded falls.

These three scenarios are depicted in the diagrams below.



Notice how the change in price depends upon the relative changes in demand and supply. This reflects the fact that the fall in demand places downward pressure on prices but the increase in costs of production (which reduces supply) places upward pressure on prices. Without further analysis it is hard to determine the final impact on prices. We have a high degree of confidence that given both curves are shifting left, the quantity traded will fall. Therefore, it can be concluded that the change in the quantity is negative but the change in the price cannot be definitively determined without further analysis of the relative changes in demand and supply. If faced with a scenario like the one described above, it would therefore be appropriate to state that the change in price is 'unknown'.

The four more complicated scenarios are summarised in Table 2.7. This table highlights that when both curves shift, there will be one of the two parameters (price or quantity) which is difficult to determine (expressed as 'unknown') and further knowledge of the individual market will be required to reach a more definitive conclusion. In reality, the predicted result may not eventuate as a number of other factors may influence how the market reacts (remember these other factors are held constant for the purposes of our analysis but in reality, they are always changing).

Table 2.7 Impact of changes in demand and supply [more complicated scenarios]

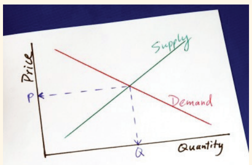
Change in demand	Change in supply	Impact on market
Increases	Decreases	P increase, Q ?
Decrease	Decreases	P ?, Q decrease
Increase	Increase	P ?, Q increase
Decrease	Increases	P decrease, Q ?

Review questions 2.7 - 2.8

1. Define what is meant by the term 'equilibrium'. Explain why the equilibrium price is seen as a compromise between the forces of demand and supply.
2. Explain how the market for smoothies would be affected by an increase in consumer confidence and describe how the market would move from disequilibrium to a new equilibrium.
3. Explain how the market for smoothies would be affected by favourable weather conditions and describe how the market would move from disequilibrium to a new equilibrium.
4. Explain how the market for smoothies would be affected by higher interest rates and describe how the market would move from disequilibrium to a new equilibrium.
5. Explain how the market for smoothies would be affected by an increase in the minimum wage and describe how the market would move from disequilibrium to a new equilibrium.

Activity 2f: Making predictions using demand and supply diagrams

For each of the following examples, use a fully labelled demand and supply diagram to illustrate the impact on the equilibrium price and quantity. You should also provide a written explanation of your response, which makes reference to the relevant demand and/or supply factor and how the market returns to equilibrium from disequilibrium.



1. The impact of the floods on the market for lettuce.
2. An increase in the price of oil on the market for petrol.
3. An increase in the price of petrol on the market for taxi services.
4. An increase in the price of Spotify on the market for Apple Music.
5. An increase in consumer confidence on the market for BMW vehicles.
6. An increase in employment on the market for second-hand clothes.
7. An increase in the value of the AUD on the market for records (all of which are imported).
8. The impact of lockdowns in China on the market for Australian iron ore.
9. An increase in the price of electricity and gas and the market for heaters.
10. An increase in child-care subsidies and more generous paid parental leave and the market for baby clothes.

Activity 2g: A visit to the market to purchase Pink Lady apples

At the Queen Victoria Market (QVM) there are a large number of fruit and vegetable sellers, each selling Pink Lady apples. Consumers are able to easily compare prices between the sellers and the price paid to rent a stall is relatively low. Assume that an economist has conducted some detailed market analysis of apple sales and she has determined that the demand and supply for Pink Lady apples is as follows:

Price per kilo ($)	Quantity demanded (kg)	Quantity supplied (kg)
$0.50	100,000	55,000
$1.00	90,000	60,000
$1.50	80,000	65,000
$2.00	70,000	70,000
$2.50	60,000	75,000
$3.00	50,000	80,000
$3.50	40,000	85,000

a. Using the above information, construct a suitably labelled demand and supply diagram.
b. Use your diagram or the above schedule to determine the equilibrium price and quantity determined in the market.

Imagine that the QVM was featured on a high rating cooking show. This provided the people of Melbourne with valuable information about how the prices at QVM are very low and the atmosphere is 'amazing'. This led to a change in the market outcomes in the following week as shown below:

Price per kilo ($)	Quantity demanded (kg)	Quantity supplied (kg)
$0.50	120,000	55,000
$1.00	110,000	60,000
$1.50	100,000	65,000
$2.00	90,000	70,000
$2.50	80,000	75,000
$3.00	70,000	80,000
$3.50	60,000	85,000

c. Update your demand and supply diagram to show how the equilibrium price and quantity has changed.
d. With reference to a relevant demand or supply factor, explain how the free promotion on the television program led to a change in the market outcome for Pink Lady apples. Make sure you describe how the market moved from disequilibrium to equilibrium.

Due to the increased popularity of the QVM, there is more competition for stall space. In response to this, the management of QVM increases the rent charged to stall holders. This results in a decrease in the ability to supply at each price level by 10,000 kg per week.

e. Use your demand and supply diagram and/or the schedule to determine the new equilibrium price and quantity traded (assume that the other conditions in part c are maintained).
f. Predict what might happen to the equilibrium price and quantity traded for Pink Lady apples at QVM based on the following changes in demand and/or supply conditions.
  I. A lack of frosts across growing regions due to climate change (frosts are needed for apples to grow)
  II. A protest organised for the busiest shopping day of the year
  III. A shortage of pears
  IV. The exemption from GST that applies to fruit and vegetables is removed
  V. The closing of the Footscray fruit and vegetable market
  VI. A strike by public transport workers

Extension: Organic apples are grown without the use of synthetic fertilisers, herbicides or pesticides. There are only three sellers of organic apples at the QVM. Most apples sold at the QVM are referred to as 'conventional' which means that artificial chemicals are used in the production process.

g. With reference to relevant factors of demand and supply, explain why the price of organic apples is sometimes 'twice the price paid for conventional apples.'
h. Explain why apples sold at the QVM are generally cheaper than the price paid in the major supermarkets.
i. Explain why the price of apples falls at the QVM at the end of each day of trading.

Activity 2h: The market for dogs during COVID-19

During the years 2020 and 2021, there was a significant increase in the price of pet dogs across Australia (and other countries around the world). Pure breed dogs such as Schnauzers, French Bulldogs and Pugs became increasingly fashionable. Dogs, which sold for $2,500 two years prior, were priced above $5,000 (and in some cases $15,000). It is predicted that the prices should fall from their peaks after the ending of lockdowns and breeders face more certainty.

Breeders from across Victoria reported that during the lockdown period, the demand for puppies had 'gone through the roof'. The Australian Association of Pet Dog Breeders said that there had been a huge jump in demand for small, apartment-friendly dogs and dogs that are low allergy. The inability to travel and the long periods spent at home meant that many people felt more equipped to raise a puppy and then look after the dog for the rest of its life. This influenced the demand factor, tastes and preferences, resulting in a shift of the demand curve for puppies to the right. Low interest rates might have also influenced the demand for puppies, as the costs associated with borrowing were significantly reduced in 2020/21. With most home loans in Australia being offered with variable rates, the amount required to service existing loans fell, leaving more (discretionary) income available for the purchase of other items, such as a new dog. During the pandemic years, households also accumulated savings, some of which might have been allocated to the purchase of a new puppy.

As noted, it is predicted that prices should start to fall from their COVID-19 peaks. As people return to work and travel opportunities increase there is likely to be fewer people who feel that they have the time or inclination to look after a pet. One of the negative consequences associated with the rapid increase in demand was the increased number of dogs who had to be subsequently abandoned. Some dog shelters in Victoria reported that they were operating at full capacity. Some previous owners underestimated the time and money required to properly care for their pet.

The growth in dog prices was also linked to the decrease in supply. In November 2017, the Victorian Government amendments to the Domestic Animals Act led to the banning of puppy sales in pet shops, closing off a major link in the supply chain. The legislation also placed a limit on the number of female dogs that a breeder could keep and the number of times the dog could have puppies. This reduced the viability of so-called puppy factories, resulting in many of them moving interstate. Those wanting to purchase a dog may have, in the past, ordered the dog from interstate, but with border closures these types of transactions were more difficult to coordinate. The laws failed to completely eliminate illegal activity which may also help to explain why increasing numbers of dogs have been abandoned.

The case study highlights how changes in non-price demand and supply factors can affect the equilibrium price and quantity of certain dogs. Some breeds still face ongoing shortages, which is highlighted by their long waiting lists. The predicted fall in prices may be associated with the reduction in demand – many people have returned to work and have more capacity to travel. It might also be an indication that many people who wanted a dog, have already purchased one (so the market is saturated). Rising costs of living associated with high inflation rates and higher interest rates may also curb the demand for dogs. Puppy breeding is a business and the breeders need to at least cover their costs of production. To raise a healthy puppy so that it can later be sold, the breeder needs to pay for high quality food and preliminary vet checks. Other costs include registration and association fees, building the accommodation for the animals and the costs associated with looking after the puppies' parents. With the increase in the numbers of dogs ending up in pounds, there could be an increase in supply. Buyers also need to be aware that some of the dogs are coming from backyard breeders who fail to meet the legal requirements – but these dogs do add to the supply available.

The increase in the sales for pet dogs has also had positive flow on benefits to those offering complementary goods and services. Dog grooming businesses are thriving, and pet shops are experiencing increased sales of food, toys and other items such as bedding. The higher price of dogs may have also influenced some consumers to purchase a cat, because they are, on average, cheaper than most dogs.

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Questions

1. **Identify and analyse two factors that contributed to a shift of the demand curve for pet dogs to the right.**
2. **Identify and analyse two factors that contributed to a shift of the supply curve for pet dogs to the left.**
3. **Construct a suitably labelled demand and supply curve to illustrate and explain how the prices of dogs have increased.**
4. **Explain how the increase in the demand for dogs may have affected other markets. In your answer, refer to complements and substitutes.**
5. **Explain why the rise in the price of dogs may be temporary. Use a demand and supply diagram to illustrate what might happen once the coronavirus pandemic has passed.**

2.9 The effect of relative prices on resource allocation

Resource allocation is the study of how the factors of production such as land, labour and capital are directed towards the production of goods and services to meet the needs of households, businesses, governments and other economic agents. An exploration of resource allocation is intrinsically linked to the three basic economic questions considered in the Chapter 1.

Economists are interested in **'What'** goods are produced. Therefore, they want to know where the resources are being directed in terms of production. For example, we may want to ask the following sorts of questions:

- Why is Australia using its labour resources to produce mineral exports rather than to manufacture cars?
- Why have some of our scarce resources been moved from mining to more service-based industries in recent years?
- What will happen to the allocation of resources as the earth's climate systems become increasingly disrupted?

Study tip

Most markets in Australia are interconnected. It is possible to make links between seemingly unrelated markets if one is prepared to investigate far enough. For example, any change in one market will affect labour and other factor markets for substitutes and complements as well as financial markets.

Economists may also be interested in **'How'** resources are being used in the production process. In a free market, it is assumed that self- interested firms (who are motivated by profit) will try to minimise their costs of production and offer the best product they can in their chosen market. This may mean that they seek the most efficient way to convert their land, labour and capital into the end product. We might consider the following:

- How will scarce resources be allocated in response to perceived changes in labour market conditions in the future?
- How will the invention of more sophisticated artificial intelligence affect the mix of labour and capital in the production process?
- How can community pressure and the buying decisions of consumers influence the methods of production employed by firms in a country?

Finally, economists will look at how the products that are made are ultimately distributed in the economy - in other words, **'Who'** gets to enjoy the goods and services that are produced. In a purely market capitalist economy, markets will typically allocate resources to those who are willing and able to pay. Given that no economy in the world is completely market capitalist, it is not surprising that the predictions that may be made by our model may not eventuate. However, in a country like Australia, the market mechanism is a very useful model that can provide consumers, businesses and other economic observers with the capacity to predict changes in prices and quantities (as well as explain retrospectively why these parameters may have changed). With respect to this question we may consider:

- What influences the wages paid to different professions?
- How does the scarcity of labour affect the allocation of the world's scarce resources?
- How do the buying decisions of the very wealthy affect the ability of low-income earners to access necessities?

Markets are able to reveal information about individual and collective preferences because consumers willingly exchange their income for those goods and services that they believe will maximise their wellbeing. These buying decisions are very instrumental when it comes to the way a nation allocates its scarce resources. The ability to make free choices provides a signal to producers regarding what consumers value, their priorities and preferences. Ultimately, the price of any good or service is determined by the buyer's willingness to pay (demand) relative to its availability (supply). The price is therefore used to ration scarce goods and services to the point where the market will allocate resources to the highest 'end use'.

Across the economy there will be a set of prices for every good or service that is offered for sale. Economists are not only interested in the price of individual goods and services but also **relative prices**. The relative price is seen as the price of any one good or service measured in terms of the price of another good or service. This usually involves dividing the price of one good by the price of another. It is therefore a measure of opportunity cost (which was discussed in Chapter 1), as the relative price of one good can be expressed in terms of what is given up to obtain the other. For example, if the price of Vitamin Water is $2.50 per bottle and the price for a green smoothie is $5 (the new equilibrium as determined in our earlier example), then the relative price is $2.50/$5.00 or 1:2. For every green smoothie that is purchased, the consumer foregoes the opportunity to purchase and enjoy two bottles of Vitamin Water. Alternatively, for every bottle of Vitamin Water that is purchased, the opportunity cost is 0.5 green smoothies.

Markets are usually dynamic places and, as we have seen earlier, the factors of demand and supply frequently change, so the relative price could change at any time. For example, if the costs of producing Vitamin Water fall, leading to a fall in the price to $2, the relative price becomes $2/$5; a new ratio of:1:2.5. Therefore, to obtain one green smoothie, the consumer must now give up 2.5 bottles of Vitamin Water. Even though the price of the smoothies has remained unchanged at $5, it has become relatively more expensive in terms of the price of what else could be bought (a substitute). The demand curve for green smoothies might therefore shift to the left, contributing to a decline in sales. The resources used to make smoothies will therefore be shifted elsewhere.

With respect to the question of **what to produce,** an economy that relies on the market or price mechanism will generally allocate resources to those goods that are in high demand. When the relative price of a good or service increases due to an increase in demand (and/or a decrease in supply), this sends a clear signal to economic agents. A supplier may see the price movements and decide that it is now more profitable to use their resources to produce that good or service. Consumers are therefore said to be the main driver of resource allocation in the market-based economy. For example, the large increase in the price of oil during 2022 caused people to look for cheaper forms of transport. This resulted in an increased demand for EVs -electric vehicles (the demand curve shifted right) and created a shortage of EVs at the existing price (waiting lists were up to twelve months). The shortage may have encouraged some potential buyers to bid up the price and existing suppliers will have taken the opportunity to raise the price. The price of EVs has now risen relative to other forms of transport (such as petrol cars), which indicates that this is an area of production providing greater profit opportunities. Producers are therefore likely to allocate more land, labour and capital to the production of EVs. At the same time, the higher oil prices encourage suppliers to increase exploration and the development of new methods of oil extraction, as well as incentivising investment into alternative energy sources, such as hydroelectricity and biofuels. [See Box 2.4 for examples of relative prices and resource allocation in the energy sector].

The price mechanism describes how the forces of demand and supply determine relative prices of goods and services, which then ultimately determine the way our productive resources (e.g. labour and capital) are allocated in the economy.

The price mechanism will also influence the second fundamental economic question of **how to produce** the good or service. Generally speaking, a business will seek to maximise its profits by minimising its costs and selling the good or service at the highest price possible. The competitive market will ensure that resources are used as efficiently as possible so that producers can offer their product at the most attractive price to the consumer. When the price of one resource increases relative to the price of another, this may influence firms to change the way they produce their goods and services (and in the process alter the allocation of resources). For example, if unions are successful in raising wages of unskilled labour, this increases the price of labour, relative to capital, and may cause some substitution out of using labour and into using capital in the production process. The relatively high price of labour (when compared to capital) offered to unskilled labour in Australia, may have encouraged the supermarket industry to implement self-serve checkouts, which decreases the need to hire as many workers. Higher labour prices in Australia have also encouraged many firms to shift their manufacturing (and sometimes service) activities to countries with cheaper labour. For example, most clothes and technology products are not made in Australia because the relative price of labour is too high and resources are allocated to alternative products where the value-added might be higher.

Similarly, the price mechanism will effectively allocate resources within factor markets themselves, with changes in the relative prices for factor inputs sending clear signals to the owners of these resources about how best to use their resources in production. For example, in **labour markets**, the shortage of engineers over recent years has resulted in a higher price for engineers (i.e. the salary or remuneration), relative to the price for other professions, which has sent a signal to people, such as university entrants, that a career as an engineer is relatively more lucrative. This is likely to lead to a greater allocation of labour resources to this particular section of the labour market. In other words, there will be greater supply of engineers to this market as the price (or wage) of engineers has increased relative to the price offered in other professions. Again, the price mechanism has facilitated this movement of (labour) resources from one activity to another.

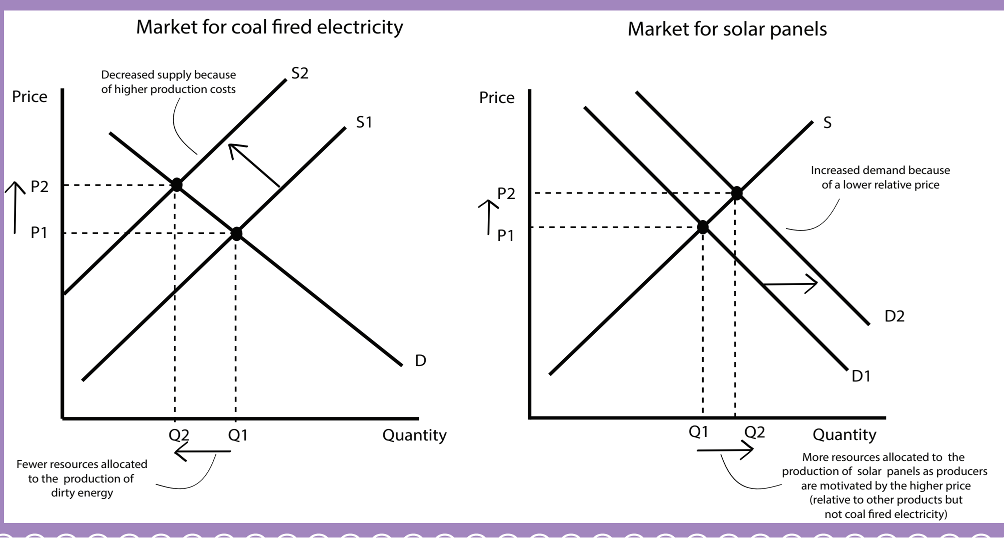
The answer to the third fundamental question of for **whom to produce** is determined by the potential consumers' willingness and ability to pay. Resources will usually be allocated to the production of goods and services that are demanded by the consumers, but some consumers will be able to access more goods and services than others. More land, labour and capital resources may therefore be devoted towards satisfying the material needs of the high-income earners in our society because they can afford to purchase more goods and services. Therefore, the relative wages of different professions will ultimately influence who gets to consume the resources available in a country (or the world at large). In a free market, this could mean that a large section of the population live without access to basic needs and could live below the poverty line. For example, there is an increasing number of Australians who do not have access to affordable housing. The inability to earn enough income in the market system significantly reduces their capacity to obtain a loan or successfully apply for a rental property. The activities of investors in the market (which have contributed to significant increases in prices) have also made it more difficult for people from younger generations to purchase a property.

Generally speaking, those goods and services that are profitable to produce in a competitive market will be produced and those that involve making a loss will not. However, governments will intervene to promote what is perceived to be a more efficient allocation of resources if there is evidence that the market has failed. Some of these instances are investigated in Chapter 3. The government will also reallocate resources when equity in the distribution of income is not achieved. This is based on society's preferences to support those who may not have the ability to achieve a dignified standard of living.

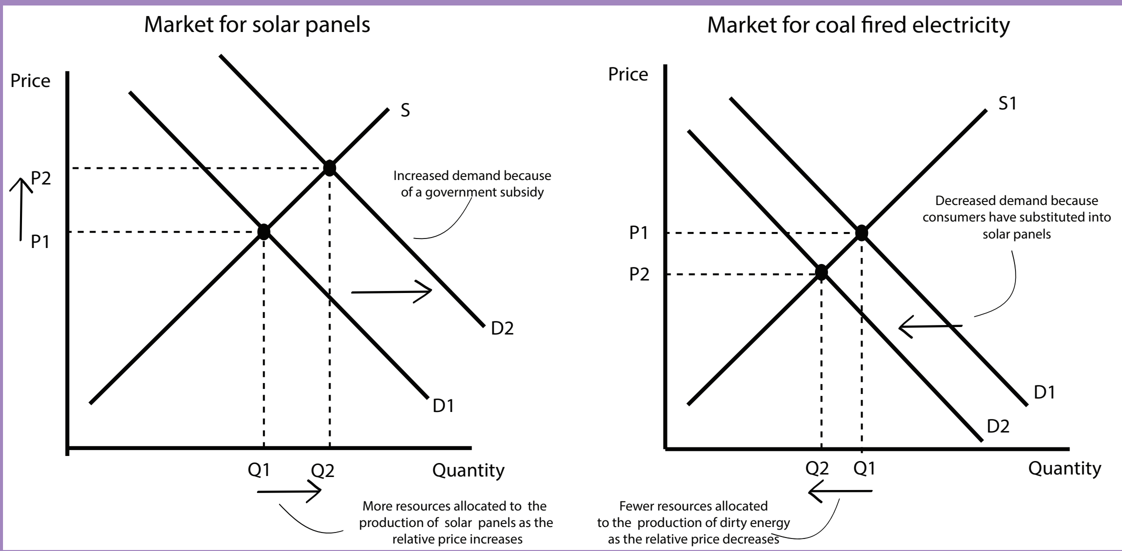
Box 2.4 Examples of relative prices and resource allocation in the energy sector

The introduction of the carbon tax from July 2012 (albeit for only two years) also influenced the structure of relative prices. The carbon tax was imposed on the country's largest carbon emitters and it resulted in an increase in the price of carbon intensive products, such as electricity produced at coal-fired power stations. The supply curve for coal-fired electricity shifted to the left, and the price of coal-fired electricity increased relative to the price of installing solar panels. This then raised the demand for solar panels (shifting the demand curve to the right) and resulted in a higher equilibrium price for solar panels. As a result, producers noticed the higher 'relative price' of solar panels (compared to other goods that they might wish to produce), and allocated more resources to the production of solar panels. The higher price of electricity generated from coal led to a contraction along the demand curve for coal generated electricity and less coal resources were ultimately utilised within Australia to make electricity.

Interestingly, a carbon tax (or carbon pricing more generally) both increases and decreases the relative price of solar panels, providing important signals to economic agents and helping to explain why and how resources are allocated in response to price signals. First, the relative price of solar panels will fall when compared to coal-fired electricity, encouraging demand to move away from the carbon intensive form energy production of burning coal, and toward less carbon intensive forms of energy production. Resources will therefore shift out of the production of coal-fired electricity. Second, the relative price of solar panels will rise when compared to other products (because the increase in demand will cause shortages at the original price), resulting in more resources flowing to the production of solar panels. After a period of time, the price of solar panels will again fall, because the larger market encourages both new suppliers to enter and the development of better technology to make the panels. This change in resource allocation is summarised in the diagrams below.



In 2018, the Victorian Government introduced a new subsidy scheme for middle and low-income households, offering to pay for up to half of the purchase price of solar panels or storage batteries. This changes the allocation of resources, as the subsidy (subsidies are considered in detail in Chapter 3) reduces the amount that consumers will need to spend on purchasing solar panels and causes the demand for solar panels to increase at the expense of coal fired electricity (i.e. consumers substitute away from coal fired electricity and into solar panels). The higher demand for solar panels causes the relative price of solar panels to rise and encourages producers to allocate more resources to their production. The lower demand for coal fired electricity would eventually see fewer resources allocated to its production over time. This change in resource allocation is summarised in the diagrams below.



*[**Note:** that normal sloping demand curves have been drawn for ease of illustration but in reality the curves are likely to be steeper (see 'price elasticity of demand' later in the chapter). In addition, to simplify the analysis, the original starting price for solar panels and coal fired electricity is assumed to be the same at P1. In reality, the relative price of solar energy is currently higher.]*

Review Questions 2.9

1. Explain how the market might answer the fundamental economic question of 'what to produce'. Make reference to the role of relative prices in your response.
2. In a competitive market, relative prices play a very important role in allocating scarce resources. With reference to a particular example, explain how an increase in demand has resulted in a change in relative prices and how this influenced the change in resource allocation.
3. Explain how the price mechanism will cause a reallocation of labour resources in the event that there is a shortage of economists.
4. Explain why reliance on the price mechanism will often result in an unequal distribution of income and therefore access to the goods and services that are produced.
5. With reference to a specific example, explain how an increase in supply of a particular product may result in a change in the allocation of resources in that particular market.
6. Consider the example you provided in question 5. Explain how another (alternative) market may be affected by the change in supply you described.
7. With reference to different markets to those discussed in questions 5 and 6, explain how a decrease in demand for a particular product may affect the allocation of resources in that particular market.
8. Based on the example provided in question 7, explain how an alternative market may be affected by the change in supply conditions.
9. Australia is currently experiencing a period of below average wages growth. Explain how this might be linked to the relative price of capital, the rate of unemployment and the price of labour in other nations.
10. With reference to a specific market(s), explain how an increase in demand may affect a factor market(s).
11. Explain why a competitive market is likely to promote allocative efficiency.
12. Explain why a competitive market is likely to promote technical efficiency.
13. Explain how changes to relative prices play an important role in answering the three basic economic questions.

Activity 2i: How artificial intelligence might affect the allocation of resources

Artificial intelligence is sometimes described as machine learning. It indicates that in the future, machines (capital) will be able to increasingly complete tasks that once required physical and mental effort by humans. In particular, the machines may get better at tasks over time. They can and will consider their operating environment and make adjustments that maximise their preferred outcomes (such as production).

Research and development in the area of AI has resulted in a number of significant developments and many expect that driverless cars will be seen on our roads in the next five years. This, in itself, is likely to see a dramatic change in the way labour resources are allocated. When a company hires a driver (to drive a bus or taxi for example), they need to pay them a wage or salary and the worker will have a physical limit to how long they can work. With the advent of driverless cars, such companies will be able to maximise their profits by reducing their demand for labour. Cathie Wood from UBS estimates that this could reduce the average cost of a trip to the airport from $50 to $10. This could have significant impacts on the transport decisions made by consumers. It is possible that these changes could result in fewer people using public transport or paying for parking services at the airport.

The introduction of driverless cars may also have flow on effects to other areas of production. The US Department of Transport predicts that driverless cars will reduce the number of fatal road accidents by up to 94%. They argue that accidents are caused by human error and that the intelligent vehicles will not suffer from lapses in concentration and irrational behaviour. With fewer accidents on the road, there will be decreased demand for panel beaters and fewer resources will need to be allocated to replacement parts for those vehicles damaged in accidents. The reduction in accidents could also reduce the demand for hospital services as fewer people require medical attention. This could mean that future societies won't have to allocate as much of the government's budget to healthcare spending. The reduction in accidents could also reduce the price of car insurance - which is based, inherently, on the probability of an accident occurring and the expenses associated with compensation.

The farming industry is also likely to experience dramatic changes due to the adoption of artificial intelligence in the production process. New 'smart' harvest machines will reduce the need for labour resources and farmers will be able to monitor their crops or livestock remotely.

Economic theory would also suggest that, with falling demand for a vast range of labour services, the equilibrium wage will fall. Those who are able to maintain their employment will face increasing competition from those who have similar skills and from artificial intelligence.

The predictions made by those researching the advances in AI point to a revolutionary change in the way goods and services are produced and significant modifications to the way economies answer the three basic economic questions. Humans may still demand natural products like food and water but households and businesses are also likely to want to purchase more labour saving devices. The real changes are likely to occur with respect to the question of 'how to produce' as businesses, acting to maximise their profits and maintain competitiveness, will look for machines that can help to lower their costs and introduce better, less wasteful production techniques. Futurists seem to disagree about the 'for whom' question. If the demand for labour resources shrinks and work, as we currently know it, is completed by machines, how will people earn an income so that they can purchase all of the goods and services that are being made with the machines? One suggestion, which is the focus of much discussion around the world, is a universal basic income (UBI) whereby all people might be paid a minimum amount per week or month so that they can live above the poverty line, regardless of their employment status. Other experts suggest that complex tasks that require emotional intelligence will be harder to replicate and will therefore give people with those skills a competitive advantage.

Questions

1. **Distinguish between labour and capital resources.**
2. **Explain how the introduction of artificial intelligence may reduce the cost of production for firms and affect how they answer the key economic question of 'how to produce'. Make reference to specific examples.**
3. **With reference to the use of vehicles in the production process, explain how artificial intelligence could result in a significant change in the allocation of resources in the economy. Extend your analysis beyond the car industry.**
4. **Explain why a large number of workers might find it difficult to achieve a pay rise in the future. Ensure you use demand and supply analysis in your answer.**
5. **Research another area of artificial intelligence and explain how changes in this area may affect the allocation of resources. Again, use demand and supply analysis and reference to relative prices in your answer.**

2.10 The meaning and significance of price elasticity of demand

The demand curve shows the relationship between various possible prices of a particular product and the quantities that buyers are willing and able to purchase at each of these prices. The law of demand suggests that consumers will respond to a lowering of price by purchasing more of the good or service in question.

Economists are also interested in the degree to which demand changes following a change in price. This can be studied by looking at the concept of elasticity, which considers the **responsiveness** of a change in one variable to changes in a factor that affects that variable (usually expressed as the relative percentage change in each of the variables).

Price elasticity of demand (PED) measures the responsiveness of the quantity demanded of a good or service to a change in price of that good or service. It can be calculated using the following formula:

$$\text{PED} = \frac{\text{percentage change in quantity demanded}}{\text{percentage change in price}}$$

By making reference to percentage changes in the calculation of the PED, we can compare the degree of responsiveness across different types of goods and services. It also allows for comparisons of the PED across different countries (and regions within countries) for the same types of products. When the PED is calculated, the value will generally be negative (because the relationship between price and quantity demanded is inverse). For simplicity, this negative sign is usually ignored and the PED will take on a value between 0 and ∞ (infinity).

High PED (elastic)

A product will have a **high PED** if the absolute value is greater than 1. In this situation, the percentage change in quantity demanded will be greater than the percentage change in price. A demand curve where the PED is high would be one that is relatively flat. [See Figure 2.9.]

Low PED (inelastic)

The product will have a **low PED** if the value is less than 1. In this situation, the percentage change in quantity demanded will be less than the percentage change in price. A demand curve where the PED is low would be one that is relatively steep. [See Figure 2.9.]

Medium PED (unit elastic)

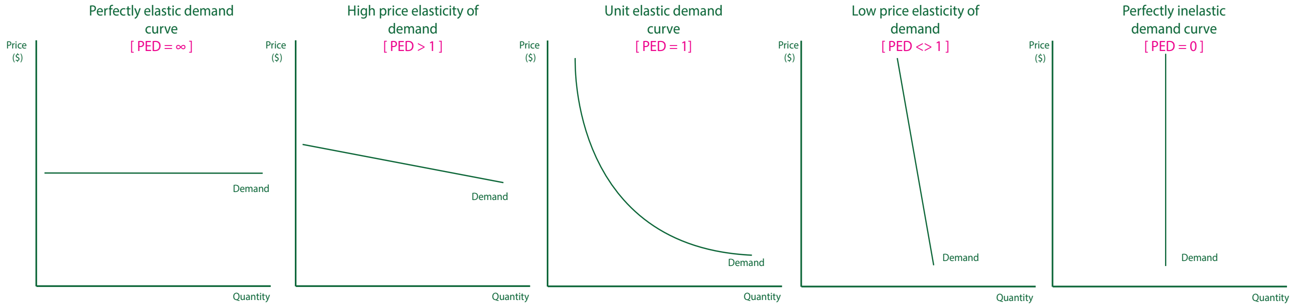
In some cases the percentage change in quantity demanded and price may be **equal**. This is called **unit elasticity** because the elasticity value will be exactly 1. [See the middle diagram in Figure 2.9.]

Box 2.5 Price Elasticity of Demand and Pricing

One way of telling whether a product has a high or low price elasticity of demand (PED) is to look at what happens to the total revenue that results from a price change. If a price increase results in an increase in total revenue then the product will have a low PED (that is less than 1). This is because the percentage increase in price will outweigh the percentage that is lost in quantity demanded. A good with a high PED will be one where a decrease in price will result in an increase in revenue. The response of increased demand will outweigh the decreased price, resulting in greater revenue. [That is, overall revenue (P x Q) will increase.]

If a product has a low PED it does not generally mean that consumer demand is completely unresponsive to changes in price. A perfectly inelastic demand curve, however, would be vertical, as demand in this situation would be completely unresponsive to changes in price. A perfectly elastic demand curve would be horizontal as the smallest percentage increase in prices would result in a complete loss of sales. [Consider for example a highly competitive market like the QVM, where there are a very large number of sellers with homogenous products for sale, such that any attempt by one seller to increase the price will result in a complete loss of sales of their product.]

Figure 2.9: Price elasticity of demand



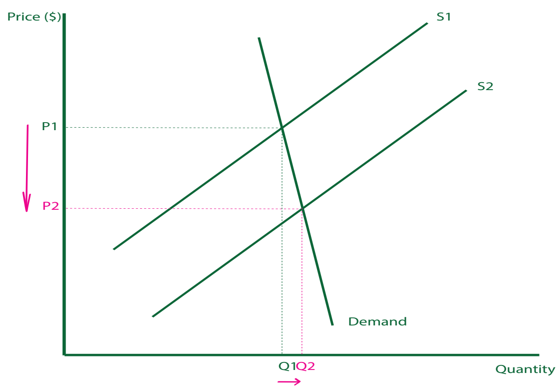
The significance of PED

The PED is an important measure for those involved in making **business decisions** and for the government. Business owners would usually prefer to operate in an environment where the goods they sell have a relatively low PED (especially if they have some degree of control over the setting of prices). From their perspective, any percentage increase in price would be associated with a smaller percentage decrease in demand. The overall impact of this is an increase in revenue for the business. Businesses will therefore seek ways to lower the PED on their products. This does not mean, however that they can continue to increase their prices. At some stage, the PED will move above one and it will no longer be feasible to increase prices because, at higher prices, consumers tend to become more responsive to price changes.

The PED of a product also influences the types of goods that may be indirectly taxed and who pays most of the tax (the consumers or the producers). The government knows that if they place an indirect tax on a product (such as cigarettes), this will result in a decrease in supply (shifting the supply curve to the left) and causing an increase in the equilibrium price for cigarettes. While the government appears to be concerned about cigarette smoking, the impact on demand may be minimal (especially in the short run) because cigarettes have a low PED. The low PED means that they generate the highest possible tax revenue from this activity because the imposition of the tax has a relatively smaller precentage effect on the quantity demanded (or sold) in the market.

When products with a low PED are taxed, the burden of paying the tax will fall more heavily on the consumer. The business knows that they can get away with passing on most of the tax to the consumer without too much loss in revenue. If the product had a high PED, it would be much more difficult to pass on the cost of the tax to the consumer because businesses would suffer a much larger percentage decrease in sales.

Figure 2.10



In some cases, operating in a market where the product has a low PED can be detrimental. For example, primary producers are often faced with unpredictable weather patterns that can affect the supply of their products. If there were favourable growing conditions, then farmers across the country could grow and offer for sale a large volume of produce. This would be represented by a shift of the supply curve to the right as shown in Figure 2.10. This might, however, lead to a decrease in total revenue. In order to sell the extra food, the farmers may have to accept the fall in market prices. The low PED means that if the farmers lower the price, they may not see a significant boost to sales (because there is only so much food that people are willing and able to eat). They may be able to sell their products into world markets, but if the whole world also has excess supply then farmers' incomes are likely to fall. Figure 2.10 illustrates the minimal increase in demand caused by a favourable change in weather conditions (resulting in the supply curve shifting to the right). Notice how significantly the price has to fall to clear the market - it clearly falls by a larger percentage than the growth in demand.

This can have implications for the whole economy. If an economy exports a large volume of goods and services in the primary sector, for example, then the revenue from export sales can fluctuate significantly. For example, Russia's invasion of Ukraine in 2022 decreased the world supply of key energy resources such as liquefied natural gas (LNG) and coal. This resulted in a significant increase in their respective prices. Both of these commodities are key exports for Australian companies - therefore the increase in price at the time, led to a smaller percentage decrease in the quantity demanded, meaning that alternative suppliers from around the world, including Australia, were able to increase their total revenue.

2.11 Factors affecting price elasticity of demand

The following factors will affect whether the demand for a good or service has a low or a high PED: The degree of necessity, availability of substitutes, proportion of income, and time.

The degree of necessity

Goods and services that are deemed to be **necessities** will usually have a low PED (less than 1), whereas luxury products will have a higher PED. Consumers usually have less choice when it comes to the purchase of a necessity, because, by definition, it is linked to survival. If the price of bread increased, for example, the quantity demanded would decrease, but by a smaller percentage than the increase in price, as bread is a staple (and perhaps a necessary food item) for most households. Similarly, if a person is a diabetic, they are unable to decrease their consumption of insulin if the price increases. Therefore, both products would have a low PED.

Study tip

Although a low PED will result in a less-than-proportional decrease in the quantity demanded of a product when the price rises, it is important to remember that there will still be some decrease in demand, unless the product has a perfectly inelastic PED. Students should avoid making statements such as 'even if the price increases, people will still buy the same amount' – as this is rarely true. The law of demand still applies meaning that when price increases, some members of the public will no longer be able to afford the relevant good or service (or they will be enticed by a relatively cheaper substitute).

Addiction can also turn a seemingly discretionary item into a good with a low PED. The addicted person will perceive the product to be a necessity and make their buying decisions without much consideration of the price. As a consequence, any price increase will usually be associated with a proportionately smaller drop in quantity demanded. This is evident in the markets for cigarettes and alcohol, which helps to explain why governments generate a significant amount of tax revenue when these products are sold.

Luxury goods on the other hand can be foregone more easily because, by definition, they are not necessities (they are considered to be items of discretionary spending). If the price increases, there is likely to be a greater percentage reduction in the quantity demanded. For example, Warren Buffet has often urged investors to steer clear of investing in the airline industry. One reason for this recommendation is that airline travel tends to have a high PED (especially when it comes to recreational travel). When oil prices were high, airline operators charged their customers a fuel levy. This consequently raised the price of a trip. With a high PED, this would have led to a more than proportionate decrease in the demand for airline travel and reduced the firms' profitability.

Availability of substitutes

Products that have a large number of viable **substitutes** will tend to be associated with a higher PED (greater than one). If substitutes are available, consumers are likely to switch to a close substitute quickly, when the price of a product rises. At a highly competitive fruit market, like the Queen Victoria Market, the price elasticity of demand for each orange would be very high. If one stall holder increased their prices by a small percentage, they may find that they lose a much larger percentage of sales (in a perfectly competitive market, their sales would fall to zero). Consumers would be able to compare prices easily, and there would be a multitude of suppliers to whom the consumer could turn to quickly and easily. This is also a key reason that insulin has a low PED, as there are no viable substitutes.

Activity 2k analyses the role of advertising in influencing the viability of substitutes. Effective advertising will decrease the viability of competitors' products since it promotes the idea that the product being advertised is unique, and therefore has few substitutes. Advertising is designed to reduce the price elasticity of demand for products by building brand loyalty and convincing the consumer that the product is unique.

Proportion of income

The greater the **percentage of income** that is needed to purchase a good or service, the higher the PED. If the price of a box of matches increased by 50% for example, it would be surprising to see a decrease in sales by 50%. A 10% increase in the price of a new house, however, could amount to tens of thousands of dollars which, for the average person, could be the deciding factor that excludes them from the market. The resulting drop in the quantity demanded would therefore exceed 10%.

This explains why a good can have a low PED at low prices but may turn into a product with a high PED as its price increases. This suggests that the PED along the demand curve increases as the price increases. Eventually, as the price of a product rises, it will reach a price where it becomes increasingly difficult to purchase the product because it takes up a larger proportion of income.

Time

Over time, the PED for a product might increase. In the **short term**, many consumers tend to undertake their buying decisions in a habitual fashion. This may mean that initially, they may not notice a price increase or cannot be bothered seeking out a viable alternative since they might need the product now and it is a hassle to go somewhere else to find a cheaper alternative. Over time however, consumers may notice the price increase and start to consider and try out alternative products. Consider the market for gas, traditionally used to heat the family home. An increase in the price of gas, which has occurred during 2022, may not result in a significant decline in demand, especially in the short term. The first time the household might notice the price increase is when they get 'bill shock' – when the latest bill is much higher than the previous one. They may not be able to alter their heating system in the short term but, over time, if the price hike persists, they may look for ways to decrease consumption of gas. They could install new appliances that rely on alternative sources of energy (reverse cycle air-conditioning that uses solar power) or improve insulation so that less heating is lost during the winter months. The rise in the price of petrol over 2022 has similar effects. Many consumers might find it difficult to reduce their consumption in the short run - they may not live in an area that has public transport and they have to maintain their current mode of transportation. However, if petrol price rises appear permanent, then consumers have more time to change their behaviour. They may seek out ways to reduce their consumption by working from home, carpooling with work colleagues, catching public transport and in the very long term, they may seek out an electric vehicle or bike. As you can see, the change in behaviour over time alters the PED, such that it will be higher in the **long term** compared to the short term.

The increasing ability of consumers to research their chosen product using the internet may reduce the time taken for the PED to increase. If the consumer purchases a product regularly, then they may be disgruntled by a price increase. The ability to compare prices has been enhanced by price comparison websites and so changes in price can be acted upon in a more timely fashion. For example, each year health insurance companies increase their prices. This should be a product with a relatively high PED but due to the hassle involved in changing companies, many households tend to stick with their incumbent insurer. The introduction of comparison websites reduces the effort associated with changing companies and therefore the time taken to respond to price increases might have been shortened.

Activity 2j: Price elasticity of demand

Determine whether the PED is relatively high (price elastic with a PED greater than 1) or low (price inelastic with a PED less than 1) and identify the likely impact on the firm's revenue. The first one has been done for you.

Scenario	H/M/L PED	Reason	Effect on revenue
Fruit and vegetable sellers increase the price of their cherry tomatoes from $2.50 to $3.00 per kilo, and observe that their sales drop from 1000 to 500 kilos per day	**High (because >1)**	**The relatively high number of substitutes for cherry tomatoes encourages consumers to demand alternatives (such as Roma tomatoes)**	**Decrease**
In response to a worse-than-normal flu season, the local supermarket increases the price of tissues from $2.50 cents pack to $3.00 per pack			
Qantas increases its airfares to the US in response to the higher price of fuel			
The government cuts the fuel tax excise in half to curb rising prices			

The government runs an extensive education campaign that outlines the long term consequences associated with consuming sugar			
Mylan raises the price of an Epi-Pen 2 pack-from $100 to $600 over a ten-year period			
The supply disruptions caused by lockdowns causes the prices of the iPhone 14 to increase when compared to the iPhone 13			
A new brand of yoghurt is introduced to the market			
The Victorian government pays households $250 to compare electricity prices			
An increase in excise taxes on cigarettes causes the prices to increase from $35 per pack to $40 per pack. Quantity demanded falls by 8%			
There is a huge rise in price of iceberg lettuce due crop damage during floods			

Activity 2k: Advertising to boost demand and reduce PED

Firms often spend thousands to millions of dollars per year on advertising and other forms of marketing. In terms of demand analysis, the aim of advertising is multi-faceted. The first aim of advertising is to increase information for the consumer that will lead to more informed decision making. It may be difficult to sell a product if your target market doesn't know that the product exists or how it might enhance their enjoyment of life. The company may wish to create a new market altogether or capture a slice of an already established market (thereby taking some of the market share away from an established firm). A successful advertising campaign should therefore result in an increase in the demand for the product at each given price level, thereby shifting the demand curve to the right because tastes and preferences have been altered. (Note: it will also cause the cost of production to increase and the firm will require a higher price to cover their costs).

Advertising is also designed to increase brand loyalty. Brand loyalty refers to a situation where a consumer develops positive feelings towards a particular brand and will usually make repeated purchases from the same brand over time and in different categories. Brand loyalty therefore adds to the already mentioned benefits associated with advertising. It helps to create a need for the product (this might be psychological) and reduces the viability of substitutes (competitors' product) s. A successful advertising campaign can therefore decrease the PED for a product. The demand curve therefore not only moves to the right but it also becomes steeper.

A lower PED for a product will therefore allow the company to charge higher prices and gain an increase in revenue. This may help to explain why some brands, such as Apple, are able to sell their products at premium prices. The first iPhone was released in 2007. In 2022, the iPhone 14 range was released and, as with previous releases, this was accompanied by an official launch and met with shortages in the first few months of release. The upgrade cycle is part of the marketing approach, as people who do not need a new phone (because the old one is still working) still feel some sense that they should purchase a new phone. Despite the high price tag, it could be argued that Apple products have a relatively low PED. Customer sensitivity to prices is cushioned somewhat by the way phones are consumed in Australia, with most people opting for a plan that spreads the cost of the phone over 12 to 36 months. Apple also has succeeded in convincing a significant proportion of the public that their products are 'special', and that there is no viable substitute for an iPhone. Apple consumers may also feel locked into the Apple ecosystem with its unique iOS and compatibility with a range of applications (further reducing the viability of substitutes).

Questions

1. **With reference to a relevant non-price factor, explain why successful advertising and marketing is likely to result in a shift of the demand curve to the right.**
2. **With reference to a relevant non-price factor, explain why advertising is likely to be associated with a shift of the supply curve to the left.**
3. **With reference to the relevant formula, explain what is meant by the price elasticity of demand.**
4. **Explain what is meant by 'brand loyalty' and outline how advertising can generate brand loyalty.**
5. **Identify one other product (apart from Apple products) where there appears to be a degree of brand loyalty. Discuss how the company has influenced you (or consumers more generally) to perceive this product when compared to others in the same industry.**
6. **Discuss the possible relationship between an increase in advertising expenditure, brand loyalty and the PED.**
7. **Explain why it is considered to be profit-maximising behaviour if a business raises the price on those products with a low PED.**
8. **With reference to at least two relevant factors, explain whether the price elasticity of demand for iPhones is likely to be high or low.**

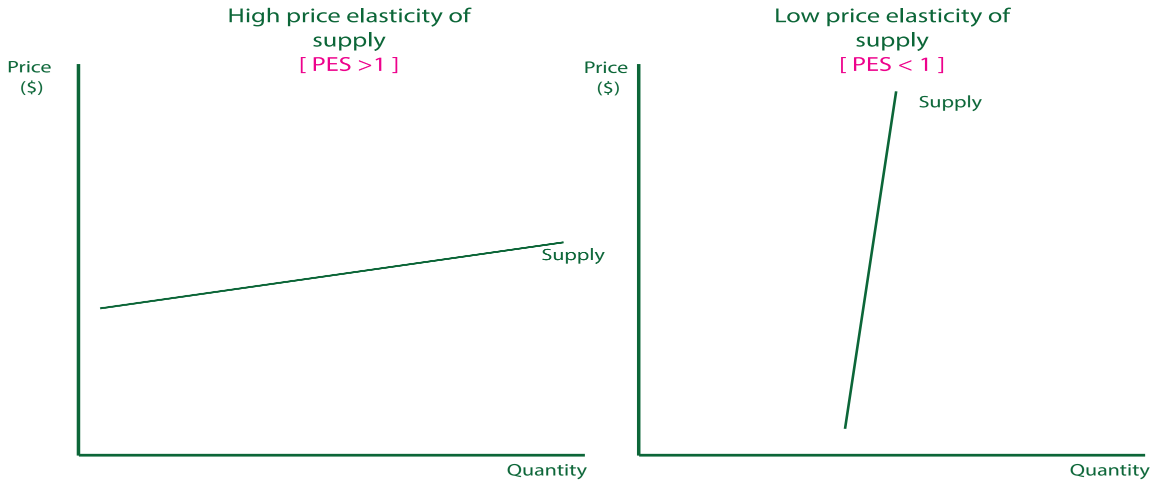
2.12 The meaning and significance of price elasticity of supply

Price elasticity of supply (PES) measures the responsiveness of the quantity supplied of a good or service to a change in price of that good or service. It can be calculated using the following formula:

$$\text{PES} = \frac{\text{percentage change in quantity supplied}}{\text{percentage change in price}}$$

Supply curves with a high PES and a low PES are depicted in Figure 2.11. A product with a PES that is greater than one will have a relatively flat supply curve. This means that suppliers are willing and able to increase the supply by a larger percentage than the price increase. If the PES is less than one, the supply curve will be relatively steep. This means that when prices increase by a certain percentage, suppliers are either unwilling and/or unable to increase supply by the same percentage.

Figure 2.11

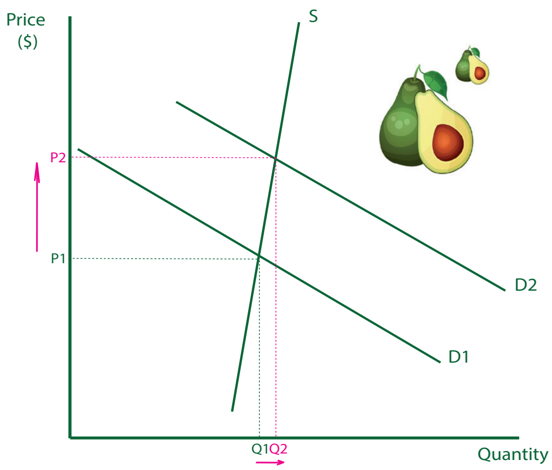


The significance of PES

The price elasticity of supply can affect the economic viability of a business as well as their ability to respond to changing price signals. Generally speaking, primary products (such as food and mining products) tend to have a lower price elasticity of supply than manufactured goods. Countries such as Australia that generate large revenue from mining and agricultural exports, often face volatile swings in the revenue they generate. For example, if prices for coal were to increase dramatically then it may be difficult for the firms to rapidly increase their output levels (especially in the short run). The low PES is also partially due to the volatility of prices in this sector. The companies need to wait for clear price signals before they undertake the investment needed to build the productive capacity necessary to meet the higher demand. Uncertainty surrounding government policy can also reduce the incentive to respond to changing price signals, especially if they, too, are perceived as temporary (given that governments in Australia can change every three years).

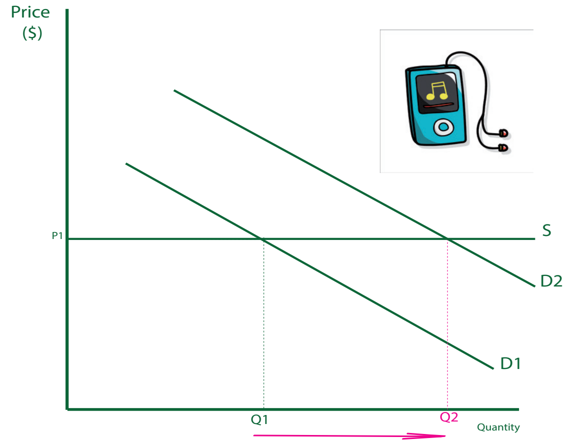
With a **steep supply curve**, signifying a low PES, any change in demand will result in a significant change in price. For example, the supply curve for many agricultural products is relatively price inelastic (less than one and therefore depicted as steep) owing to the fact that the production period is relatively long [See Section 2.13 on the next page.] This adds to the volatility of prices for primary producers. Any change in demand can lead to significant changes in prices. This is illustrated in Figure 2.12, which shows what happens when demand rises for a primary or agricultural product, such as avocados. In recent years, the demand for avocadoes has increased, causing a shortage at the original price. Given that avocado trees can take up to 4 years before they fruit, the PES tends to be low (in the short run) and prices can remain high for some time.

Figure 2.12



The advent of digital technologies has had a disruptive effect on both demand and supply. The disruption may be positive for some but negative for others. Consider the example of streaming services such as Netflix and Stan. Because these files can be used by any number of consumers simultaneously, the PES for this product is effectively infinite, resulting in a horizontal supply curve. Any increase in demand can be supplied instantaneously, resulting in **no shortage** and no need for the price to rise. This is highlighted in Figure 2.13.

Figure 2.13



As more products become available in a digital format (such as books, movies and games), the PES will influence the decision of producers to enter the market. If you were a potential producer, would you be encouraged to enter a market where supply could be infinite or one where it is difficult to adjust supply if the price increases or decreases? The ability to adjust supply quickly and easily (such as with the streaming services) adds flexibility to decision-making and supply response. (It does, however, in some cases, leave the company more vulnerable to piracy and therefore lost revenue). The ability to readily increase supply also means that consumers need not worry about the product being out of stock. For example, you might hear an interview on the radio where an author discusses her new book. In the next minute you could have downloaded the book to your Kindle and be reading it straight away.

2.13 Factors affecting price elasticity of supply

The following factors will determine whether the supply of a good or service is likely to have a low or a high PES.

Production period

If prices increase for a particular product, this will signal to suppliers that allocating resources into this area may now be more profitable. Firms may wish to increase their supply, but it may take time to attract the resources that are needed to increase production volumes. For example, if there was an increase in the demand for apricots, the demand curve will shift to the right, resulting in a higher equilibrium price. The higher price will therefore act as an incentive for more apricots to be grown.

Unfortunately, the supply response may be minimal because they cannot be produced instantly. Apricots trees may need to be planted, with time taken to grow, ripen and harvest the fruit. As a result, the PES of apricots (and many other seasonal fruits) will tend to be very low in the **short term**. However, the PES will increase over time as more resources can be shifted into the production of apricots (assuming that the increased preference for apricots is permanent and the price of apricots remains high over time.) In contrast, a song that has been written and recorded can be supplied at the tap of a button in the digital era. The production of new copies has a minimal production period, so the PES of such products is very high.

This factor highlights the importance of time for the PES. Over time, firms will be able to respond to changing **price signals** and this will vary from industry to industry. Consider a farmer who makes his/her living from grazing cattle. Imagine how he/she might respond to an increase in the world price for beef. In the short term, the farmer may not be able to meet the increased demand which has caused the relative price to increase. He/she will also want to make sure that the price change is not temporary so may need to study the causes of the price increase (are they cyclical or structural changes that have occurred in the market?). If the price is expected to stay high, then the farmer will look to raise more cattle in the future, and he/she will be able to respond more effectively to the higher prices.

Spare capacity

If a firm has spare capacity, then this will mean that they have factors of production that are not being fully utilised (they may be idle at times). This will mean that it will have a greater ability to respond quickly to changing prices. The **underemployed labour** may be able to work more hours and machinery can be utilised to increase supply quickly. In contrast, if businesses are running at productive capacity and there are **skills shortages**, this will make it hard to attract suitable labour to expand operations. The PES for products under this scenario will tend to be relatively low. Over a period of time, the firm may be able to increase its productive capacity (through investment and training for example) and attract new labour (it could offer higher wages to encourage workers to leave an alternative supplier). The government may also help to address the underlying causes of these capacity constraints by expanding immigrant targets and allocating more of the budget to training those who are structurally unemployed.

This factor also highlights why the PES will tend to change over time. As the firm gets closer to productive capacity, the PES will tend to decrease. For example, if there was an increase in the demand for movie tickets due to an excessively hot summer (too hot to go outside), initially firms may face a relatively high PES. This is because cinemas may be able to respond to the higher demand by opening the cinema for longer and filling more of the seats that had been empty in the past. Eventually the cinema would reach its productive capacity, at which point its PES would drop significantly. If the cinema owners believed that unpredictable weather conditions would continue (due to climate change) and that they could maintain the high prices for cinema tickets they may add to their productive capacity permanently, by investing in new cinemas. This would then raise the PES for these services.

Durability of goods

If the goods can be stored, then it will be much easier to respond to changing prices. The supplier can simply access the **inventory** that has been stored. Storage is, however, often costly for firms and they may want to reduce the stock that they hold at a given time. Advances in technology have also helped firms as they can now employ 'Just In Time' (JIT) inventory management systems. By having closer connections with their suppliers using digital technologies, firms are more easily able to respond to increasing prices that are caused by increases in demand.

Many fresh food products tend to have a low price elasticity of supply as they have a limited storage life. Processed food products, however, such as soft drinks and baked beans, may be stored for extended periods and will therefore tend to have a higher PES. If there was a sudden increase in demand which resulted in higher prices of, for example, baked beans, the supplier could simply access any inventory that is available and reap the rewards. It is important to note, however, that once all of the stock is sold into the market, the firm then faces the same factors that can make it difficult to increase supply (i.e. the production period and degree of spare capacity in the canning factory will affect the PES).

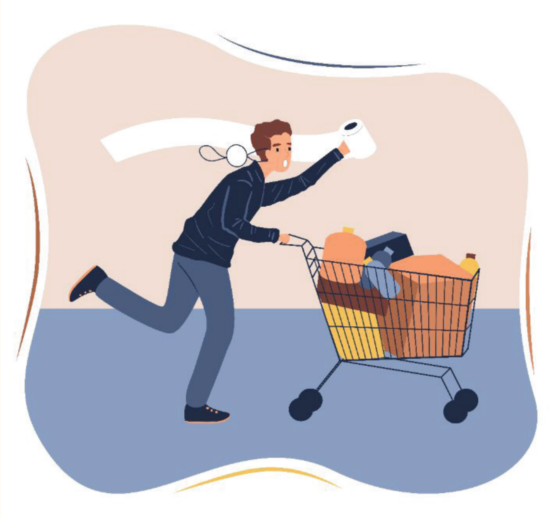
Activity 2I: Determining elasticities

With reference to relevant factors, examine whether the price elasticity of demand and the price elasticity of supply are high or low for each of the following products:

1. Chocolate
2. A bottle of wine
3. Digital movie rentals
4. New cars
5. Surfboard
6. Education
7. Opioid drugs
8. Coal
9. Pet cats
10. Hairdressing services



Activity 2m: When markets don't clear



During the pandemic, it was not unusual to see shelves stripped bare. During 2020, it was increasingly difficult to locate a supermarket that had toilet paper on the shelf. In 2022, there were widespread shortages of tissues as the flu season (which had been incredibly mild in the previous two years) was taking effect, especially during winter. The economic model that we have discussed in this chapter would suggest that such severe shortages would result in significant increases in prices. The supermarkets could simply raise the prices (or auction off the products to the highest bidders) to clear the market. This would be represented by a shift of the demand curve to the right, as well as a possible decrease in supply (given the constraints on the ability of businesses to continue operating at full capacity), both of which would cause the initial shortage and the consequent increase in prices.

In reality, the prices did not increase enough to clear the markets. In some cases, shortages continued and there was other non-price rationing that took place. In extreme circumstances, customers fought with each other in supermarkets to attain the scarce goods. To explain why prices don't always respond as the model of demand and supply would predict, one has to look closely at the accuracy of the assumptions which underpin the model. You may recall from Table 1.1 and Box 1.1 in Chapter 1, that some of the key assumptions made by economists are that economic agents engage in rational decision making and that they seek to maximise their utility (consumers) and/or profits (producers). It is also assumed that both consumers and producers will compete against each other to achieve their respective goals. Given these key assumptions, one would expect that a firm might be incentivised to dramatically increase prices when there is a crisis such as that experienced from 2020.

Research conducted by Richard Thaler, Daniel Kahneman and Jack Knetsch suggests that fairness might, however, prevent the market moving to a new equilibrium position. It might, therefore, not be socially acceptable to raise prices when people are suffering. They conducted multiple economic experiments to gather opinions on the fairness of decisions and discovered that businesses will adjust their profit maximising behaviour by considering social norms. For example, rather than raise prices of essential products like tissues, the supermarkets limited the amount each customer could buy (which should, in theory have some impact on the demand curve).

Thaler et al, argue that businesses are likely to "play the long game". While it might boost profits in the short run to raise prices when there are shortages, they are concerned with the damage that this might do to their reputation. They want to build loyalty with customers and be remembered as a fair business when normal operating conditions prevail.

In some cases, the firms may want to raise prices, but they have signed long term contracts. In the US, the opportunist might also be blocked from taking advantage of customers by governments or from resale sites. For example, at the beginning of the pandemic, there were entrepreneurs who, seeing what was ahead, purchased large quantities of hand-sanitiser and masks. Initially they started selling their scarce products at multiple times the original price. After they gained the attention of the public, both Amazon and eBay refused to allow them to sell their products (and they were left with excess supply that they struggled to get rid of).

Labour markets may also fail to clear (there might be an ongoing shortage or surplus for particular skills). For example, there is currently a shortage of Maths teachers across Australia. One suggestion to address this short term and long term problem, raised by Engineers Australia chief engineer, Jane MacMaster, might be to raise the salaries of Maths teachers relative to other teachers. She said that the government must ensure that "teachers are paid a salary that attracts high-calibre people to the profession". This could therefore be another instance when the market mechanism cannot operate to achieve an efficient allocation of resources. It is likely to be considered unfair to pay Maths teachers more than their colleagues. It could lead to resentment within the profession and a lack of harmony in staffrooms across the country. Given that the government also hires most teachers across Australia, it is evident that the salary (price of labour) is not entirely determined by the laws of demand and supply. Other factors, including the ability of the government to raise sufficient taxes, and fairness will also need to be considered.

Questions

1. **With reference to the standard economic model, explain why shortages might arise in a market.**
2. **Explain how, theoretically, a market would move from disequilibrium (such as a shortage) to a new equilibrium.**
3. **With reference to a contemporary example explain how the concept of fairness might limit the ability of a market to achieve equilibrium.**
4. **Discuss the view that Maths teachers should be paid more than other teachers. In your response, consider the advantages and disadvantages of the proposal and the possible short run and long run implications.**
5. **Research another market where there is an ongoing shortage or surplus. Provide a hypothesis as to why this market cannot achieve equilibrium.**

Activity 2n: The market for cars

Traditionally, second-hand cars are sold at a lower price than brand new cars. The price paid reflects a number of demand and supply factors. In fact, it is an old cliché that the minute you drive your car from the dealer's lot, it could have lost up to 15% of its value (even though the car is essentially identical to what you just purchased). The price paid in the market is a reflection of, amongst other things, consumer tastes and preferences and the availability of cars. Consumers might need to be offered a lower price for a second-hand car due to asymmetric information (which will be covered in Chapter 3). For example, they don't know whether the car has any faults, or whether it has been involved in an accident. This creates uncertainty about its potential value and a warranty is not always available when purchasing a second-hand car (especially if purchased privately) unlike that which applies to the purchase of a new car.

Over the period 2020-2022, the price of second-hand cars increased dramatically (in some cases by 50%). The price of some second-hand cars was even higher than the price of new cars. For example, the price of a new Toyota Landcruiser was listed at $144,000 in July 2020. Online used car websites listed identical used vehicles selling for up to $175,000. We can therefore try to use our demand and supply model to explain what might appear to be an economic anomaly.

Since the start of the pandemic, global supply chains were significantly disrupted. There was a global computer chip shortage, meaning that car makers were competing against other industries for chips (cars might have up to 1,000 chips). There was also a shortage of shipping containers, which increases the delays in getting the new cars to the dealership. Other factors causing a supply disruption include the closure of factories in parts of the world, and rising costs of oil (which is an input into car manufacturing). In addition, the Australian dollar depreciated over the same period, increasing the costs of importing for the dealerships. All these factors resulted in a shift of the supply curve to the left for new cars, which created a shortage of new cars and meant that people wanting a new car had to wait for extended periods to receive their cars after placing an order. According to pricemycar.com.au, average wait time in June 2022 was 155 days (compared to 25 days in June 2019).

The extended wait time could be linked to the factor of tastes and preferences. Faced with extended wait times, some consumers turned to the second-hand market. Some of these consumers, especially those who required a car in the short term, might not have considered a second-hand car in the past. As a result, more people competed for the stock of second-hand cars available, shifting the demand for second hand cars to the right. While the height of the pandemic saw many people working from home, with a reduced need for cars, once lockdowns ended many people became less willing to use public transport and increased their need for a car (which is another factor affecting tastes and preferences). The increased demand for (second-hand) cars may have also been encouraged by the record low interest rates that prevailed over the two-year period in addition to the generous government stimulus measures that helped to raise disposable incomes. The lack of activity during the pandemic also allowed many households to accumulate savings, money that could later be allocated to the purchase of a car.

At the time of writing, there is uncertainty about how long this anomaly might last. There are some signs that the chip shortage is being addressed, and there is some expectation that the price of second-hand cars will start to fall by the end of 2022. The growth in interest rates over the second half of 2022 is also likely to curb borrowing and further reduce discretionary incomes, which will influence the willingness and ability of consumers to buy cars. With fuel prices expected to stay above $2.00 per litre for an extended period, however, one would expect that the demand for electric vehicles will continue to grow relative to the demand for traditional vehicles, despite the lengthy wait times.

Questions

1. **Identify and explain the supply factors that are discussed in this case study.**
2. **Identify and explain the demand factors that are discussed in this case study.**
3. **With reference to the factors identified above, use a demand and supply diagram to explain changes in the market for new cars.**
4. **With reference to the factors identified above, use a demand and supply diagram to explain changes in the market for second-hand cars.**
5. **What has happened to the price of second-hand cars since this case study was written? Explain the movement in prices by linking to relevant demand and supply factors.**
6. **Conduct research into the market for electric vehicles. With reference to relevant demand and supply factors, explain why the sales of electric vehicles are low when compared to many European countries.**

Review questions 2.10 - 2.12

1. Define what is meant by price elasticity of demand and explain how PED affects the slope of the demand curve.
2. With reference to two relevant factors, explain why the PED for airline travel would be higher than the PED for cigarettes.
3. With reference to the concept of brand loyalty, explain why advertising expenditure may cause the demand curve for a specific product to shift to the right and become steeper.
4. Explain how knowledge of PED may affect the government's decision to place taxes on certain goods and services.
5. With reference to the consumption of electricity, explain why the PED will tend to increase over time.
6. Use a suitably labelled supply and demand diagram to explain why farmers, whose products tend to have low PED and low PES, face huge variations in their incomes.
7. Define what is meant by price elasticity of supply. Explain how PES affects the slope of the supply curve.
8. With reference to two relevant factors explain why the PES for streaming services may be higher than the PES for fresh pineapples.
9. Explain how the increasing use of artificial preservatives may have affected the PES of food products.
10. With reference to iron ore, explain why the PES will tend to increase over time.
11. Evaluate the following statement 'a business would prefer to sell items with a high PED and a low PES'.

Multiple choice review questions

1. Which of the following statements about the relationship between price and quantity demanded is incorrect?

a) As the price of the product increases, the quantity demanded is likely to decrease
b) As the price of the product decreases, the quantity demanded is likely to increase
c) As the demand for a product increases, its price is likely to fall
d) The quantity demanded for a good or service is dependent on its own price

2. The demand curve for teddy bears is likely to shift to the right if:

a) there is a decrease in the price of teddy bears
b) there is an increase in the birth date
c) the price of cuddly toy rabbits decreases
d) there is a new invention that allows the suppliers to produce more teddy bears per hour

3. The demand for special edition sneakers is likely to 'expand' in Australia if:

a) their own price increases
b) the price of traditional sneakers decreases
c) there is an appreciation of the Australian dollar
d) the unemployment rate in Australia increases

4. The supply curve for soft drinks is likely to shift to the left if:

a) the Victorian Government bans the advertising of soft drink
b) the price of soft drink increases
c) the price of sugar increases
d) there is a decrease in the price of glass

5. There will be a movement to the right along the supply curve for chocolate (i.e. an expansion) if:

a) the price of chocolate decreases
b) the price of cacao beans (used to make the chocolate) decreases
c) chocolate is proven to contain polyphenols that extend the average person's lifespan
d) the price of ice cream decreases

6. A pandemic, where the government bans the selling of cinema tickets is likely to cause which of the following changes in the streaming service market?

a) A shift of the demand curve to the right and a decrease in the price of streaming services.
b) A shift of the demand curve to the left and a decrease in the price of streaming services.
c) A shift of the supply curve to the right and a decrease in the price of streaming services.
d) A shift of the demand curve to the right and minimal change in the price of streaming services.

7. A large increase in real disposable incomes is likely to lead to a decrease in the demand for:
a) Amazon Prime memberships
b) High end restaurant meals
c) Mass produced sausages
d) Financial advice

8. A movement down along the demand curve (i.e. expansion) for peanut butter is likely to be caused by:
a) An increase in the price of almonds
b) A ban on all nut products in all schools across Australia
c) Higher cost of labour for peanut farmers
d) A glut in the market for peanuts

9. An increase in the price of petrol is likely to result in:
a) A decrease in the sales of petrol powered vehicles
b) An expansion of the demand for petrol
c) A decrease in the demand for public transport
d) An increase in the price of electric vehicles

10. What would happen in the market for BMW vehicles if there was an increase in the price of Mercedes vehicles?
a) The demand curve would shift to the right and the price would fall
b) The demand curve would shift to the right and the price would increase
c) The demand curve would shift to the left and the price would increase
d) The demand curve would shift to the left and the price would fall

11. An increase in Australia's unemployment rate is likely to cause which of the following to occur in the market for home brand baked beans?
a) the supply curve would shift to the right causing the price to increase
b) the demand curve would shift to the right causing the price to increase
c) the demand curve would shift to the left causing the price to decrease
d) there would be no change in this market

12. If the price for soft drinks increases by from $2 to $2.20 and this resulted in a fall in the quantity demanded for soft drinks from 20 million litres per week to 19 million litres per week, then the product:
a) Has a high PED
b) Has a low PED
c) Is unit elastic
d) Has a PED that cannot be determined from the information given

13. Which of the following products is likely to have a PED that is higher than its PES?
a) Cans of baked beans
b) Smart phones made by Apple
c) A cordless drill
d) Paintings by Pablo Picasso (a deceased artist)

14. The demand for McDonald's hamburgers is likely to decrease if:
a) McDonalds doubles the licence fees for their franchise operators
b) The government raises income tax rates
c) Hungry Jacks closes down
d) McDonalds introduce a loyalty scheme

15. An increase in the price of lawn mowing services may result in:
a) An increase in the price of lawn mowers
b) An increase in the price of synthetic grass
c) A contraction along the supply curve for lawn mowing services
d) all of the above

16. Consider a business producing a good with a low Price Elasticity of Demand (PED). To maximise its revenue, it should:

a) increase its price
b) decrease its price
c) keep the price at its current level
d) increase supply

17. The equilibrium price and quantity for which of the following is likely to increase when there is an increase in interest rates

a) Gucci handbags
b) New Mini Cooper vehicles
c) Shares
d) Public transport

18. There will be an increase in the quantity of resources allocated towards solar storage batteries if:

a) immigration to Australia is temporarily halted
b) the cost of materials to make the batteries decreases
c) there is a recession that causes an increase in unemployment
d) the government removes the subsidy for solar panels

19. The Price Elasticity of Supply (PES) for canteen food, such as a chickpea salad, is likely to be affected by:

a) The disposable income of the students
b) The price and availability of sushi rolls
c) The size of kitchen
d) A campaign by the students and teachers to introduce healthy, brain boosting food options

20. An increase in the popularity of a product, which is traded in a highly competitive market, is likely to result in:

a) a short run increase in the price and a long run decrease in the price
b) a short run increase in the price and a long run increase in the price
c) a short run decrease in the price and a long run decrease in the price
d) a short run decrease in the price and a long run increase in the price

Chapter 2 Extended economic exercise on the housing market

Using demand and supply theory to analyse changes in the housing market

Now that you have completed a full chapter on demand and supply analysis it is a good idea to look at a comprehensive case study about how a market can change dramatically over the course of a year or two. One such market is the housing market, which receives an enormous amount of media attention because it has such a significant impact on living standards.

Each year Demographia (a housing affordability think tank), reports on the affordability of housing in a number of major cities from around the world. The 2022 report indicated that all housing markets in Australia were rated as 'severely unaffordable', a situation where house prices are more than 5 times the median income. Sydney was considered the least affordable city in the country, with a median house price to income ratio of 15.3 (making it the second worst city for affordability in the world). Melbourne had a median multiple of 12.1 and was classified as the fifth least affordable major housing market internationally.

The lack of affordability in Australian housing has been driven by very rapid increases in house prices when compared to the significantly lower increase in median incomes. Demographia suggests that the lack of affordability has been driven by the significant increases in land prices as well as by investment activity which is speculative in nature (people buying property in the hope or expectation that they can sell it for a higher price in the future). Most governments in Australia have restrictive land use regulations in place that limit urban sprawl and make it difficult to gain planning permission for more densely populated developments in the inner city (referred to in the report as urban containment). When this is combined with rapid increases in population growth, notwithstanding the cut in immigration during 2020-21, [Australia's immigration targets are some of the highest on a per capita basis in the industrialised world], it results in relative shortage of available property and puts upward pressure on prices. Favourable tax treatment for property investment (primarily capital gains tax concessions and negative gearing) continues to be a factor behind the continuing strong growth in the demand for property.

During the pandemic, the RBA reduced the cash rate to a record low of 0.1%. In December 2020, the Governor of the RBA, Philip Lowe also said that interest rates were unlikely to rise until 2024. This encouraged people to borrow as much as possible to buy property. Fixed rate loans were also very attractive for borrowers as the RBA effectively allowed banks to access money at cheap rates for fixed periods (such as three years). In December 2019, APRA (Australian Prudential Regulation Authority) also removed some of the previously imposed limits on lending with some households being able to take out loans six or more times their income. This helps to explain why prices increased by approximately 20% over the 2021 calendar year.

Some economic commentators describe Australia's debt situation as 'peak debt'. Some of those borrowers initially took out 'interest only' loans, such that they did not pay off any of the principal (amount borrowed) in the early years of their loans. Given the very high levels of existing debt and the ageing of the Australian population, it is not surprising that many households have tried to 'repair their balance sheets' by reducing their level of debt. This was particularly evident during the pandemic where savings rates increased dramatically. Many households were well ahead on their mortgage repayments. Some households may have also taken out fixed rate loans when they were at record lows. In the short run, they may not be affected by the rising interest rates but, when the fixed rate period finishes they will face significantly higher interest rate charges. This will negatively influence the ability of many mortgagees to service loans and has potential to increase loan defaults, which results in forced selling of properties and downward pressure on prices.

House prices did start to decline in 2022, with prices falling between April and June by 1.5% in Melbourne. The cash rate increased rapidly in 2022 (at the time of going to print it had increased from 0.1% in May to 2.6% by October 2022). This increased the interest payable on variable rate mortgages, reducing the borrowing capacity of those looking to secure a new loan, as well as raising the risk of defaults (as noted earlier). Some economists, including Shane Oliver from AMP, expected that property prices could fall by as much as 20%.

The restrictions on global people movement during the coronavirus pandemic, resulted in a net decrease in the size of Australia's population. This would ordinarily exert downward pressure on housing prices but with record low interest rates and fears of missing out, demand for housing grew rapidly. As the Australian Government opened borders and allowed for increased immigration targets, this might be one factor that could help to reduce the degree to which house prices might fall.

At the time of writing, the unemployment rate was 3.5%. It had not been that low for nearly 40 years. Some commentators suggested that this too might limit the degree to which house prices might fall. With a low unemployment rate, household disposable incomes are likely to be higher and this would increase their capacity to service a home loan (even if the interest component has increased significantly). There are some expectations, however, that rising interest rates will curb economic growth and one would expect that the unemployment rate would rise over 2022-23.

Other factors have also been decreasing the capacity of households to borrow and service their loans. Petrol prices had risen to an average of $2.15 per litre in late 2022, reducing the discretionary income of households in a similar way to rising interest rates. The inflation rate also increased to 6.8% (year to end August 2022) and is predicted to rise above 7% by the end of 2022. This should influence the amount that banks will be willing to lend given that wages growth is not keeping pace with inflation (resulting in lower real wages) which negatively influences the capacity to service any given loan.

Application questions

1. **With reference to the law of demand, explain why an increase in the price of houses is likely to be associated with a contraction in demand.**
2. **Explain how government legislation might affect the supply of housing. How is this likely to affect housing affordability (assuming all else remains constant)?**
3. **Construct a suitably labelled demand and supply diagram for houses in the suburb in which you live. Use the internet to research the change in median house prices. Compare the median house price today with what it was 7 years ago and what it was 2 years ago.**
4. **There are several demand factors that may have influenced house prices in the current year. Explain how two of these factors may have resulted in behavioural change. Then explain how this initially caused disequilibrium in in the market and how this resulted in changes to the equilibrium price and quantity traded.**
5. **Explain why the price elasticity of demand for housing might have increased over time.**
6. **Predict what might happen to property prices over the next year. Use factors (including those outlined in the case study) to justify your forecast.**

<u>Extension task:</u> Collect information over the course of the year on property prices (the AFR has a property section which is very useful), and keep a summary of each of the demand and supply factors that are mentioned. Each time a new factor is discovered, construct a demand and supply diagram to show how the market outcomes change. How accurate were the predictions you made in Q6 above?

Chapter summary

1. Microeconomics is the study of the individual parts of the economy that interact to make up the whole economy.
2. A market is anywhere that facilitates the exchange of goods and services. Buyers and sellers may exchange goods in person or via online facilities.
3. In a competitive market it is assumed that all economic agents are price takers. No individual buyer or seller has the market power to influence prices. It is easy for new competitors to enter these markets as set up costs are low and the government does not restrict new entrants.
4. Consumers will try to obtain the product at the lowest price possible while the seller will try to extract the highest price possible. Analysis of demand and supply predicts the likely compromise between the two parties.
5. The law of demand states that as the price of a product increases, the quantity demanded will tend to decrease. Conversely if the price of the product decreases, the quantity demanded will tend to increase.
6. The law of demand is based on the observation of human behaviour that suggests that at higher prices a consumer's ability and willingness to purchase tends to decrease because the consumption of most goods is subject to the law of diminishing marginal utility.
7. The effect on demand of an increase in price is represented by a movement along the demand curve to the left (called a contraction). The effect on demand of a decrease in price is represented by a movement along the demand curve to the right (called an expansion).
8. When the demand curve is drawn with price on the vertical axis and quantity on the horizontal axis, all other factors that affect the demand for the product are assumed to be held constant. A change in any of these factors will result in a shift of the demand curve to the left or right.
9. A shift of the demand curve to the right means that more is being demanded at each given price. A shift to the left of the demand curve means that less is being demanded at each given price.
10. An increase in disposable income will generally lead to a shift of the demand curve to the right for normal goods and a shift to the left for inferior goods.
11. A decrease in interest rates will increase discretionary income for indebted households and businesses and usually result in an increase in demand for most goods and services. Changes in the prices of other essential items, such as petrol, will also affect the discretionary income of households and may affect the demand for other seemingly unrelated products.
12. If the price of a substitute good or service increases, there will be an increase in demand for the alternative product (resulting in a shift to the right of the demand curve).
13. A complementary good or service is one that is consumed together with another. An increase in the price of a complementary good or service will mean that the cost of consuming both has increased, resulting in a decrease in demand for the complementary good (even if its price has not increased).
14. An increase in population will generally result in an increase in the demand for most goods and services. Demographic change can lead to an increase in the demand for some goods but a decrease in others.
15. An improvement in consumer sentiment (confidence), which measures consumers' general expectations about future state of the economy and their employment prospects, will generally lead to an increase in their marginal propensity to consume and result in an increase in the demand for a broad range of goods and services.
16. If a product becomes fashionable, this is likely to result in an increase in demand. This is described as a change in tastes and preferences.
17. The law of supply states that as the price increases for a good or service there will generally be an increase in the quantity supplied.
18. The law of supply is logical because at higher prices suppliers have more incentive to shift resources into those areas which will generate greater profits.
19. An increase in the price of a product will result in a shift along the supply curve to the right (an expansion). A decrease in the price of a product will result in a shift along the supply curve to the left (a contraction).
20. When the supply curve is drawn with price on the vertical axis and quantity on the horizontal axis, all other factors affecting supply are assumed to be held constant. A change in any of these factors will result in a shift of the supply curve to the left or right.
21. If the supply curve shifts to the right, there will be a greater volume supplied to the market at each given price. A shift of the supply curve to the left means that less will be supplied at each given price.
22. An increase in the cost of any inputs associated with making a product will result in a shift of the supply curve to the left. Common costs of production include wages, utility costs and rent.
23. New technology may reduce the cost per unit and will tend to shift the supply curve to the right. This increase in the willingness and ability of firms to supply is associated with the boost to productivity which is enhanced by technological change.
24. Climatic conditions affect the willingness and ability of firms to supply. Human activity can also cause disruptions to supply (such as wars).
25. The market equilibrium occurs when the demand for a good or service is equal to the supply of a good or service.
26. A shortage develops when the price is below the equilibrium price and the demand is greater than the supply for the product.

27. A surplus develops when the price is above the equilibrium price and the demand is less than the supply for the product.
28. A movement of the demand and/or supply curve will result in a new equilibrium price and quantity traded.
29. The relative price is seen as the price of any one good or service measured in terms of the price of another good or service.
30. Relative prices send clear signals to producers and consumers and therefore direct resources to their highest end use.
31. Prices help to answer the three economic questions; what to produce, how to produce and for whom to produce. They therefore determine how resources are allocated in the economy.
32. The price mechanism describes how the forces of demand and supply interact to determine relative prices of goods and services, which then ultimately determines the way our productive resources (land, labour and capital) are allocated in the economy.
33. Price elasticity of demand refers to the responsiveness of demand to changes in prices and is measured by the percentage change in quantity demanded divided by the percentage change in price.
34. A low price elasticity of demand means that the percentage change in quantity demanded is less than the percentage change in price. A high price elasticity of demand means that the percentage change in quantity demanded is higher than the percentage change in prices.
35. PED is an important economic measure because it helps businesses to analyse the impact of price changes on revenues and allows the government to consider which goods are the most appropriate to impose an indirect tax upon.
36. Price elasticity of demand will tend to be higher if there are a number of viable options available for the consumer as small price increases are more likely to result in a substitution towards these alternative products.
37. Price elasticity of demand will tend to be lower if the good or service is deemed to be a necessity or is highly addictive.
38. Price elasticity of demand will tend to be higher if the purchase of the product consumes a large portion of a purchaser's income.
39. Generally speaking, the PED will increase over time because consumers will have more time to consider alternatives and to adjust their behaviour in response to the price change.
40. Price elasticity of supply measures the responsiveness of quantity supplied to changes in price and is measured by the percentage change in quantity supplied divided by the percentage change in price.
41. A low price elasticity of supply means that the percentage change in quantity supplied is less than the percentage change in price. A high price elasticity of supply means that the percentage change in supply is more than the percentage change in price.
42. Price elasticity of supply is an important economic measure because it helps businesses to determine the impact of price changes on their profitability and it may also determine how vulnerable a country is to changes in the prices of the goods and services it exports.
43. Price elasticity of supply is likely to be higher if the product can be stored easily.
44. Price elasticity of supply is likely to be higher if firms are operating with some spare capacity and can ramp up production quickly.
45. Price elasticity of supply will tend to be lower in the short term but as resources are re-allocated across the economy to more profitable areas, price elasticity of supply will tend to increase.