1 THE ECONOMIC PROBLEM

LEARNING OBJECTIVES

- Understand the problem of scarcity
- Understand opportunity cost
- Understand production possibility curves
- Understand causes of positive and negative economic growth

SUBJECT VOCABULARY

goods things that are produced in order to be sold

GETTING STARTED

The planet we live on contains many resources that are used to produce **goods** we like to consume. However, there is a problem. Look at the images below.

CASE STUDY: RESOURCES AND NEEDS

▲ Figure 1.1 Valuable resources

▲ Figure 1.2 Needs

1 Describe the resources shown in Figure 1.1.

2 Are there enough of these resources in the world? Explain your answer with reference to the images in Figure 1.2.

3 In groups, discuss whether your country has enough resources. Draw up a list of measures that your government might take to increase the quantity of resources available. Present your ideas to the rest of the class.

THE PROBLEM OF SCARCITY

SUBJECT VOCABULARY

finite having an end or a limit

GENERAL VOCABULARY

fertile soil ground that is capable of producing crops

GENERAL VOCABULARY

health care activity of looking after people's health, considered to be an industry
needs basic requirements for human survival
wants people's desires for goods and services

SUBJECT VOCABULARY

infinite without limits

FINITE RESOURCES

All countries have resources, such as water, minerals, soil, plants, animals and people. However, in any country there is a **finite** quantity of these resources, which means that the quantity available is limited. As there is only a limited quantity, economists say that resources are scarce. These resources are often referred to as the four factors of production: land, labour, capital and enterprise (see Chapter 14).

Resources are scarcer in some countries than others. For example, in some African countries there are serious shortages of **fertile soil** and water. This means that food production is inadequate. Even where resources exist, a country may not be capable of exploiting them. For example, Ethiopia struggles to produce enough food for its population because only about 4 per cent of its fertile land is irrigated. The problem is not a shortage of water but the failure to exploit some of its huge rivers, such as the Awash and the Blue Nile. The country does not have the financial resources to invest in projects that would make use of the water for agriculture.

UNLIMITED WANTS

Economists distinguish between **needs** and **wants**. Needs are the basic requirements for human survival. Some of these needs are physical and include water, food, warmth, shelter and clothing. If these needs cannot be satisfied, eventually humans would cease to exist. In some countries in the world people do die because such needs cannot be met.

In addition to basic needs, humans also have other desires. These are called wants and may include more holidays abroad, a better house, more meals out, a bigger car, new golf clubs, a better education, improved **health care** and a cleaner environment. These wants are unlimited or **infinite**. People always want more whatever their current circumstances; it is human nature. The problem is made worse because many of the things that people want have to be replaced. Consumers regularly replace cars, computers, shoes, clothes and furniture, for example, either because they are no longer functional, or because better or more fashionable versions have become available.

ACTIVITY 1

CASE STUDY: NEED AND WANTS

▲ Figure 1.3 Different eating arrangements

1 How might the two images in Figure 1.3 illustrate the differences between needs and wants?

2 Why are resources finite?

THE ECONOMIC PROBLEM

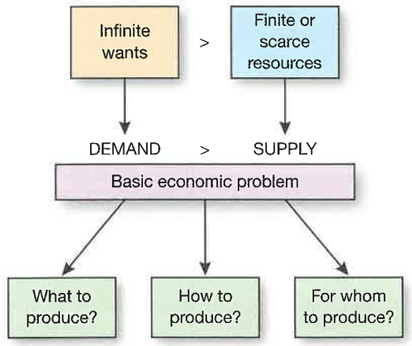
SUBJECT VOCABULARY

basic economic problem allocation of a nation's scarce resources between competing uses that represent infinite wants
scarce resources amount of resources available when supply is limited

GENERAL VOCABULARY

allocate to decide officially that a particular amount of money, time, etc. should be used for a particular purpose

All countries have to deal with what economists call the **basic economic problem**. The problem, summarised in Figure 1.4, occurs because the world's resources are scarce or finite and people's wants are infinite. Demand for resources is greater than their supply. As a result, decisions have to be made about how to **allocate** a nation's **scarce resources** between different uses. This is what the study of economics is all about.



▲ **Figure 1.4** The basic economic problem

To overcome the basic economic problem, important decisions have to be made.

- **What to produce?** Because it is impossible to produce all the goods that people want, a country must decide which goods will be produced. For example, should resources be used to provide more libraries, build more schools, expand the armed forces, make more cars, build more houses, construct more roads, make more toys, print more books, increase state pensions or train more doctors?
- **How to produce?** Goods can be produced using a variety of different production methods. The four factors of production can be organised in different ways to produce the same goods.
- **For whom to produce?** Once goods have been produced, there has to be a method of **distribution**. This means that the goods have to be shared in some way between members of the population. For example, should everyone get exactly the same quantities or should some receive more than others?

There are different solutions to the basic economic problem. This is because different courses of action can be taken when making the decisions outlined above. The way in which they are made depends on what sort of economic system a country has. This is explained in Chapter 11.

KEY FACTS

In China, many clothes manufacturers use large quantities of labour in production. However, in many Western countries the same goods may be produced using high-tech machinery.

GENERAL VOCABULARY

distribution act of sharing things among a large group of people in a planned way

OPPORTUNITY COST

GENERAL VOCABULARY

choices deciding between alternative uses of scare resources

Whichever approach is used to solve the basic economic problem, all decision makers are faced with **choices**. Resources often have a number of alternative uses; as a result people have to make a choice about which way to use them. Individuals, producers and governments face this choice.

- Individuals have to choose how to spend their limited budgets. For example, a university student, after all living costs have been met, may have £50 left at the end of the week. This student would like to buy some new books (£20), get the train home for the weekend (£30), go out for a meal with friends (£30), buy some new computer software (£20) or buy a new pair of designer jeans (£50). Clearly, a choice has to be made because all of these goods together would cost £150.
- Producers may have to choose between spending £100 000 on advertising, training its workforce or buying a new machine.
- A government may have to decide whether to spend £5000 million on increasing welfare benefits, building new hospitals, providing better care for the mentally ill or building a new motorway.

GENERAL VOCABULARY

sacrifice something valuable that you decide not to have, in order to get something that is more important

SUBJECT VOCABULARY

opportunity cost cost of the next best alternative given up (when making a choice)

When making such choices, individuals, firms and governments will face a cost once their choice has been made. This is called the **opportunity cost**. This cost arises because a **sacrifice** has to be made when making a choice. If the government in the example above can place its spending desires in order of preference, the opportunity cost can be identified. Once the government has chosen the best alternative, the opportunity cost will be the benefit lost from the next best alternative. Assume that the government's spending desires are placed in order of preference as below:

1 new motorway

2 new hospital

3 increase welfare benefit

4 improve care for the mentally ill.

In this example, the new motorway is the government's preferred choice. Therefore, the £5000 million will be allocated to this project. The opportunity cost in this case is the benefit lost from not building the new hospital, that is, the benefit lost from the next best alternative.

ACTIVITY 2

CASE STUDY : OPPORTUNITY COST

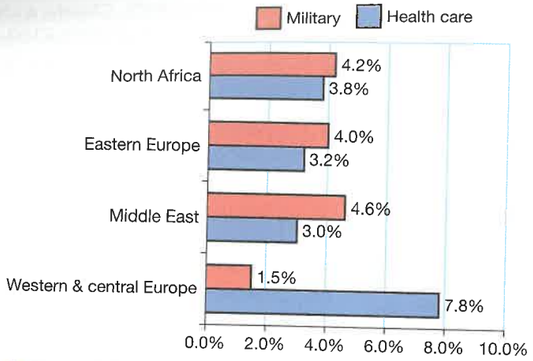
In 2015, according to the Stockholm International Peace Research Institute (SIPRI), the value of global military spending was US$1 676 000 million. This was about 2.3 per cent of the world's gross domestic product (a measure of world income). This level of spending on military goods often attracts criticism about the possible opportunity costs it incurs. In some regions, more is spent on the military than on health care – Figure 1.5 identifies four of these regions. Figure 1.5 also shows that in western and central Europe spending on health care is far higher than that on military goods. Campaigners often say that government **expenditure** on the military is a waste of resources. They recommend spending at least some of this money on meeting human needs. For example, the Global Campaign on Military Spending called for a 10 per cent cut in worldwide military spending. It said the money saved should be used for development purposes. In support of this campaign, Kazakhstan's President Nursultan Nazarbayev said that all nations should give 1 per cent of their military spending to the United Nations Special Fund for Global Development. In 2015, the UN Food and Agriculture Organisation said that a redirection of just 13 per cent of the global military budget could **eliminate** extreme poverty and hunger.

SUBJECT VOCABULARY

expenditure spending by a government, usually a national government

GENERAL VOCABULARY

eliminate to get rid of something unnecessary or unwanted



▲ **Figure 1.5** Spending on health care and military goods in a selection of regions (as a percentage of GDP)

1 Suggest one reason why spending on health care in western and central Europe is far higher than that on military goods, compared with the other regions shown.

2 What is meant by opportunity cost? Use this case as an example in your answer.

PRODUCTION POSSIBILITY CURVES (PPCs)

SUBJECT VOCABULARY

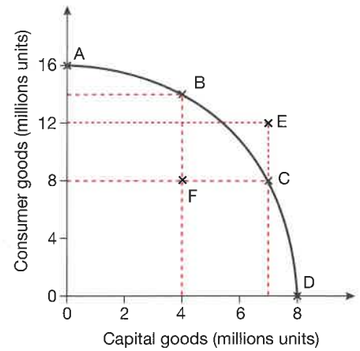
capital goods those purchased by firms and used to produce other goods such as factories machinery, tools and equipment

consumer goods those purchased by households such as food, confectionery, cars, tablets and furniture

production possibility curve (PPC) line that shows the different combinations of two goods an economy can produce if all resources are used up

Deciding which goods to produce and the concept of opportunity cost can be illustrated using **production possibility curves (PPCs)**. A PPC shows the different combinations of two goods that can be produced if all resources in a country are fully used. It shows the maximum quantities of goods that can be produced. A PPC for a country is shown in Figure 1.6. It is assumed that the country can produce **consumer goods** or **capital goods**. What does the PPC show?

- At point A, 16 million units of consumer goods are produced and zero capital goods.
- At point D, 8 million units of capital goods can be produced and zero consumer goods.
- At point B, a combination of 14 million units of consumer goods and 4 million units of capital goods can be produced.
- At point C, a combination of 8 million units of consumer goods and 7 million units of capital goods can be produced.
- At point F, a combination of 8 million units of consumer goods and 4 million units of capital goods can be produced. At this point, not all resources in the country are being used – there are unemployed resources. This is because point F is inside the PPC. A country should aim to push production so that it is on the PPC. At points A, B, C and D resources are fully employed.
- The combination of goods represented by point E is not possible. This is because it is outside the PPC. The country does not have the resources to produce 12 million units of consumer goods and 7 million units of capital goods.



▲ **Figure 1.6** A production possibility curve for a country

WHAT HAPPENS WHEN AN ECONOMY MOVES FROM ONE POINT ON THE PPC TO ANOTHER?

For example, what happens if the economy in Figure 1.6 moves from B to C? By moving along the PPC, an opportunity cost is incurred. At point B, 14 million units of consumer goods are being produced and 4 million units of capital goods. By moving to C, the production of capital goods rises to 7 million units but production of consumer goods falls to 8 million units. To gain another 3 million units of capital goods, 6 million units of consumer goods are being sacrificed. The lost production of consumer goods (6 million units) is the opportunity cost.

The choice between different combinations of consumer goods and capital goods is an important one for a country. If a country produces more capital goods, it will probably be able to produce more consumer goods in the future. This is because capital goods are used to produce consumer goods. However, by doing so there will be fewer consumer goods today and some people will have less in the short term.

CAUSES OF POSITIVE AND NEGATIVE ECONOMIC GROWTH

SUBJECT VOCABULARY

economic growth increase in the level output by a nation

GENERAL VOCABULARY

proportion part of a number or an amount, considered in relation to the whole

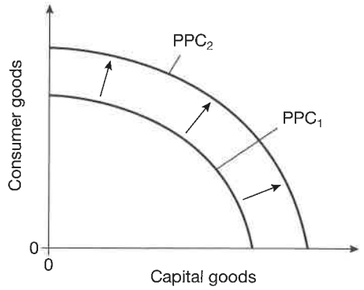
vocational training that teaches you the skills you need to do a particular job

At a particular point in time, a country cannot produce combinations of goods that lie to the right of the PPC. However, over a long period of time, an economy would expect to raise the production of all goods. This is called **economic growth**. There are several reasons for this.

- **New technology**: As time passes, new technology is developed and this benefits businesses. For example, new machines such as robots, computers, telecommunications and the internet have been used by businesses to help increase productive potential. New technology is usually faster and more reliable in production and therefore more output can be produced.
- **Improved efficiency**: Over time, resources are used more efficiently. New production methods, such as kaizen (continuous improvement) and lean production (using fewer resources in production), for example, have been developed and adopted. These more efficient methods replace the old ones and more output can be produced with fewer resources.
- **Education and training**: An economy can boost the productive potential of a nation by educating and training the population. A country's economy becomes more productive as the **proportion** of educated workers increases. This is because educated workers can more efficiently carry out tasks that require reading and writing analysis, evaluation, communication and critical thinking. However, a country has to find the 'right' balance between academic and **vocational** education.

- **New resources:** Some countries find new resources that enable them to produce more. For example, in recent years, the USA has raised its productive potential by producing more oil through fracking. Fracking involves shooting a mixture of mostly water and sand under high pressure against rock until it fractures or breaks. The sand fills the fracture, forcing oil out of the rock formation. Fracking now provides the USA with around 50 per cent of its oil needs. This is up from just 2 per cent in 2000.

If countries can produce more, the PPC will shift outwards. This is shown in Figure 1.7, PPC_1 represents an original PPC, while PPC_2 shows a new PPC resulting from improved efficiency, for example. Combinations of goods not previously possible can now be enjoyed. To generate economic growth in this way, a government needs to ensure that investment levels are adequate. Economic growth is discussed in more detail in Chapter 25.



▲ **Figure 1.7** Effect of improved efficiency on the PPC

Finally, it is possible for the PPC to shift inwards. This would represent negative economic growth, that is, where a country's productive potential actually falls. It may be caused by resource depletion: where a country runs out of a natural resource, such as oil or coal. The productive potential of a country can also be reduced by weather patterns. For example, dry weather might prevent some nations from meeting their **agricultural** production targets. Economic growth in a particular country might also be negative if large numbers of highly qualified, skilled and experienced workers moved overseas. This might happen if these workers could earn more money employed in another country. Wars, conflict and natural disasters might also result in negative economic growth.

GENERAL VOCABULARY

agricultural practice or science of farming

MULTIPLE-CHOICE QUESTIONS

▶ 1 Which of the following questions is associated with the basic economic problem?

- **A** When to produce?
- **B** Who should produce?
- **C** What to produce?
- **D** Where should production be located?

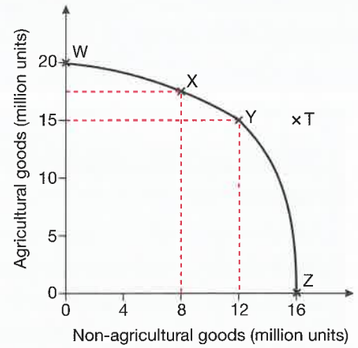
▶ 2 Which of the following might be considered a need rather than a want?

- **A** Shelter
- **B** Holiday
- **C** Smartphone
- **D** Pet dog

ECONOMICS IN PRACTICE

CASE STUDY: PRODUCTION POSSIBILITY CURVES

A country is able to produce agricultural and non-agricultural goods. It is currently at point X on the production possibility curve, as shown in Figure 1.8.



▲ **Figure 1.8** PPC of a country producing agricultural and non-agricultural goods

CHAPTER QUESTIONS

1 What is meant by a production possibility curve? Use this case as an example in your answer.

2 According to the PPC, the decision makers in this country must make what key choice?

3 Why is point T on the diagram currently unobtainable?

4 The country is considering a movement from X to Y. What will be the opportunity cost of such a movement?

5 Using a diagram, assess the effect that the discovery of fresh oil reserves might have on the PPC of this country.

2 ECONOMIC ASSUMPTIONS

LEARNING OBJECTIVES

- Understand the underlying assumptions in economics
- Understand why consumers might not maximise their benefit
- Understand why producers may not maximise their profit

SUBJECT VOCABULARY

variables something that affects a situation in a way that means you cannot be sure what will happen

GENERAL VOCABULARY

assumptions things that you think are true although you have no definite proof

irrational not based on clear thought or reason

GETTING STARTED

Economics is a social science that studies how individuals make decisions about the allocation of scarce resources. It often uses economic models to help predict the behaviour of **variables** (such as inflation, unemployment, consumer spending and wages) and to explain the cause of certain events. In using these models, economists are required to make some **assumptions** about the behaviour of individuals. Look at the example below.

CASE STUDY: MAKING CHOICES

In general, economists assume that an individual behaves rationally when making a choice. This means that an individual will make a thoughtful and logical decision when choosing between different courses of action. For example, a young student, Anita, is given Rs5000 to spend on anything she chooses up to that value. She draws up a list of the things she would like to buy and places them in order of preference. The items, each of which cost Rs5000, are shown in Figure 2.1. Option A is her most preferred option and option D is her least preferred.

◀ A Meal out to treat her friends

◀ B Ticket for India v England at Rajkot

◀ C A new outfit for a future wedding

◀ D Flight to Mumbai to visit her brother

▲ Figure 2.1 Items that Anita would like to buy

1 Why it would be **irrational** for Anita to choose option C given the information above?

2 What is the opportunity cost of choosing option A?

UNDERLYING ASSUMPTIONS IN ECONOMICS

GENERAL VOCABULARY

rational based on clear thought or reason

When making economic decisions, individuals are usually faced with limitations. In 'Getting started' above, Anita could not buy all the things she wanted. She was limited by the amount of money she had available (Rs5000) and therefore had to choose one from four different options. However, to help her make the decision, she placed the four items of expenditure in order of preference. By doing this, she was able to select option A. This is **rational** because according to her list option A is the most preferred option, that is, the one that will give her the most satisfaction. Economists assume that individuals behave in a rational way. They make the following two assumptions in relation to rationality.

1 CONSUMERS AIM TO MAXIMISE BENEFIT

When making economic decisions, economists assume that consumers will always choose a course of action that gives them the greatest satisfaction. This will help them **maximise** benefit. In 'Getting started' above, Anita chose to spend her Rs5000 on the most preferred item in her list, that is, the meal out with her friends. This is a rational decision; economists assume that consumers will always do this. Two other examples of consumer rationality are outlined below.

SUBJECT VOCABULARY

maximise to increase something such as profit, satisfaction or income as much as possible

- If a consumer is faced with buying exactly the same product from three different suppliers, the consumer will always buy from the supplier that offers the cheapest price. To pay more for a product than is necessary is irrational. For example, why would a consumer pay €1.14 for a litre of petrol at a filling station, when less than 500 metres away another is selling the same petrol for €1.09 per litre?
- If a consumer is faced with buying a product from three different suppliers at the same price, the consumer will buy the best quality product. To buy a product of lower quality would be irrational.

2 BUSINESSES AIM TO MAXIMISE THEIR PROFIT

When business owners make decisions, they will always choose a course of action that has the best financial results. This is because economists assume that business owners will want to make as much profit as possible. Owners are assumed to be rational when making financial decisions about their businesses. Two examples are outlined below.

SUBJECT VOCABULARY

revenue money that a business receives over a period of time, especially from selling goods or services

- If a business owner can buy some raw materials from three different suppliers, the owner will always buy the cheapest available as long as the quality is the same. To pay more for raw materials than is necessary would be irrational.
- When setting a price for a product, a business owner will always choose the highest price that the market can stand. For example, if a business owner can sell a product for €5 in a market, that owner would not charge €4.50. This would be irrational. By charging the highest possible price, business owners will be maximising **revenue** and therefore maximising their profit. Economists assume that business owners will always do this.

REASONS WHY CONSUMERS MAY NOT ALWAYS MAXIMISE THEIR BENEFIT

In some circumstances, a consumer may fail to maximise their benefit when making a choice. There are three possible reasons that help to explain this.

- It is possible that some consumers have difficulty in calculating the benefits from consuming a product. This is because measuring the satisfaction gained from consuming a product is often very difficult. It is hard to quantify (express in numbers) the satisfaction gained from consumption. For example, in 'Getting

started' above, how can Anita measure precisely the satisfaction gained from going out for a meal, going to the cricket match, buying a new outfit and visiting her brother? They are four very different acts of consumption. Anita has overcome the problem by placing the choices in order of preference. However, she may have overestimated or underestimated the possible satisfaction that any one of the four acts of consumption gives her. As a result, she may not have maximised her benefit when choosing the meal out.

- Some consumers develop buying habits that may affect their ability to make rational choices. For example, over a period of time some consumers stay loyal to a particular brand. Once they become used to a brand, they continue to buy it habitually. Even when other brands on the market offer better value, they maintain their loyalty. This seems irrational but such behaviour can be observed. For example, many people buy the same newspaper all of their lives. They may start by choosing a particular title and then carry on purchasing this paper out of habit. They may ignore new publications and other options continually. This behaviour is not uncommon. Businesses are aware of this behaviour and many try to develop brand loyalty through their marketing activities. If businesses can establish a strong brand and build up a loyal customer base, they can often charge higher prices.
- Another reason why some consumers do not maximise their benefit is because they are influenced by the behaviour of others. Young consumers may adopt some of the buying habits of their parents. For example, when young people leave home for the first time and make purchases that their parents once made, they may choose the same brands as their parents. This may be because they trust their parents or because they are familiar with the brands. It may not be because they prefer these brands to others. For example, it is reckoned that 59 per cent of people aged between 18 and 24 open their first bank accounts at the same bank as their parents. Also, some consumers are influenced by their friends or peers; they may copy their purchases in an effort to fit in or because they submit to pressure from their peers.

ACTIVITY 1

CASE STUDY: MAXIMISING CONSUMER BENEFIT

PandaCheck is a Chinese price comparison website. Like price comparison websites all over the world, they help consumers to find the cheapest deals when shopping online. The website is designed to help online shoppers find the best prices, search for current promotions, and learn some tips and tricks when ordering goods from China. For example, if you wanted to buy a battery for an ASUS laptop computer, you would type 'ASUS laptop battery' into the search engine and click on the search button. You would then see a list of the prices charged by all the Chinese online shops that stock the product. The user can change the order of the list but most people would probably want the list to show the cheapest suppliers at the top. Each listing gives a description of the product written by the supplier. This extra information may help consumers in their selection.

1 What is meant by a rational consumer?

2 How will PandaCheck help consumers to maximise their benefits?

3 Discuss one reason why a consumer may fail to maximise their benefits when making a purchase.

REASONS WHY PRODUCERS MAY NOT ALWAYS MAXIMISE THEIR PROFIT

It is possible that some business owners may not maximise their profits. Three key reasons may explain this.

- The performance of some businesses may be influenced by the behaviour of other people in the organisation. In some businesses, not all decisions are made directly by the owners. Business owners sometimes **delegate** decision making to others who may have different objectives to those of the owners. For example, managers in the sales department of a business may try to maximise sales revenue. They may do this because their salaries are linked to sales levels (the more they sell, the more **commission** they get). However, maximising sales may not result in the maximisation of profit. This is because to sell larger and larger quantities the price will eventually have to be lowered. When the price is lowered, the profit made on each extra unit sold will fall (and may become negative).
- Some producers have alternative business objectives. Although profit may be important to them, other issues may also be important. Consequently, by focusing on other objectives, it may not be possible for the producer to maximise profits. For example, some businesses focus on customer care; they may try to exceed customer expectations by providing high-quality customer service. This may mean that they spend more money on training their staff in giving good customer service. As a result, the extra costs incurred in training will reduce profitability.
- Some commercial **enterprises** operate as charities. They are sometimes called not-for-profit organisations. They aim to raise awareness and money for a particular cause. For example, UNICEF is an international charity that provides **humanitarian** and developmental help to children and their mothers. It collects money from donations and operates a number of commercial activities to generate revenue. This money is used to fund its humanitarian and developmental activities. Economists cannot assume that such organisations seek to maximise their profits, since they have other aims.
- Also, an increasing minority of businesses are being set up as social enterprises. These are organisations that operate commercially but aim to maximise improvements in human or environmental well-being. For example, MitiMeth is a Nigerian social enterprise that aims to find solutions to ecological problems. For example, many of Nigeria's waterways are 'clogged-up' with destructive water hyacinth plants. MitiMeth uses these nuisance plants (after they have been dried out in the sun) to make handcrafted products such as baskets, tableware and even jewellery. The sale of these products generates revenue but one of the key aims of the business is to solve an ecological problem.

Finally, consumers will be prevented from maximising their benefits, and producers from maximising their profits if they do not have access to all the information available. For example, if a consumer does not know that a particular product can be purchased at a lower price in another location, that consumer will not be able to maximise benefit due to a lack of information. However, in recent years, access to the internet and developments in social media, mean that the flow of information around the world has increased. This helps both consumers and producers to maximise their benefits and profits.

SUBJECT VOCABULARY

enterprises companies, organisations or businesses

GENERAL VOCABULARY

commission amount of money paid to someone according to the value of goods, shares or bonds they have sold

delegate to give part of your power or work to someone else, usually someone in a lower position than you

humanitarian concerned with improving bad living conditions and preventing unfair treatment of people

MULTIPLE-CHOICE QUESTIONS

▶ 1 Which of the following would help consumers and producers to maximise their benefits and profits, respectively?

A Lower prices

B Access to more information

C Improved transport networks

D Better quality products

▶ 2 Which of the following is a reason why consumers may not maximise their benefits?

A Some consumers are very poor

B Opportunity costs may be too high

C Some consumers may develop buying habits that are hard to give up

D Some consumers save a high proportion of their income

ECONOMICS IN PRACTICE

CASE STUDY: MAXIMISING PROFIT?

ANNA'S SWIMWEAR

GENERAL VOCABULARY

retailer business that sells goods to members of the public, rather than to shops

Anna Freeman runs a small company that manufactures swimwear. Most of her sales are made online to individual consumers. However, in 2015, she received an order for 3000 swimsuits from a **retailer** 100 kilometres away. She accepted the order and agreed to deliver the swimsuits herself. However, Anna needed to hire a van for 24 hours in order to make the delivery. She contacted three budget van hire companies and gathered the information shown in Table 2.1.

HIRE COMPANY	HIRE FEE (24 HOURS)	DISTANCE CHARGE	INSURANCE CHARGE	TOTAL
A	US$40	5 cents per km	US$12	
B	US$59	Zero	zero	
C	US$30	10 cents per km	US$15	

▲ **Table 2.1** Costs of hiring a van from three different van hire companies

▲ A self-drive hire van

SUBJECT VOCABULARY

administration activities involved with managing and organising the work of a company or organisation

MÉDECINS SANS FRONTIÈRES (MSF)

Médecins Sans Frontières (Doctors Without Borders) is an international not-for-profit medical humanitarian organisation. It employs 36 000 staff across 65 different countries. Its aim is to save lives and reduce the human suffering of people who are in danger by delivering medical care. MSF provides assistance to:

- victims of natural or man-made disasters
- victims of armed conflict
- other groups of people in distress.

MSF helps all people regardless of their gender, race, religion or political beliefs. In 2016, MSF helped refugees in Europe escaping from war, persecution and poverty. In Yemen, MSF provided lifesaving care to people affected by conflict. MSF also had units in Syria, South Sudan, Central African Republic and Iraq.

In 2015, MSF raised £42.7 million from donations. Eighty-six per cent of this money was spent on its medical operations, 12 per cent on fundraising and just 2 per cent on **administration**.

▲ MSF medical staff at work

CHAPTER QUESTIONS

1 Calculate the total cost to Anna of hiring a van for 24 hours from each van hire company shown in Table 2.1.

2 According to economists, which company would Anna select? Explain your answer.

3 Why might some of Anna's customers find it difficult to measure the benefit they get from buying a swimsuit?

4 Discuss why MSF does not aim to maximise profit. Give at least two reasons in your answer.

3 THE DEMAND CURVE

LEARNING OBJECTIVES

- Understand how demand is defined
- Understand how changes in price cause movements along the demand curve
- Understand what causes the demand curve to shift

GETTING STARTED

There is a strong link between the price charged for a good and the amount that people are willing to buy. Look at the example below.

CASE STUDY: CARPET STALL

Aziz Feddal makes carpets and sells them from his market stall inside the Henna Souk in Fez, Morocco. Table 3.1 shows the number of carpets that customers would buy per week at different prices.

PRICE (MAD)	60	80	100	120	140	160	180
WEEKLY PURCHASES	70	60	50	40	30	20	10

▲ Table 3.1 The number of carpets customers would buy at different prices

1 How many carpets would be bought at a price of MAD 100?

2 What happens to the number of carpets bought as the price increases?

3 What happens to the number of carpets bought when the price is lowered?

▲ Carpets on sale inside the Henna Souk, Fez, Morocco

EFFECTIVE DEMAND

Demand is the amount of a good that will be bought at given prices over a period of time. However, in economics it is **effective demand** that is really important. Effective demand shows how much *would* be bought (that is, how much people can afford to buy and would actually buy) at any given price. It does not mean how much people would like to buy if they had an endless amount of money.

THE DEMAND CURVE

Demand can be expressed graphically. This means that the relationship between price and demand can be shown on a graph. Consider the information in Table 3.2. This is a **demand schedule** and shows the demand for an electronic circuit board manufactured by a South Korean electronics company. The circuit boards are used in television production and sold worldwide.

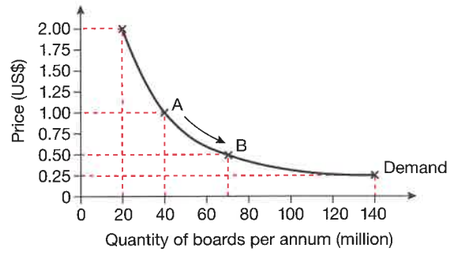
SUBJECT VOCABULARY

demand curve line drawn on a graph that shows how much of a good will be bought at different prices
demand schedule table of the quantity demanded of a good at different price levels – can be used to calculate the expected quantity demanded
effective demand amount of a good people are willing to buy at given prices over a given period of time supported by the ability to pay
inverse relationship (between price and quantity demanded) when price goes up, the quantity demanded falls and when the price goes down the quantity demanded rises

PRICE (US$)	0.25	0.50	1.00	2.00
QUANTITY OF BOARDS PER ANNUM (MILLION)	140	70	40	20

▲ Table 3.2 The demand for an electronic circuit board

The information in this schedule can be presented on a graph. This is shown in Figure 3.1. Price is shown on the vertical axis and the quantity demanded is shown on the horizontal axis. The amount sold at each price in the schedule is also shown. If these points are joined up with a smooth line, a **demand curve** is formed. A demand curve shows the quantity demanded at any given price. For example, in this case, when the price is US$1 the quantity demanded is 40 million units.



▲ Figure 3.1 Demand curve for circuit boards sold by a South Korean company

The demand curve slopes down from left to right; for most goods this is always the shape of the demand curve. This is important because it shows that price and the quantity demanded have an **inverse relationship**. This means:

- when prices go up demand will fall
- when prices go down demand will rise.

For example, when the price of circuit boards falls from US$1 to US$0.50, the demand for circuit boards rises from 40 million to 70 million units.

MOVEMENT ALONG THE DEMAND CURVE

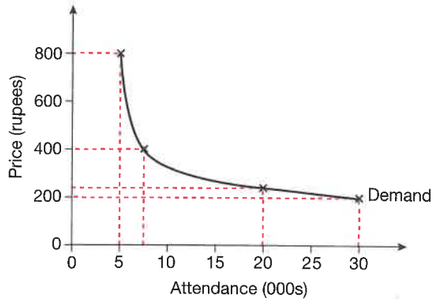
When there is a price change, there is a movement along the demand curve. In Figure 3.1, when the price falls from US$1 to US$0.50, we move along the demand curve from A to B to identify the new level of demand. The movement

along the demand curve in this case shows that the quantity demanded rises by 30 million units, from 40 million to 70 million units, when the price falls. This is important because other factors that influence demand, such as income, have a different effect on the demand curve. This is discussed below.

ACTIVITY 1

CASE STUDY: DEMAND FOR CRICKET TICKETS

An Indian cricket stadium has a capacity of 30 000. Figure 3.2 shows the demand curve for tickets to attend international cricket matches at the stadium.



▲ **Figure 3.2** Demand for tickets at an Indian cricket stadium

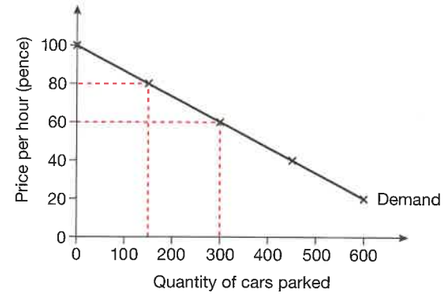
▲ An Indian cricket stadium

1 What will the attendance be if Rs400 is charged to attend a match?

2 What price must be charged to fill the stadium?

STRAIGHT-LINE DEMAND CURVES

The demand curves shown in Figures 3.1 and 3.2 are both downward sloping curves. In economics, it is common to show demand using a straight-line demand curve. The reason for this is to simplify the drawing of demand curves and to make it easier to understand diagrams. Most demand curves are shown as straight lines, like the one in Figure 3.3. This demand curve shows the demand for car park spaces at a city-centre car park. It still shows the important inverse relationship that exists between price and the quantity demanded. For example, if the price to park for an hour rises from 60 pence to 80 pence, the number of cars parked falls from 300 to 150.



▲ **Figure 3.3** Straight-line demand curve showing the demand for spaces at a city-centre car park

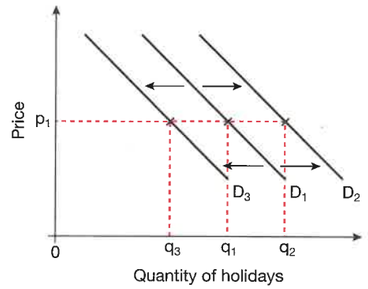
A SHIFT IN THE DEMAND CURVE

SUBJECT VOCABULARY

shift in the demand curve movement to the left or right of the entire demand curve when there is a change in any factor affecting demand except the price

If the price of a good changes, there is a movement along the demand curve. A change in any other factor, such as income for example, will be shown by a **shift in the demand curve**. The demand curve, D_1, shown in Figure 3.4, is for package holidays to the Maldives. At the price of p_1 consumers are currently buying q_1 holidays.

- If there is an increase in incomes, the quantity demanded will rise at every given price. As a result, the demand curve will shift to the right, to D_2 shown in the diagram. At the price p_1, the number of holidays bought would rise from q_1 to q_2.
- If there is a decrease in incomes, the quantity demanded will fall at every given price. This will cause the demand curve to shift to the left, to D_3 shown in the diagram. At the price p_1, the number of holidays bought would fall from q_1 to q_3.



▲ **Figure 3.4** Shift in the demand curve for holidays to the Maldives

The factors that are likely to cause the demand curve to shift (as shown above) are discussed in detail in Chapter 4 (see pages 23–29).

MULTIPLE-CHOICE QUESTIONS

▶ 1 Which of the following statements is true about a demand curve?

A When the price falls, the quantity demanded falls

B There is a proportionate relationship between price and the quantity demanded

C It slopes up from left to right

D When there is a price change, there is a movement along the demand curve

▶ 2 Which of the following will cause a demand curve to shift to the left?

A A fall in the price of a product

B A rise in income (for example)

C A rise in the price of a product

D A fall in income (for example)

ECONOMICS IN PRACTICE

CASE STUDY: AL'S BIG BURGER

Alan Buschwacker makes a living by selling burgers from a van. He parks his van at busy locations in Seattle, Washington, USA, and sells 'gigantic' burgers, which have become his trade mark in the area. Most of the time his wife assists him. Details of weekly demand for Al's burgers are shown in Table 3.3.

PRICE (US$)	0.5	1	1.5	2	2.5	3	3.5	4
WEEKLY DEMAND	1600	1400	1200	1000	800	600	400	200

▲ Table 3.3 The demand schedule for Al's Big Burgers

▲ Al's burger van

CHAPTER QUESTIONS

1 What is meant by effective demand?

2 Draw a demand curve using the information in Table 3.3.

3 Al currently charges US$3 for his giant burgers. How many burgers would he expect to sell at this price?

4 If Al wanted to sell 1400 burgers, what price would he have to charge?

5 What is meant by the inverse relationship between the price and the quantity demanded for a product? Use this case as an example in your answer.

4 FACTORS THAT MAY SHIFT THE DEMAND CURVE

LEARNING OBJECTIVE

- Understand the factors that cause a shift in the demand curve: advertising, income, fashion and tastes, price of substitutes, price of complements and demographic changes

GETTING STARTED

Chapter 3 showed that demand for a product is influenced by the price charged. Generally, if the price of a product is increased, the quantity demanded will fall. However, a number of other factors could affect the demand for goods. These can shift the demand curve. Look at the example below.

CASE STUDY: HOLIDAY TREAT

Jacob Atudo works for a big oil company in Kenya. In 2016, he was promoted and received a 20 per cent pay increase. He decided to spend some of his extra pay on a treat for him and his wife. He had seen a television advert recently placed by a travel company; the advert offered discounts on holidays to the Seychelles. He knew that his wife would enjoy a trip abroad so went ahead and booked the holiday.

▲ A luxury villa in the Seychelles

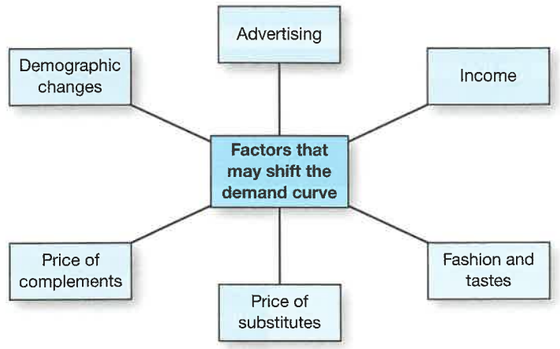
1 In addition to the price, what two factors might affect the quantity demanded for holidays in the Seychelles?

2 What would you expect to happen to the quantity demanded for holidays in the Seychelles during a recession? Explain your answer.

3 In pairs, choose any two products that you or your family regularly buy. Make a list of the things that might influence demand for these two products. Present your ideas to the rest of the class.

FACTORS THAT MAY SHIFT THE DEMAND CURVE

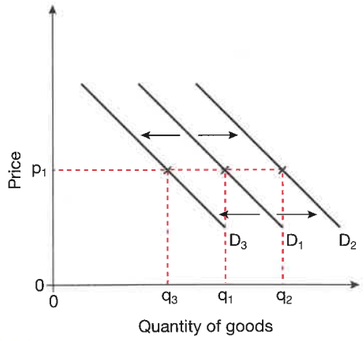
Price is the main factor that affects the quantity demanded. However, there are many other factors and each of them may actually shift the demand curve. Some of the most important factors are summarised in Figure 4.1.



▲ **Figure 4.1** The main factors that may shift the demand curve

ADVERTISING

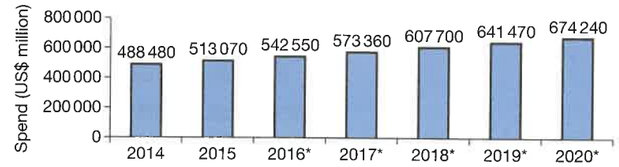
Businesses try to influence demand for their products through advertising and other forms of promotion. For example, in the highly competitive soft drinks industry, Coca-Cola spent US$3499 million on advertising in 2014. If goods are advertised more heavily, the quantity demanded is likely to increase. This helps to explain the huge amounts that some businesses, such as Coca-Cola, are prepared to spend on advertising. Although it might be difficult to measure the precise impact advertising expenditure has on the quantity demanded, most would agree that such spending will help to increase demand. An increase in advertising expenditure is likely to shift the demand curve to the right – from D_1 to D_2 in Figure 4.2.



▲ **Figure 4.2** Shifts in the demand curve

ACTIVITY 1

CASE STUDY: DEMAND AND ADVERTISING



▲ **Figure 4.3** Global adspend, 2014–20 *Estimated

1 Calculate the percentage increase in predicted advertising expenditure between 2014 and 2020.

2 Why are some businesses prepared to spend so heavily on advertising?

SUBJECT VOCABULARY

disposable income income that is available to someone over a period of time to spend; it includes state benefits but excludes direct taxes

inferior goods goods for which demand will fall if income rises or rise if income falls

normal goods goods for which demand will increase if income increases or fall if income falls

INCOME

Generally, when **disposable income** rises, demand for goods will also rise. For example, if wages and salaries rise in the economy, people may decide to spend more money going out to restaurants. They may take an extra holiday or they may buy a new car. These are all **normal goods**. These are goods for which demand will rise when income rises. Most goods in the economy are normal goods. However, a minority of goods are **inferior goods**. This means that the quantity demanded will actually fall when incomes rise. Supermarket 'own label' brands or public transport may be examples of inferior goods. For example, consumers who generally buy a relatively cheap supermarket 'own label' brand of baked beans may switch to a more expensive brand when their incomes rise. Therefore, the quantity demanded for the supermarket 'own label' brand will fall. This would be shown by a shift in the demand curve to the left from D_1 to D_3 in Figure 4.2.

FASHION AND TASTES

Over a period of time, demand patterns change because there are changes in consumer tastes and fashion. For example, there has been a rise in demand for T20 cricket (cricket games that last for three hours) around the world in the last 10 years. This is reflected by the attendances at T20 fixtures in many different countries, such as India, Australia, Bangladesh and Sri Lanka. Stadiums are often full for international T20 fixtures. This compares with relatively smaller crowds at test match fixtures (cricket games that last for up to 5 days). T20 cricket has grown in popularity and increasing numbers of cricket fans find the style appealing.

The clothes industry is influenced strongly by changes in fashion. In many countries, there are a various buying seasons for clothes. Many of the clothes bought in one season would not be in demand in later seasons because they would no longer be in fashion.

Fashions and tastes may be influenced by social changes. For example, in recent years, millions of people have developed a keen interest in social media. Social media websites, such as Facebook, Twitter and Snapshot, have seen a huge increase in demand since their launch.

SUBJECT VOCABULARY

substitute goods goods bought as an alternative to another but perform the same function

PRICE OF SUBSTITUTES

Many goods sold by businesses have **substitute goods**. For example, a consumer buying a can of Coca-Cola might have considered other brands, such as Pepsi, Virgin or supermarket 'own label'. Most consumers would consider these as good substitutes. The price of substitutes will affect demand. If the price of a substitute were lowered, demand for a product would fall. This would be shown by a shift to the left in the demand curve for that product from D_1 to D_3 in Figure 4.2. If a good has a lot of close substitutes, then the prices of these will affect demand significantly.

SUBJECT VOCABULARY

complementary goods goods purchased together because they are consumed together

PRICE OF COMPLEMENTS

Some goods are purchased together by consumers. This is because the two goods are used together, for example, consumers of cornflakes will also buy milk, and people who buy cars will also buy car insurance. In these examples, milk and cornflakes and cars and car insurance are **complementary goods**. Demand for such products is likely to be affected by the price of a complementary good. For example, if the price of milk were to rise the demand for cornflakes may fall.

GENERAL VOCABULARY

demography study of human populations and the way in which they change

DEMOGRAPHIC CHANGES

Clearly, as the world's population grows, there will be an increase in demand for goods and services. However, demand will also be affected by the structure of the population as well as its size: **demography** affects demand.

- The age distribution of a population is the number of people who fall into different age groups. For example, in many countries, there has been growth in the number of people aged over 60. This will have an effect on demand patterns. For example, as the population ages there will be more demand for goods such as retirement homes, specialist holidays for the elderly and health care.
- In some countries, in the population overall there are more women than men. And there are many more women than men in older age groups. Consequently, the gender distribution of the population is likely to affect demand patterns. For example, there will be a greater demand for women's clothes than men's clothes, particularly in older age groups.
- The geographical distribution may affect demand. Increasingly, in most developed and developing countries more and more people live in urban areas. As a result, demand for schools and hospitals in urban areas will be higher than in rural areas.
- Many countries have ethnic groups in the population structure. If these ethnic groups grow in size, there is likely to be an increase in demand for products associated with their culture. In Australia, there is a large Southeast Asian population. This has resulted in the spread of restaurants offering Vietnamese, Malayan, Thai and Indonesian meals, for example.

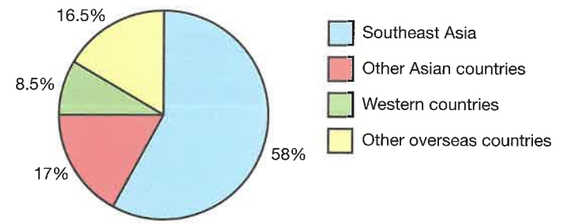
KEY FACTS

- Changes in the size and structure of the population may have other impacts in the economy than those mentioned in this chapter, for example, on firms and the government. (These will be discussed in other chapters.)
- There are likely to be changes in the size and structure of populations over time. For example, if the birth rate rises, there will be an increase in the size of the population.
- An increase in immigration (people coming to a country from overseas to live permanently), will tend to change both the size and the structure of the population.

ACTIVITY 2

CASE STUDY: DEMAND AND POPULATION

The population of the UAE has grown significantly since 2000. Between 2000 and 2010, it grew from 2.9 million to 8.3 million. The UAE has a very large immigrant population. It is estimated that around 90 per cent of the population were born overseas. As Figure 4.4 shows more than half of non-UAE nationals come from Southeast Asia.



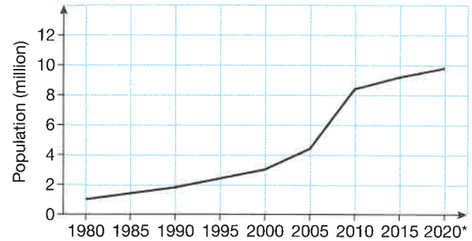
▲ **Figure 4.4** Origins of UAE's immigrant population

Most of the immigrants are attracted to the country by employment opportunities. There has been a huge boom in the construction industry, for example. The UAE government has invested revenues from the sale of oil and gas into **infrastructure** development, residential real estate and commercial properties.

GENERAL VOCABULARY

infrastructure basic systems and structures that a country needs to make economic activity possible, for example, transport, communication and power supplies

The UAE has the largest difference in the male : female ratio in the world, with 2.2 men for every woman, or 2.75 men for every woman in the 15–65 age group. The graph in Figure 4.5 shows the growth in the population of UAE from 1980 to 2020.



▲ **Figure 4.5** UAE population growth, 1980–2020 *Estimated

1 Why has the population of the UAE increased so sharply in recent years? Give one reason in your explanation.
2 How will the change in the size of the UAE's population affect demand?
3 A significant number of the people migrating to the UAE are Southeast Asian. How might this affect demand patterns in the UAE?

MULTIPLE-CHOICE QUESTIONS

▶ 1 Cars and petrol are examples of which goods?
- **A** Inferior goods
- **B** Complementary goods
- **C** Substitute goods
- **D** Capital goods

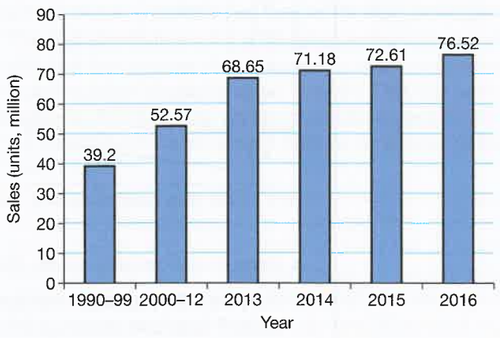
▶ 2 A rise in the price of car insurance may have which effect?
- **A** Increase the quantity demanded for cars
- **B** Increase the quantity demanded for car insurance
- **C** Shift the demand curve for cars to the left
- **D** Shift the demand curve for cars to the right

ECONOMICS IN PRACTICE

CASE STUDY: GLOBAL DEMAND FOR CARS

Ever since cars became commercially available, demand for them has continued to increase. In 2016, it was predicted that 76.5 million new cars will be purchased worldwide. Rising demand is currently driven by rapid economic growth in countries such as India and China. Owning cars in such countries is a new experience for huge numbers of people. As people in developing countries become wealthier as a result of economic growth, more cars are purchased.

In recent years, the demand for electric vehicles (EVs) has increased. In 2015, total sales of EVs reached 1 million. It is estimated that by 2040 around 35 per cent of all cars purchased will be EVs. This growth in the demand for EVs is being driven by government investment in the public battery-charging infrastructure (with the rate of introduction of fast DC chargers growing by 350 per cent in China alone in 2015) and improvements in the driving range of EVs. Also, if oil prices recover to the pre-2014 levels (when oil was US$140 a barrel) the incentive to buy an EV will be even stronger.



▲ Figure 4.6 Global demand for cars, 1990–2016

CHAPTER QUESTIONS

1 Suggest one reason why the global demand for cars is rising.

2 Discuss the possible factors that might affect the demand for electric cars in the future. Give two factors in your analysis.

3 What effect will the following have on the global demand for cars: **(a)** an increase in global incomes; **(b)** a rise in the price of petrol. Use diagrams in your answer.

4 What is the difference between a movement along the demand curve and a shift in the demand curve? Use a diagram in your explanation.

5 THE SUPPLY CURVE

LEARNING OBJECTIVES

- Understand how supply is defined
- Understand how changes in price cause movements along the supply curve
- Understand what causes the supply curve to shift

GETTING STARTED

Sellers or producers are responsible for meeting the needs of consumers. They provide goods and services that they hope people or other businesses will buy. There is a strong link between the price of a good and the quantity provided, for example, if prices are too low, sellers may not be interested in supplying the market because they may not be able to make enough profit.

CASE STUDY: CHICKEN FARMING

Tom Chang is a chicken farmer in rural China. He has reared chickens for 35 years and sells them to people in his local community. However, twice weekly, he takes chickens to a market about 15 kilometres away in order to boost sales. Table 5.1 shows the number of chickens he is prepared to offer for sale per week at different prices. For example, when the market price is CNY5, he is not prepared to sell any at all because he cannot make any profit at this price.

PRICE (CNY)	5	10	15	20	25	30	35	40
NUMBER OF CHICKENS	0	10	20	30	40	50	60	70

▲ Table 5.1 Number of chickens (per week) Tom Chang is prepared to offer for sale at different prices

▲ A chicken farm

1 How many chickens would Tom offer for sale if the price was CNY30?

2 In Table 5.1, what happens to the number of chickens offered for sale when prices rise?

3 Why do you think sellers, such as Tom, offer more for sale when prices are higher?

SUPPLY AND THE SUPPLY CURVE

Supply is the amount of a good that sellers are prepared to offer for sale at any given price over a period of time. For example, in 'Getting started' above, if the market price for chickens was CNY30, Tom Chang would sell 50 chickens during a week. This means that the supply of chickens by Tom Chang at CNY30 during a particular week was 50.

The supply of any product can be expressed graphically. This means that the relationship between price and the quantity supplied can be shown on a graph. Consider the information in Table 5.2. This is a schedule showing the supply of handmade golf shoes by M. Crammer and Son, a family business in Florida, USA.

SUBJECT VOCABULARY

supply amount that producers are willing to offer for sale at different prices in a given period of time
supply curve line drawn on a graph which shows how much of a good sellers are willing to supply at different prices

PRICE (US$)	0	50	100	150	200	250	300	350
QUANTITY OF GOLF SHOES (PER ANNUM)	0	300	600	900	1200	1500	1800	2100

▲ **Table 5.2** Supply schedule for handmade golf shoes by M. Crammer and Son

GENERAL VOCABULARY

per annum (p.a.) for or in each year

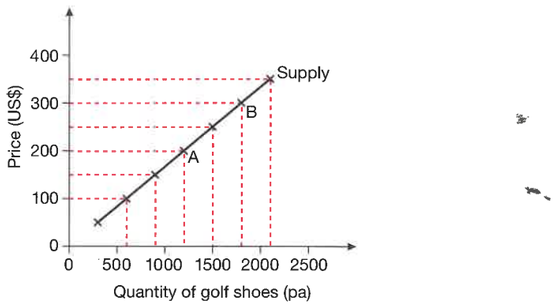
The information in the schedule can be presented on a graph, as shown in Figure 5.1. Like the demand curve, price is shown on the vertical axis and quantity on the horizontal axis. The amount supplied by M. Crammer and Son at each price in the schedule is also shown. If these points are joined together, a **supply curve** is formed. This is a straight-line supply curve and shows the quantity supplied at any given price. For example, when the price of golf shoes is US$200, M. Crammer and Son will supply 1200 pairs **per annum**.

SUBJECT VOCABULARY

proportionate relationship (between price and the quantity supplied) when the price goes up, the quantity supplied also goes up and when the price goes down the quantity supplied goes down

The supply curve slopes up from left to right, which means there is a **proportionate relationship** between price and the quantity supplied. This shows that:

- when prices go up, supply will also go up
- when prices go down, supply will also go down.



▲ **Figure 5.1** Supply curve for golf shoes made by M. Crammer and Son

For example, when the price of golf shoes rises from US$200 a pair to US$300 a pair, the quantity supplied will increase from 1200 pairs to 1800 pairs. This applies to the vast majority of goods. However, there are exceptions and one such exception is discussed later in this chapter (see page 32).

The reason for this relationship is mainly because businesses are motivated by profit. If prices are rising, existing businesses will be willing to supply increasing amounts of a good because they may make more profit. Or, more businesses will join the market in the belief that they can also make a profit. As a result supply in the market increases.

MOVEMENT ALONG THE SUPPLY CURVE

As with demand, when there is a price change, there is a movement along the supply curve. In Figure 5.1, when the price rises from US$200 to US$300, for example, we move along the supply curve from A to B to identify the new level of supply. The movement along the supply curve in this case shows that the quantity supplied is increased from 1200 pairs of golf shoes to 1800 pairs when the price rises. This only happens when there is a price change. If there are changes in any other factor influencing supply, the effect on the supply curve is different. This is discussed below.

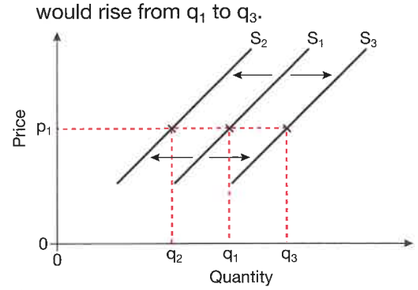
A SHIFT IN THE SUPPLY CURVE

SUBJECT VOCABULARY

shift in the supply curve movement to the left or right of the entire supply curve when there is any change in the conditions of supply except the price

If the price of a good changes, there is a movement along the supply curve. A change in any other factor, such as production costs, will be shown by a **shift in the supply curve**. The supply curve, S_1, shown in Figure 5.2, is for any product. At the price of p_1, sellers are offering quantity q_1 for sale.

- If there is a rise in production costs, the quantity supplied will fall at every given price. This will cause the supply curve to shift to the left, to S_2 as shown in the Figure 5.2. At the price p_1, the quantity of goods offered for sale would fall from q_1 to q_2.
- If there is a fall in production cost, the quantity supplied will rise at every given price. As a result, the supply curve will shift to the right, to S_3 as shown in the diagram. At the price p_1, the quantity of goods offered for sale would rise from q_1 to q_3.



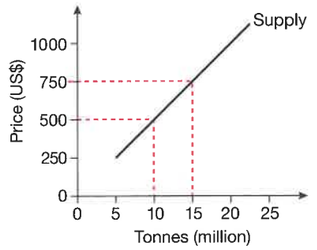
▲ **Figure 5.2** Shift in the supply curve for a product

The range of factors that are likely to cause the supply curve to shift (as shown above) is discussed in detail in Chapter 6 (pages 34–39).

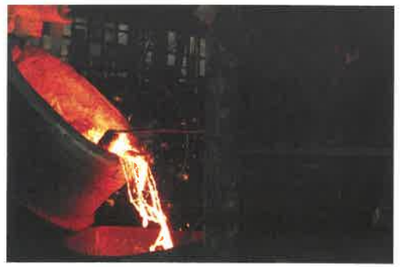
ACTIVITY 1

CASE STUDY: STEEL SUPPLY IN A COUNTRY

The annual supply curve for steel in a country is shown in Figure 5.3.



◀ **Figure 5.3** Annual supply of steel for a particular country



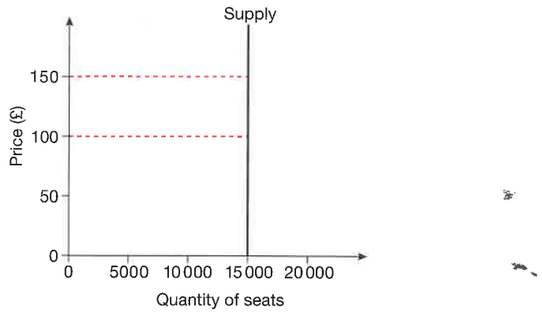
▲ Steel production

1 What will happen to the supply of steel if the price rises from US$500 to US$750 per tonne?

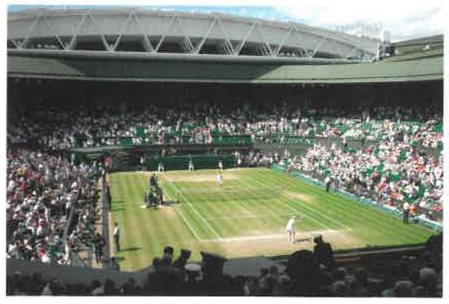
2 Why are steel suppliers likely to offer more for sale at higher prices?

FIXED SUPPLY

In some circumstances, the supply of a product or service may be fixed. If this is the case, then the supply curve will be vertical. Supply will be fixed if it is impossible for sellers to increase supply even when prices rise. Supply at venues where sports matches and other events are held may be fixed. An example is shown in Figure 5.4. Centre Court at Wimbledon (the main stadium at the venue) has a capacity of 15 000. It is impossible to offer more than 15 000 seats for tennis matches at this venue. Even if the price of tickets were to rise, say, from £100 to £150 for a match, no more seats could be supplied.



▲ **Figure 5.4** Fixed supply – the capacity of Wimbledon's Centre Court



▲ Wimbledon's Centre Court

MULTIPLE-CHOICE QUESTIONS

▶ 1 Which of the following is true of supply?

A If price increases the supply curve will shift to the right

B If the price falls, the quantity supplied will also fall

C The amount supplied and the price are inversely related

D The supply curve is always horizontal

▶ 2 If supply is fixed which of the following is true?

A Demand will also be fixed

B The supply curve will be vertical

C Suppliers will not offer any quantity for sale

D Supply will fall when price rises

ECONOMICS IN PRACTICE

CASE STUDY: FOTHERGILL & SONS

Fothergill & Sons manufacture a range of wooden products – mainly heavy furniture, such as large tables, benches and beds. One of its profitable lines is park benches, which are often sold to local governments. Many of Fothergill's benches are to be found in local council parks. The number of park benches that Fothergill & Sons is prepared to offer for sale at different prices in a year is shown in Table 5.3.

PRICE (£)	20	40	60	80	100	120	140	160
NUMBER OF BENCHES P.A.	0	200	400	600	800	1000	1200	1400

▲ Table 5.3 Supply schedule for park benches made by Fothergill & Sons

▲ Park bench

CHAPTER QUESTIONS

1 Draw the supply curve for park benches using the data in Table 5.3.

2 How many park benches would be supplied if the price was £110?

3 If Fothergill & Sons wanted to supply 1300 park benches per annum, how much would it expect to sell them for?

4 Why is supply 0 at a price of £20?

5 Discuss whether Fothergill & Sons could supply three times as many park benches.

6 FACTORS THAT MAY SHIFT THE SUPPLY CURVE

LEARNING OBJECTIVE

- Understand the factors that may cause a shift in the supply curve: costs of production, changes in technology, indirect taxes, subsidies and natural factors, such as natural disasters and the weather

GENERAL VOCABULARY

volatile changing quickly and suddenly, for example, a volatile market rises and falls without much warning

SUBJECT VOCABULARY

ventures new business activities or projects that involve taking risks

GETTING STARTED

Chapter 5 established that the supply of a product is influenced by the price in the market and showed that as the price rises, sellers are willing to supply more. However, there are other factors that could affect the supply of goods. Look at the example below.

CASE STUDY: NIGERIAN FARMING

In 2016, growing numbers of Nigerian chicken and fish farmers were reducing production rates. Some were even abandoning their farms to pursue other business **ventures**. This was a response to **volatile** and rapidly rising feed costs. As a result, Nigerian politicians begged young people, and others who have left the countryside to seek a better life in the cities, to return to their family farms.

It is the rising costs of feed that has caused problems with supply. In Lagos state, fish farmers complained that feed prices had risen by as much as 80 to 100 per cent. Locally produced catfish feed has risen from NGN 6000 to NGN 9000, while imported feed has gone up from NGN 6000 to NGN 11 000 for a 15 kilogram bag.

1 Describe the main factor affecting supply in this case?

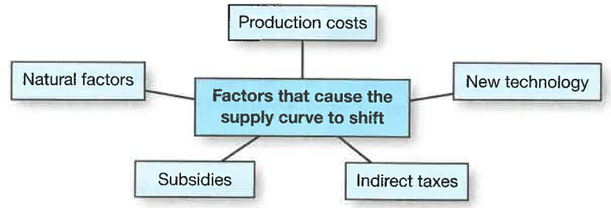
2 Calculate the percentage increase in the price of imported fish feed per 15 kilogram bag.

3 Why do you think the quantity supplied falls when production costs rise?

4 In pairs, choose any two products that you or your family regularly buy. Make a list of the things that might influence the supply of these two products. Present your ideas to the rest of the class.

FACTORS THAT MAY SHIFT THE SUPPLY CURVE

Price is the main factor that affects supply. However, a range of other factors may also have an impact. Unlike a change in price, which results in a movement along the supply curve, changes in these other factors can cause the supply curve to shift. These factors are summarised in Figure 6.1.



▲ **Figure 6.1** Factors that can shift the supply curve

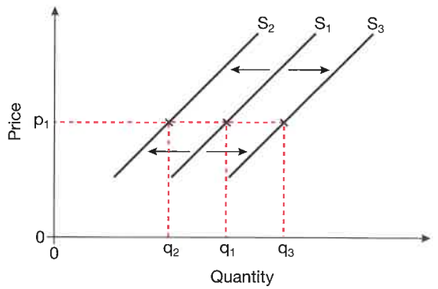
COSTS OF PRODUCTION

The quantity supplied of any product is influenced by the costs of production, such as wages, raw materials, energy, rent and machinery. Assuming the price is fixed, if production costs rise, sellers are likely to reduce supply. This is because their profits will be reduced. This is what happened in the example in 'Getting started' above. The rising cost of fish feed resulted in some fish farmers leaving the industry, causing the quantity supplied to fall. A rise in costs will cause the supply curve to shift to the left. This is shown in Figure 6.2. When costs rise, the whole supply curve will shift to the left, from S_1 to S_2. At a price of p_1, the amount supplied in the market falls from q_1 to q_2.

If costs fall, the quantity supplied would increase because production becomes more profitable. As a result, the supply curve will shift to the right. This shows that more is supplied at every price. The new supply curve is S_3 and the amount supplied at p_1 will rise from q_1 to q_3.

KEY FACTS: PRODUCTIVITY

In recent years, the UK has tried to increase **productivity** in manufacturing. However, in a recent survey, 73 per cent of industry leaders said they had found it difficult to recruit skilled workers. Both the quantity and quality of candidates were lacking. Sixty-seven per cent of bosses said they were regularly forced to deal with a lack of technical skills, 64 per cent said there were too few people applying and 61 per cent said candidates lacked relevant experience.



▲ **Figure 6.2** Shift in the supply curve

The availability of resources will also affect supply. If there is a shortage in some of the factors of production – for example, land, labour or capital – this will cause it to be difficult for producers to supply the market because their costs are likely to rise.

SUBJECT VOCABULARY

indirect taxes taxes levied on spending, such as VAT
productivity rate at which goods are produced, and the amount produced in relation to the work, time, and money needed to produce them

INDIRECT TAXES

Indirect taxes are taxes on spending. VAT (valued-added tax) and duties, such as those on petrol and cigarettes, are examples of indirect taxes. Such taxes have an effect on supply. When they are imposed or increased, the supply curve will shift to the left. This is because indirect taxes represent a cost to

firms. In Figure 6.2, the imposition of a tax would shift the supply curve to the left from S_1 to S_2. As a result, the quantity supplied would fall from q_1 to q_2.

If indirect taxes are reduced, the supply curve will shift to the right because costs are lower. In Figure 6.2, lower indirect taxes would shift the supply curve from S_1 to S_3. As a result, the quantity supplied would rise from q_1 to q_3.

Governments use indirect taxes to raise revenue for government expenditure and discourage the **consumption** of harmful products, such as cigarettes and alcohol. Indirect taxes might also be used to protect the environment. For example, taxes might be imposed on producers if their production methods result in damage to the environment. This is discussed in Chapter 29 (pages 228–239).

SUBJECT VOCABULARY

consumption amount of goods, services, energy, or natural materials used in a particular period of time
subsidy money that is paid by a government or organisation to make prices lower, reduce the cost of producing goods or providing a service, usually to encourage production of a certain good

SUBSIDIES

Sometimes the government may give money to businesses in the form of a grant. This is called a **subsidy**. Subsidies may be given to firms to try to encourage them to produce a particular product. For example, in the EU, subsidies have been given to farmers to encourage them to produce certain agricultural products. If the government grants a subsidy on a good, the effect is to increase its supply. This is because subsidies help to reduce production costs. As a result, the supply curve will shift to the right, from S_1 to S_3 in Figure 6.2. This causes the amount supplied at p_1 to rise from q_1 to q_3.

DID YOU KNOW?

Government subsidies to producers may have negative effects. For example, producers may lack the incentive to improve efficiency. Another problem is that the government will incur an opportunity cost when spending on subsidies. The money spent might be used on other items of government expenditure, such as education.

ACTIVITY 1

CASE STUDY: SUPPLY AND SUBSIDIES

In 2016, the Sri Lankan government announced that it would provide a Rs37 000 million fertiliser subsidy to the nation's paddy farmers (that is, farmers growing rice). The Ministry of Agriculture said that paddy farmers would receive an annual payment of Rs25 000 for every two hectares of farmland used to grow rice. In addition, vegetable farmers growing vegetables such as green gram, cow pea, soya bean, Bombay onion and other crops, would also receive a fertiliser subsidy. The government said they would receive Rs10 000 per hectare.

Fertiliser subsidies have been an important feature of Sri Lankan agricultural policy since 2005. The subsidies have accounted for between 2 and 2.5 per cent of total government expenditure over the years. The subsidies have helped to increase paddy production, stabilise the price of rice and helped Sri Lanka to become self-sufficient in rice production.

▲ Paddy farmers in Sri Lanka

1 Why is the Sri Lankan government offering subsidies to paddy farmers?

2 Using a diagram, show the effect of these subsidies on the supply of rice in Sri Lanka.

GENERAL VOCABULARY

yield amount of something that is produced, such as crops or oil extracted

CHANGES IN TECHNOLOGY

Over a period of time, new technology becomes available that many businesses use in their production processes. New technology is more efficient and can therefore reduce the costs of production. For example, when the price of oil fell sharply in 2014, many oil companies began to use new technology to lower their costs. Some companies began to use lasers and other hi-tech data analysis equipment to help measure the potential **yield** from new oil wells. Others used new techniques to help them produce more oil from both old and new wells. Since the introduction of new technology will help to lower production costs, firms are likely to offer more for sale. As a result, there will be a shift in the supply curve to the right, from S_1 to S_3 in Figure 6.2.

NATURAL FACTORS

The production of some goods is influenced by natural factors, such as the weather, natural disasters, or the presence of pests (for example, rats or mice) or diseases. This is true of many agricultural products. For example, good growing conditions can help to improve crop yields, which will increase supply. This will shift the supply curve to the right – from S_1 to S_3 in Figure 6.2. In contrast, poor growing conditions can cause severe shortages and the quantity supplied may be cut. This will shift the supply curve to the left, from S_1 to S_2 in Figure 6.2.

In 2016, there was a shortage of squid due to the effect of El Niño. El Niño is a natural but irregular climatic event responsible for raising the temperature of the sea along the coast of Ecuador and Peru. It can have far reaching effects. For example, it reduces the amount of nutrients in the sea that are essential to support marine life. It can also cause a change in wind patterns across the Pacific Ocean, drought (long periods of unusually dry weather) in Australasia and heavy rain in South America. El Niño caused a shortfall in the supply of squid, which forced prices up from around US$1.80 to US$2.20 per prepared squid in the USA. Catch totals of squid for the 2015/16 season were 37 000 tonnes, only 35 per cent of the seasonal catch limit of 107 000 tonnes.

ACTIVITY 2

CASE STUDY: SUPPLY AND THE WEATHER

A number of countries in recent years have faced severe water shortages. For example, in 2015 people in São Paulo, Brazil, once known as the 'city of drizzle', started to dig through basement floors and car parks to gain access to underground water. In California, it was reported that the state was suffering its fourth year of drought in a row with January 2015 becoming the driest month ever recorded. In the Middle East, overconsumption and reduced rainfall have reduced large areas of the countryside to desert and devastated agricultural production.

Changing weather patterns and melting snow and ice caused by global warming is having a severe impact on the world's water systems. This means that around 1000 million people in the world do not have access to safe drinking water. The situation is also expected to get worse.

In the UAE, the government is taking measures to reduce the effects of drought. It is investing in desalination plants to convert seawater into drinking water and wastewater treatment units. It was reported that Crown Prince General Sheikh Mohammed bin Zayed al-Nahyan said, 'For us, water is [now] more important than oil.'

▲ Effects of drought

1 What are the causes of the water shortages outlined above? Give at least two reasons in your answer.

2 What measures are being taken by the UAE to increase the supply of water?

MULTIPLE-CHOICE QUESTIONS

▶ 1 Which of the following will shift a supply curve to the left?

A A decrease in indirect taxes

B Higher production costs

C The introduction of new technology in production

D A government subsidy

▶ 2 A bumper wheat harvest across the world resulting from favourable weather conditions will do what?

A Shift the supply curve for wheat to the right

B Reduce the quantity demanded for bread

C Increase the price of wheat

D Reduce the price of butter

ECONOMICS IN PRACTICE

CASE STUDY: HOUSING SUPPLY IN KENYA

Like many countries, Kenya suffers from a housing shortage. People moving into towns and cities from rural areas looking for a better life have created housing shortages in the cities of Nairobi, Mombasa, Kisumu and Eldoret. The high cost of traditional house-building methods has reduced the ability of the government and private constructors to build new houses. However, new technologies are now being used to help resolve the problem.

House builders are now using newly developed expanded polystyrene Styrofoam (EPS) panels and aluminium moulds in their construction plans. These building materials are superior to the use of traditional materials, such as concrete, stone and mortar. They are strong, lightweight, fireproof

GENERAL VOCABULARY

formwork temporary or permanent moulds into which concrete or similar materials are poured or injected

and long lasting. EPS also keeps properties warm effectively while aluminium **formwork** makes for better quality walls and can be painted easily. House builders also save money on other parts of the construction. This is because the lightweight technologies do not require builders to lay deep foundations. The amount of concrete used on walls and flooring is reduced. For example, EPS only requires a 5 cm layer of concrete on the walls and floors instead of the 20 cm needed when using conventional building methods.

Houses can also be constructed more quickly. This is because housing units are assembled from sections that are manufactured off-site. This reduces labour costs and improves business cash flow. Housing has also become more affordable. New housing units are now accessible to the lower middle-class and low-income earners.

CHAPTER QUESTIONS

1 How will the use of EPS panels and aluminium formwork improve the supply of housing in Kenya? Use a diagram in your explanation.

2 What are the benefits of the new technologies in house building to: **(a)** construction companies; and **(b)** Kenyan residents?

3 Describe one measure the Kenyan government could take to help increase the supply of houses in the country.

4 What is the possible effect on the supply of houses in Kenya if construction companies had to pay much higher wages to workers. Use a diagram in your explanation.

7 MARKET EQUILIBRIUM

LEARNING OBJECTIVES

- Understand how equilibrium price and quantity are determined
- Understand how shifts in the supply and demand curves affect equilibrium price
- Understand excess supply and excess demand
- Understand how market forces can remove excess supply and excess demand

GENERAL VOCABULARY

government intervention where the government becomes involved in a situation in order to help deal with a problem

GETTING STARTED

In any market (unless there is government intervention), the forces of supply and demand set the prices. The price consumers pay for goods and services is the price where supply and demand are exactly the same. Look at the example below.

CASE STUDY: PRICE, SUPPLY AND DEMAND

Table 7.1 shows the quantities of a product that will be offered for sale by producers, and purchased by consumers, at different prices (in a given year). For example, when the price is CNY 20, producers will offer 40 000 units for sale and consumers will want to buy 70 000 units. However, at this price demand is greater than supply. This is not the price that will be charged in the market.

PRICE (CNY)	5	10	15	20	25	30	35	40	45
QUANTITY SUPPLIED (1000S)	0	20	30	40	50	60	70	80	90
QUANTITY DEMANDED (1000S)	85	80	75	70	65	60	55	40	45

▲ **Table 7.1** The supply and demand schedule for a product

1 What price will be charged for the product in the above example?

2 How much is supplied and demanded when the price is CNY 40?

3 What will happen if producers set the price at CNY 40 for this product?

EQUILIBRIUM PRICE

SUBJECT VOCABULARY

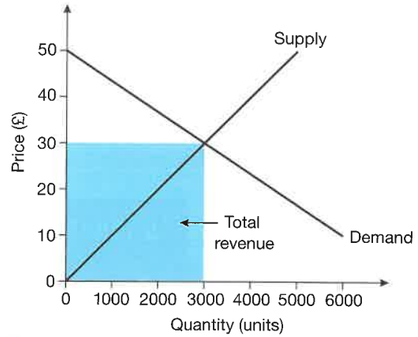
equilibrium price price at which supply and demand are equal

The way in which the forces of supply and demand determine prices in a market can be shown on a graph. Figure 7.1 shows the supply and demand curves for a product. In any market, the price is set where the wishes of consumers are matched exactly with those of producers. This price, called the **equilibrium price**, is where supply and demand are equal. In Figure 7.1, the equilibrium price is £30. At this price, consumers want to buy 3000 units and producers want to sell 3000. The wishes of buyers and sellers are matched. There is no other price where this happens. For example, if the price were £40, sellers would want to supply 4000 units. However, at this price, buyers only demand 1500 units because the price is too high.

SUBJECT VOCABULARY

market clearing price price at which the amount supplied in a market matches exactly the amount demanded

The equilibrium price is also known as the **market clearing price**. This is because the amount supplied in the market is completely bought up by consumers. There are no buyers left without goods and there are no sellers left with unsold stock. The market is cleared.



▲ **Figure 7.1** Market equilibrium

TOTAL REVENUE

SUBJECT VOCABULARY

total revenue amount of money generated from the sale of goods calculated by multiplying price by quantity

Figure 7.1 also shows the **total revenue** or total expenditure at the equilibrium price. Total revenue is the amount of money generated from the sale of output. It is calculated by multiplying price and quantity.

Total revenue = Price × Quantity or TR = P × Q

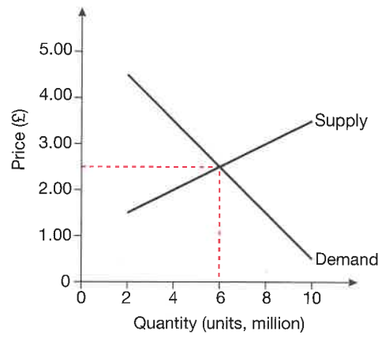
In this example, the shaded area in the diagram shows the total revenue. It is:

TR = P × Q = £30 × 3000 = £90 000

ACTIVITY 1

CASE STUDY: EQULIBRIUM PRICE

The market for woollen hats in a country is represented by the supply and demand curves shown in Figure 7.2.



▲ **Figure 7.2** Market for woollen hats in a country

▲ A typical woollen hat

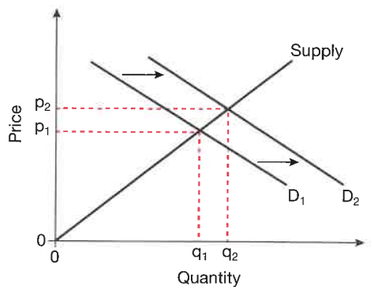
1 What is the equilibrium price and quantity?

2 What is meant by equilibrium price? Use this diagram in your explanation.

3 What is the value of total revenue at the equilibrium price?

SHIFTS IN DEMAND

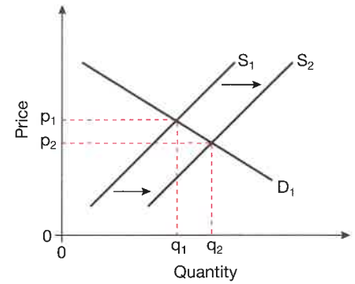
The equilibrium price will change if there are changes in supply or demand. For example, if demand increases, price will rise. In Figure 7.3, an increase in demand for the product is shown by a shift in the demand curve to the right, from D_1 to D_2. This changes the equilibrium price because supply and demand are now equal at a different point. The price is forced up from p_1 to p_2 and the amount sold in the market has gone up from q_1 to q_2. If demand were to fall, the opposite would happen. The demand curve would shift to the left and the price would fall. (This is not shown in the diagram.)



▲ **Figure 7.3** Effect of a shift in demand for a product

SHIFTS IN SUPPLY

A change in supply will also affect equilibrium price. For example, if supply increases, the price will fall. In Figure 7.4, an increase in supply for the product is shown by a shift in the supply curve to the right, from S_1 to S_2. This changes the equilibrium price because supply and demand are now equal at a different point. The price is forced down from p_1 to p_2 and the amount sold on the market has gone up from q_1 to q_2. If supply were to fall, the opposite would happen. The supply curve would shift to the left and price would rise. (This is not shown in the diagram.)



▲ **Figure 7.4** Effect of a shift in supply for a product

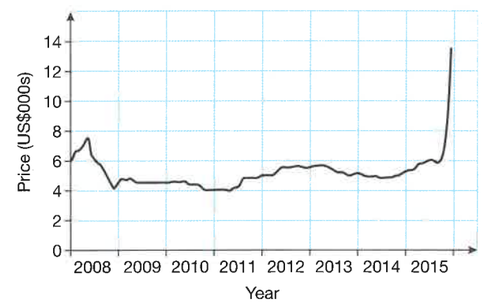
ACTIVITY 2

CASE STUDY: THE GLOBAL LITHIUM MARKET

In 2015, the global price of the metal lithium rose sharply, from US$6000 per tonne to about US$14 000 per tonne in just a few months. The quantity of lithium demanded has increased due to its growing use in car batteries for electric cars and devices such as smartphones, laptops and power tools.

At the moment, the main lithium-ion battery-makers are Samsung and LG of South Korea, Panasonic and Sony of Japan and ATL of Hong Kong. But China also has many battery-makers. The Chinese government is currently promoting the use of lithium-ion batteries and electric vehicles (EVs) – buses in particular. Sales of 'new energy' vehicles in China increased by almost three times in the first 10 months of 2015 compared with the same period in 2014. Tesla Motors, a US EV-maker, is starting large-scale battery production in Nevada. It hopes to supply lithium-ion batteries for 500 000 cars a year within five years. Much bigger carmakers are also increasing their demand for lithium. Toyota has begun using lithium-ion batteries instead of heavier nickel-metal hydride batteries in its Prius model.

Although the Earth contains plenty of lithium, extracting it can be expensive and time consuming. Consequently, the higher prices may not automatically increase the supply of lithium. Figure 7.5 shows the global lithium between 2008 and 2015.



▲ **Figure 7.5** Global lithium price, 2008–15

1 Calculate the percentage increase in the price of lithium in 2015 (when it rose from US$6000 to US$14 000).

2 Why has the price of lithium increased? Use a supply and demand diagram in your explanation.

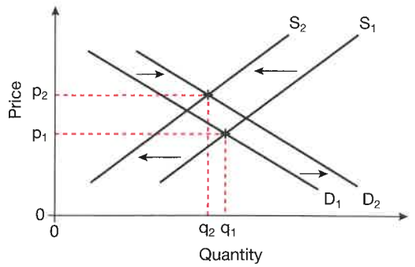
3 What impact will a government subsidy paid to lithium producers have in the market? Use a supply and demand diagram in your explanation.

SHIFTS IN SUPPLY AND DEMAND

It is possible for both supply and demand to change at the same time in a market. For example, demand might increase and supply decrease at the same time. This is shown in Figure 7.6. The original equilibrium price is p_1 where $S_1 = D_1$. The increase in demand is represented by a shift to the right from D_1 to D_2. The decrease in supply is represented by a shift to the left from S_1 to S_2. The new equilibrium price, where $D_2 = S_2$, is p_2. The price is higher and the amount sold in the market has fallen from q_1 to q_2.

It must be noted that it would be possible to redraw the diagram to show that, although the price will be higher, the quantity sold could also be higher. To do this, it would be necessary to make the increase in demand greater than the decrease in supply. In Figure 7.6, the increase in demand is smaller than the decrease in supply.

When there is a change in both supply and demand, it is not possible to show exactly what will happen to price and quantity unless it is known precisely by how much supply and demand shift.



▲ **Figure 7.6** Shift in supply and demand for a product

EXCESS DEMAND

SUBJECT VOCABULARY

excess demand where demand is greater than supply and there are shortages in the market

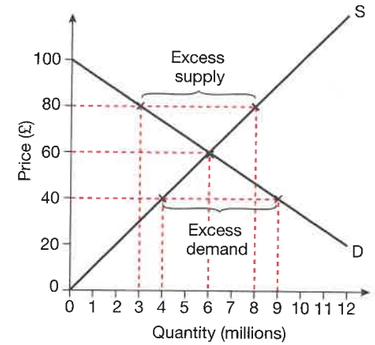
If the price charged in a market is below the equilibrium price, supply and demand will not be equal. In Figure 7.7, the equilibrium price is £60. At this price, the quantity supplied and the quantity demanded are both 6 million units. However, if the price is set lower, say at £40, the market is not in equilibrium. At this lower price, the quantity demanded is 9 million units and the quantity supplied is only 4 million units. There is **excess demand**, which means there is a shortage of goods in the market. In this case, there is a shortage of 5 million units (9 million – 4 million) at the price of £40.

EXCESS SUPPLY

SUBJECT VOCABULARY

excess supply where supply is greater than demand and there are unsold goods in the market

If the price charged is set above the equilibrium price, again, supply and demand are not equal. In Figure 7.7, if the price is set higher, say at £80, the quantity demanded is only 3 million units while the quantity supplied is 8 million units. This time there is **excess supply**. This means that goods would remain unsold. In this case, the quantity of goods that would be unsold in the market if the price were set at £80 is 5 million units (8 million – 3 million).



▲ **Figure 7.7** Excess demand and excess supply

REMOVING EXCESS SUPPLY AND EXCESS DEMAND

If there is disequilibrium in a market, producers can restore equilibrium by changing the price or adjusting supply. For example, if there is excess demand in the market, producers could raise the price. In Figure 7.7, excess demand existed when the price was £40. If producers raised the price to £60, the market would clear since both the quantity supplied and the quantity demanded would be 6 million units. Alternatively, producers could employ more resources and increase supply to 9 million units. If this action were taken, equilibrium would be restored at a price of £40.

If there is excess supply in the market, producers could lower their prices. In Figure 7.7, excess supply existed when the price was £80. At this price, producers wanted to sell 8 million units but consumers only wanted to buy 3 million units. If producers lowered their prices to £60, the excess supply would be removed since both the quantity supplied and the quantity demanded would be 6 million units at this price. Alternatively, producers could store the excess supply and release it onto the market at a later date. However, this might not be practical because storing goods costs money and some stocks, such as fresh food, need to be consumed quickly.

DID YOU KNOW?

The private taxi firm, Uber, uses something called 'surge pricing' to deal with excess demand. During very busy periods, such as New Year's Eve or at the end of a major event when thousands of people are looking for a cab home, the fares charged by Uber drivers can rise very sharply: perhaps by two or three times or even more. The purpose of this is to remove excess demand. The higher prices discourage some consumers from ordering a taxi, so demand falls. However, the higher fares also act as an incentive for dormant drivers (those who have gone home perhaps) to get back on the road, so supply increases. When the supply and demand for taxis is more evenly matched, the fares charged are restored to 'normal' levels.

MULTIPLE-CHOICE QUESTIONS

▶ 1 Which of the following statements is true if the price is set below the equilibrium price in a market?

A Supply and demand will be equal

B There will be excess supply in the market

C There will be excess demand in the market

D Supply will be greater than demand in the market

▶ 2 If demand for a product falls and the supply increases which of the following will happen?

A Price will rise

B Price will fall

C Total revenue will rise

D There will be excess supply

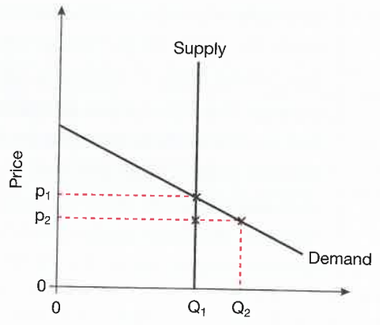
ECONOMICS IN PRACTICE

DID YOU KNOW?

The 'black market' is an illegal market. The black market for FA Cup Final tickets means that 'touts' (illegal traders) sell tickets above their face value.

CASE STUDY: THE MARKET FOR FA CUP FINAL TICKETS AT WEMBLEY

Every year, the FA Cup Final is played at Wembley Stadium, London, the UK. Unfortunately, there are never enough tickets for all the supporters who would like to go. There is always a shortage. The English Football Association is aware of this but says it would prefer to keep the tickets 'reasonably priced' so that genuine football supporters can afford to go to the match, rather than only the wealthy or those using corporate hospitality. Evidence of ticket shortages is presented by the price of tickets on 'unofficial markets'. For example, sellers on the Edinburgh-based website FootballTicketPad were charging supporters up to £21 230 for a pair of £120 category 1 tickets, including a £1930 booking fee. This was for the final between Arsenal and Aston Villa in 2015. Figure 7.8 illustrates what is happening in the market. Note that the supply curve is vertical because supply is fixed: the capacity of Wembley Stadium is 90 000.



▲ Figure 7.8 Market for FA Cup Final tickets at Wembley Stadium

▲ Aston Villa supporters at Wembley Stadium for the 2015 FA Cup Final

CHAPTER QUESTIONS

1 What is the equilibrium price of an FA Cup Final ticket according to the diagram in Figure 7.8?

2 Assuming that the FA charges p_2 for tickets, discuss why it does not charge the equilibrium price.

3 If the average price of a ticket were £60, what would be the value of total revenue?

4 If the FA could double the capacity of Wembley Stadium, what might be the effect on ticket prices?

5 To what extent is there excess demand in this market?

8 PRICE ELASTICITY OF DEMAND

LEARNING OBJECTIVES

- Understand how to define and calculate price elasticity of demand (PED)
- Understand how to use diagrams to show price elastic and price inelastic demand
- Understand how to interpret numerical values for PED
- Understand the factors that influence PED
- Understand the relationship between PED and total revenue following price changes

GETTING STARTED

Chapter 3 explained that a price change will result in a movement along the demand curve. For example, if a price falls, there will be an increase in the quantity demanded. However, price changes can bring about different responses in the quantity demanded. The demand for some goods changes more than others when prices change. Look at the examples below.

CASE STUDY: ELECTRICITY

In August 2016, the Patel family received their electricity bill for the previous 3 months. It had increased by 13 per cent to US$164. The reason for the increase was a price rise by the supplier, not because they used more electricity. Mr Patel mentioned the 'bill' to the rest of the family and suggested that everyone should try to 'economise' when using electrical appliances. Everyone agreed, but Mr Patel knew that asking his family to reduce their electricity use was probably not going to make much difference to the size of the next bill. Indeed, when the next bill arrived in November, he was proved right. The bill had gone down but only slightly to US$159.


Your electricity bill

Your service plan: Standard Rat

Charges for electri

Cost of electricity you

Customer account charge
Delivery service charge
Environmental benefits surch
Federal environmental impro
System benefits charge
supply adjustment

▲ An electricity bill

CASE STUDY: CHINESE TAKE AWAY

Bob and Anne Jones enjoy Chinese food very much. Every Saturday night, they order a large Chinese meal from the China Garden, their regular supplier. However, one day in September 2016, they received a leaflet advertising a new take away service by China Dragon. It was offering a 20 per cent discount on take away orders. Bob said it was an attractive offer and suggested that they try the new supplier that coming weekend. Anne agreed saying that 'The food can't be that different can it?' When the food arrived, Anne was proved right and they saved over US$10.

▲ A Chinese meal

1 What happened to the Patel's demand for electricity after the 13 per cent price increase?

2 Describe one possible reason for your answer to **(1)**.

3 Do you think demand for Chinese take away food is sensitive to price changes?

WHAT IS PRICE ELASTICITY OF DEMAND?

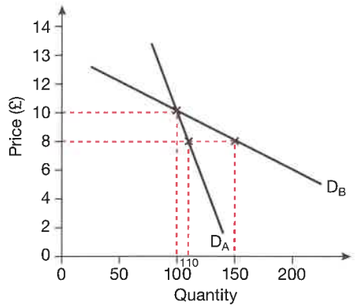
GENERAL VOCABULARY

responsive reactive

SUBJECT VOCABULARY

price elasticity of demand the responsiveness of demand to a change in price

For some goods, a price change will result in a large change in the quantity demanded and for others a smaller change. It all depends on the type of good. Figure 8.1 helps to illustrate this. Two demand curves are shown with different slopes representing two different products: A and B. The demand curve for product A is steep and the demand curve for product B is flatter. At a price of £10, the quantity demanded for both products is 100 units. However, when the price falls to £8, the quantity demanded increases by different amounts for each product. Demand for product A only increases slightly to 110 units. But for product B, demand increases a lot more, to 150 units. Demand for product B is more **responsive** to the price change. This relationship that exists between the responsiveness of demand to a change in price is called **price elasticity of demand**.



▲ **Figure 8.1** Effect of a price change on the demand for two different products: A and B

PRICE INELASTIC DEMAND

SUBJECT VOCABULARY

inelastic demand change in price results in a proportionately smaller change in the quantity demanded (alternative term: price inelastic)

In Figure 8.1, for product A, the price change resulted in a small change in demand. The change in demand was not as big as the change in price. The price fell by 20 per cent but demand only increased by 10 per cent (from 100 units to 110 units). When this happens, economists say that the good has **inelastic demand** or that demand is price inelastic. A minority of goods have inelastic demand. Electricity is one, used in 'Getting started' above.

PRICE ELASTIC DEMAND

SUBJECT VOCABULARY

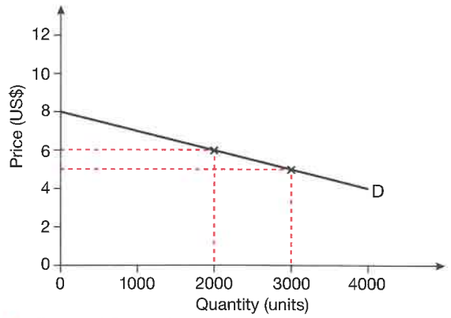
elastic demand change in price results in a greater change in the quantity demanded (alternative term: price elastic)

In Figure 8.1, for product B, the price change resulted in a *significant* change in the quantity demanded. This means the change in demand was greater than the change in price. The price fell by 20 per cent (from £10 to £8) while the quantity demanded increased by 50 per cent (from 100 units to 150 units). When this happens, economists say that the good has **elastic demand** or that demand is price elastic. Goods with elastic demand are more *responsive* to price changes.

ACTIVITY 1

CASE STUDY: ELASTIC DEMAND

Figure 8.2 shows a demand curve for a product. The price currently charged is US$5. At this price, 3000 units are purchased.



▲ **Figure 8.2** Demand curve for a product

1 If the price increases from US$5 to US$6, what happens to the amount demanded?

2 What is meant by elastic demand? Use this case as an example in your explanation.

CALCULATING PRICE ELASTICITY OF DEMAND

It is possible to calculate the price elasticity of demand (PED) of a good using the formula shown below.

$$\text{Price elasticity of demand} = \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in price}}$$

For product A in Figure 8.1 when price falls from £10 to £8, the PED would be:

$$= \frac{10\%}{-20\%} = -0.5$$

For product B in Figure 8.1, when the price falls from £10 to £8, the PED would be:

$$= \frac{50\%}{-20\%} = -2.5$$

There is a minus number in the calculation because the price fell by 20 per cent (from £10 to £8). Since the price change was negative, a minus sign must be shown. Whenever price or quantity demanded falls in the calculation, it is proper, and may be helpful, to show the minus sign.

GENERAL VOCABULARY

fraction part of a whole number in mathematics, such as ½ or ¾.
decimal fraction (= a number less than 1) that is shown as a full stop followed by the number of tenths, hundredths etc. – the numbers 0.5, 0.175 and 0.661 are decimals
infinity abstract concept describing something without any bound or larger than any number

INTERPRETING THE NUMERICAL VALUE OF ELASTICITY

SUBJECT VOCABULARY

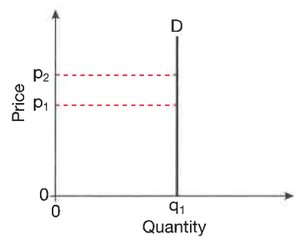
perfectly elastic demand where PED = ∞ (an increase in price will result in zero demand)
perfectly inelastic demand where PED = 0 (a change in price will result in no change in the quantity demanded)
unitary elasticity where PED = –1 (the responsiveness of demand is proportionately equal to the change in price)

The values calculated above show whether demand is price elastic or price inelastic.

- If the value of PED is less than 1 (that is, a **fraction** or a **decimal**), demand is said to be inelastic. Demand for product A in Figure 8.1 is price inelastic because price elasticity is –0.5.
- If the value of PED is greater than 1, demand is said to be elastic. Demand for product B in Figure 8.1 is price elastic because price elasticity is –2.5.
- If the value of PED is *zero*, demand is said to be **perfectly inelastic.**
- If PED is equal to **infinity** (∞), demand is said to be **perfectly elastic.**
- If PED is exactly -1, demand is said to have **unitary elasticity.**

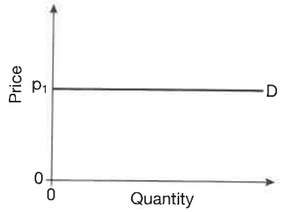
PRICE ELASTICITY AND THE SLOPE OF THE DEMAND CURVE

The demand curves for the two products in Figure 8.1 have different slopes. For product A, the demand curve is steep. This is common for goods that have inelastic demand like product A. For product B, the demand curve is much flatter. Goods that have elastic demand, like product B, tend to have relatively flatter demand curves. There are also some *special cases where PED is either 0, infinite or equal to –1.* These are shown and explained briefly below.



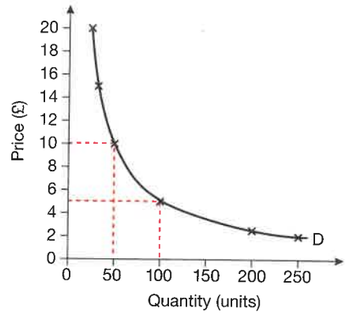
▲ **Figure 8.3** Perfectly inelastic demand where PED = 0

The vertical demand curve in Figure 8.3 shows the demand curve for a good that has perfectly inelastic demand. This means that a price change will not affect the quantity demanded. For example, if the price increases from p_1 to p_2, there is no change in the quantity demanded, it remains at q_1. The value of price elasticity in this case is zero.



▲ **Figure 8.4** Perfectly elastic demand where PED = ∞

The horizontal demand curve in Figure 8.4 shows a demand curve for a good that has perfectly elastic demand. This means that buyers purchase as much as they possibly can at price p_1. However, if the price rises above p_1, the quantity demanded will fall to zero. The value of price elasticity in this case is infinite.



▲ **Figure 8.5** Demand curve with unitary elasticity

The demand curve in Figure 8.5 shows the shape of a demand curve where PED = –1. This is a special case in economics and when there is a price change the effect on total revenue is unique. The demand curve for a product that has unitary elasticity is called a rectangular hyperbola (a mathematical term). When the price is £10, the quantity demanded is 50 units and total revenue is £500 (£10 × 50). Alternatively, when the price is £5, the quantity demanded is 100 units and total revenue is still £500 (5 × 100). When demand has unitary elasticity the total revenue will be exactly the same at every price. Therefore, a price change will result in no change in total revenue. The relationship between PED and total revenue following a price change is discussed in detail below.

In Figure 8.1 the demand curve labeled D_A shows a relatively inelastic demand curve. In contrast, the demand curve D_B is a relatively elastic.

ACTIVITY 2

CASE STUDY: THE HEPTON TENNIS CLUB

The Hepton Tennis Club appeared likely to close in 2015 due to a decline in membership. After an emergency committee meeting in January 2016, it was decided to slash the membership fees from US$500 p.a. to US$300 p.a. for 2016. As a result, membership grew from 400 to 600.

▲ Hepton Tennis Club

1 Calculate the PED for Hepton Tennis Club membership.

2 What evidence is there in the case to suggest that demand is elastic in this example?

FACTORS AFFECTING PRICE ELASTICITY OF DEMAND

The value of PED for a good depends on a number of factors.

AVAILABILITY OF SUBSTITUTES

Goods that have lots of close substitutes will tend to have elastic demand. This is because consumers can switch easily from one product to another. For example, if the price of strawberry jam rises, consumers can switch to other types of jam such as raspberry, blackcurrant, plum, apricot or loganberry. Consequently, the demand for strawberry jam is likely to be elastic. In contrast, if there are few or no real substitutes for a product, demand will be inelastic.

DEGREE OF NECESSITY

Goods considered 'essential' by consumers will have inelastic demand. This is because if the prices of essentials, such as food and fuel rise, consumers cannot reduce the amounts they purchase significantly – they are necessities. In contrast, goods that are not essential – for example, luxury products, such as boats, sports cars and holidays – will have more elastic demand. If a product is habit forming, it may become a necessity and therefore it will have inelastic demand.

PROPORTION OF INCOME SPENT ON A PRODUCT

It may be argued that if consumers spend a large proportion of their income on a product, demand will be more elastic. For example, most consumers buying a flat screen television for £400 will be using up a significant proportion of their monthly income. Such items are one-off or infrequent purchases and so consumers may be prepared to wait a few months to see if the price drops.

Consequently, price changes in such high value items result in significant changes in the quantity demanded. In contrast, demand for products that cost very little in relation to income – for example, stamps or pencils – are more price inelastic. Often these lower price items are more of a necessity, a consumer cannot post a letter without buying a stamp.

TIME

In the short term, goods have inelastic demand because it can often take time for consumers to find substitutes when the price rises, for example. In the long term, demand is more elastic because consumers can search for alternatives and are more prepared to switch.

THE RELATIONSHIP BETWEEN PED AND TOTAL REVENUE

When there is a price change, there will be a change in the quantity demanded and therefore a change in total revenue. The value of price elasticity shows whether revenue will rise or fall following a price change. Consider the example shown in Figure 8.1. The demand for product A is price inelastic and the demand for product B is price elastic.

At the price of £10, the quantity demanded for both products is 100 units. However, when the price falls, the quantity demanded for product A rises to 110 units while the quantity demanded for B rises to 150 units. The different effects on total revenue for each product are outlined below.

For product A, when the price falls from £10 to £8 there is an increase in the quantity demanded from 100 units to 110 units. This means that total revenue will change. This is shown by the following calculations.

When P = £10 TR = £10 × 100 = £1000

When P = £8 TR = £8 × 110 = £880

The price reduction from £10 to £8 has resulted in a £120 fall in total revenue (£1000 – £880). This shows that when demand is inelastic, a price cut will cause total revenue to fall. The opposite will happen if the price is increased. If demand is inelastic, a price increase will cause total revenue to rise.

For product B, when the price falls from £10 to £8, the quantity demanded rises from 100 units to 150 units. The effect on total revenue is calculated below.

When P = £10 TR = £10 × 100 = £1000

When P = £8 TR = £8 × 150 = £1200

This time, for product B, the price reduction has resulted in a £200 increase in revenue from £1000 to £1200. This shows that when demand is elastic, a price cut will result in an increase in total revenue. The opposite will happen if the price is increased. If demand is elastic, a price increase will cause total revenue to fall. The effect of price changes on total revenue for different price elasticities is summarised in Table 8.1.

PRICE ELASTICITY	VALUE OF ELASTICITY	PRICE CHANGE	EFFECT ON TR
Inelastic	< 1	Decrease	Fall
Inelastic	< 1	Increase	Rise
Elastic	> 1	Decrease	Rise
Elastic	> 1	Increase	Fall

▲ **Table 8.1** The effect of price changes on total revenue when demand is elastic and inelastic

Finally, the importance of elasticity to businesses and the government is discussed in more detail at the end of Chapter 10 (pages 63–69).

MULTIPLE-CHOICE QUESTIONS

▶ **1** What is the PED for a perfectly inelastic demand curve?

A –1

B 0

C –0.1

D Infinity

▶ **2** If the value of PED for a product is –0.87, an increase in price will result in which of the following?

A An increase in demand for that product

B A decrease in demand for a substitute product

C A rise in total revenue

D A fall in total revenue

ECONOMICS IN PRACTICE

CASE STUDY: NG CHOCOLATES

The market for chocolate in China has seen some significant growth in recent years. Hershey, the US confectionery company, said that Chinese chocolate sales in 2014 were worth US$2700 million and were expected to grow to US$4300 million by 2019. This represents a growth of about 60 per cent. However, it is reckoned that European suppliers dominate 70 per cent of China's chocolate market. Chinese brands have struggled to make a big impact in the market. This is because many Chinese consumers have worries about the safety of some Chinese food products. However, one small producer, Ng Chocolates, is determined to benefit from growth in the market.

▲ Handmade chocolates

Ng Chocolates produces handmade chocolates that are sold in decorative boxes to retailers in Shanghai. Ng currently charges retailers CNY 20 per box and in 2015 sold 12 000 boxes. However, many of their customers reckoned that if Ng reduced the price to CNY 16, demand would probably rise significantly. Ng carried out some research and estimated that demand would rise to 16 000 boxes p.a. if they lowered the price to CNY 16.

CHAPTER QUESTIONS

1 What is meant by PED?

2 Calculate the PED for Ng Chocolates and state whether demand for Ng Chocolates is elastic or inelastic.

3 Calculate the change in total revenue for Ng Chocolates if Ng lowers the price to CNY 16.

4 Should Ng lower the price of their chocolates to CNY 16? Explain your answer.

5 Discuss the main factor in this case that influences the value of PED.

9 PRICE ELASTICITY OF SUPPLY

LEARNING OBJECTIVES

- Understand how to define and calculate price elasticity of supply (PES)
- Understand how to use diagrams to show price elastic and price inelastic supply
- Understand how to interpret numerical values for PES
- Understand the factors that influence PES
- Understand how the PES for manufactured and primary products are likely to be different

GETTING STARTED

Chapter 8 showed that after a price change, the change in quantity demanded will vary in quantity depending on the type of good. The same can also be said of supply. When the price rises, for example, the quantity supplied will increase sharply for some goods but hardly at all for others.

CASE STUDY: HOUSING

Many countries around the world have housing shortages. Growing populations may cause housing shortages, particularly in areas where immigration is high (internally from rural areas and externally from other countries). However, it is not just rising demand that causes problems. The supply of new houses is often slow to increase, particularly affordable houses. For example, in the UK the National Housing Federation estimated 974 000 homes were needed between 2011 and 2014. However, information provided by 326 regional councils showed that only 457 490 were built. One report suggested that there were ten buyers for every house on the market in parts of the UK. One of the problems with the supply of new houses is that houses take several months to construct. Finding suitable land and obtaining planning permission for house building can take significantly longer and cause long delays in the UK. The average house price rose from £154 452 in March 2009 to £218 255 in January 2017.

▲ Construction of new houses can be slow

SUBJECT VOCABULARY

fast-moving consumer good (FMCG) goods, especially food, that sell very quickly and in large amounts

CASE STUDY: POTATO CRISPS

Potato crisps are a **fast-moving consumer good (FMCG)**. They are marketed in many countries in the world and produced in huge quantities. For example, Lays, one of the biggest crisp manufacturers worldwide, produces and sells millions of packets every year. They are mass produced in a number of factories around the world.

▲ Potato crisps, a FMCG

1 Why is the supply of houses slow to increase in the UK?

2 Describe the problems caused by a lack of supply in the UK housing market.

3 Do you think potato crisp producers could increase output at short notice? Explain your answer.

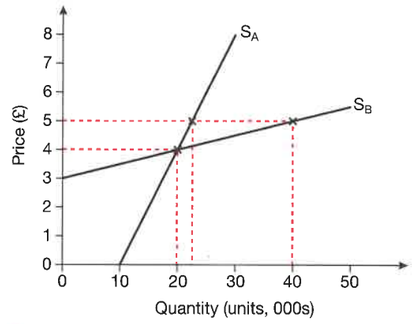
4 How would holding large stocks of potato crisps affect producers' ability to increase supply at short notice?

WHAT IS PRICE ELASTICITY OF SUPPLY?

SUBJECT VOCABULARY

price elasticity of supply responsiveness of supply to a change in price

When the price of a good changes, the amount supplied will also change. However, the size of the change in supply is not likely to be the same for all products. For example, Figure 9.1 shows the supply curves for two different products: A and B. At a price of £4 the quantity supplied for both products is 20 000 units. When the price increases by 25 per cent to £5, the quantity of product A supplied rises by 12.5 per cent from 20 000 units to 22 500 units. The percentage increase in quantity supplied is not as great as the percentage increase in price. However, for product B, the 25 per cent price increase results in a 100 per cent increase in the quantity supplied, from 20 000 units to 40 000 units. The supply of product B is much more responsive to the price increase than product A. This relationship between the responsiveness of supply and a change in price is called **price elasticity of supply** (PES).



▲ Figure 9.1 Effect of a price change in the supply of two different products: A and B

INELASTIC SUPPLY

SUBJECT VOCABULARY

inelastic supply change in price results in a proportionately smaller change in the quantity supplied (alternative term: price inelastic)

In Figure 9.1, for product A, the change in price resulted in a smaller percentage change in quantity supplied. The 25 per cent price increase resulted in a smaller percentage increase in the quantity supplied of just 12.5 per cent. When this happens, economists say that product A has **inelastic supply**. The supply of houses in 'Getting started' is very price inelastic. Also, many agricultural goods have price inelastic supply because farmers cannot increase supply at short notice. It takes time to grow farm produce.

ELASTIC SUPPLY

SUBJECT VOCABULARY

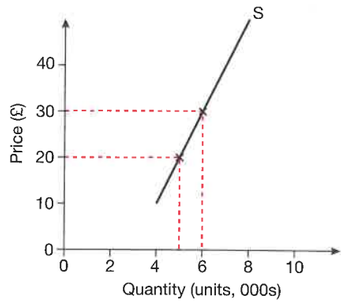
elastic supply change in price results in a proportionately greater change in the quantity supplied (alternative term: price elastic)

In Figure 9.1, for product B, the change in price resulted in a larger percentage change in quantity supplied. The 25 per cent price increase resulted in a 100 per cent increase in quantity supplied. When this happens, economists say that product B has **elastic supply**. Provided firms have spare capacity, the supply of many manufactured goods, like crisps in 'Getting started', tends to be elastic.

ACTIVITY 1

CASE STUDY: INELASTIC SUPPLY

Figure 9.2 shows the supply curve for a product. The current price is £20 and the amount supplied is 5000 units.



▲ **Figure 9.2** Supply curve of a product

1 What happens to the quantity supplied when the price increases from £20 to £30?

2 What is meant by inelastic supply? Use this case as an example in your explanation.

CALCULATING THE VALUE OF PRICE ELASTICITY OF SUPPLY

Like price elasticity of demand, PES can be presented numerically. The formula for calculating PES is given below.

$$\text{Price elasticity of supply} = \frac{\text{Percentage change in quantity supplied}}{\text{Percentage change in price}}$$

For product A in Figure 9.1 PES would be:

$$= \frac{12.5\%}{25\%} = 0.5$$

For product B in Figure 9.1 PES would be:

$$= \frac{100\%}{25\%} = 4$$

INTERPRETING THE VALUE OF PRICE ELASTICITY OF SUPPLY

SUBJECT VOCABULARY

perfectly elastic (supply) where PES = ∞. (producers will supply an infinite amount at the given price)
perfectly inelastic (supply) where PES = 0 (the quantity supplied is fixed and cannot be adjusted whatever the price)
unitary elasticity (with regard to supply) where PES = 1 (a change in price will be matched by an identical change in the quantity supplied)

The values calculated above show whether supply is price elastic or price inelastic.

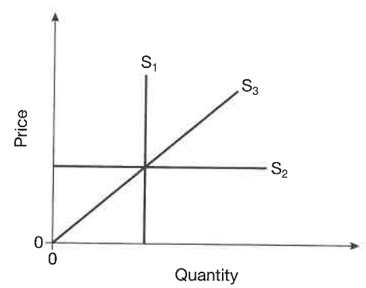
- If the value of PES is less than 1 (that is, a fraction or a decimal), supply is said to be *inelastic*. Product A in Figure 9.1 has inelastic supply because price elasticity is 0.5.
- If the value of PES is greater than 1, supply is said to be *elastic*. The supply of product B in Figure 9.1 is price elastic because price elasticity is 4.
- If PES = 0, supply is said to be **perfectly inelastic**.
- If PES = ∞, supply is **perfectly elastic**.
- If PES = 1, supply has **unitary elasticity**.

PRICE ELASTICITY AND THE SLOPE OF THE SUPPLY CURVE

The supply curves in Figure 9.1 have different slopes. For product A, the slope is steep and, generally, this shows that supply is price inelastic. In contrast, the supply curve for product B is flatter. This generally shows that supply is price elastic. However, whether or not supply is elastic or inelastic really depends on whether the supply curve cuts the price axis or the quantity axis. Straight-line supply curves that cut the price axis are elastic and those that cut the quantity axis are inelastic.

There are also some *special cases*. They are shown Figure 9.3.

- A perfectly inelastic supply curve, S_1 in Figure 9.3, is vertical. This means that a price change will not affect the quantity supplied at all. The quantity supplied is fixed and the value of PES in this case is zero. An example of fixed supply was shown in Chapter 5. Here the supply of tickets to a tennis match was fixed at 15 000 because the capacity of the stadium was fixed.
- A perfectly elastic supply curve, S_2 in Figure 9.3, is horizontal. This means that producers are prepared to supply any amount at a given price. The value of price elasticity in this case is infinite.
- Any straight-line supply curve that passes through the origin, S_3 in Figure 9.3, has a price elasticity equal to 1. This means that the percentage change in price is always the same as the percentage change in the quantity supplied.



▲ **Figure 9.3** Supply curves – special cases

In Figure 9.1 the supply curve labeled S_A shows a relatively inelastic supply curve. In contrast, the supply curve S_B is relatively elastic.

ACTIVITY 2

CASE STUDY: AMPAT HOLDINGS

Ampat Holdings manufactures a range of replica sports shirts. They are produced in a large factory in Chittagong, Bangladesh. The shirts are sold to retailers and **wholesalers** all over the sub-continent. In 2016, the price of these shirts fell from BDT 800 to BDT 640. As a result, Ampat Holdings reduced supply from 1.6 million to 1.2 million shirts.

▲ Replica sports shirts are very big business in many parts of the world

1 Calculate the PES for the replica shirts in this case.

2 What is meant by elastic supply? Use this case as an example in your explanation.

SUBJECT VOCABULARY

wholesalers person or company that sells goods in large quantities to businesses, rather than to the general public

FACTORS INFLUENCING PES

The supply of some goods is not very responsive to price changes, whereas the supply of others is. Generally, PES is influenced by whether producers can increase supply easily, or not. If producers can increase the quantity supplied easily, supply will tend to be elastic. However, if there are barriers that prevent producers from increasing the quantity supplied, then supply will be more inelastic.

SUBJECT VOCABULARY

raw materials substances used to make a product

FACTORS OF PRODUCTION

If producers have easy access to the factors of production such as labour, **raw materials**, energy, tools and machinery, they will be able to boost production if necessary. This means that supply will be elastic. For example, if there is an increase in the price of training shoes, producers should be able boost production and increase the quantity supplied fairly easily. This is because there is no reason why the resources needed to produce training shoes should not be available. Consequently, the supply of training shoes should be elastic.

Supply will also be more elastic if production factors are mobile. If production factors such as labour and materials can be switched to other uses easily, supply will be elastic. However, if specialised resources are needed for production, such as skilled labour, such resources are less mobile (it may take time to train workers in new skills) and supply will be more inelastic.

AVAILABILITY OF STOCKS

Producers that can hold stocks of goods can respond quickly to price changes so supply will be elastic. However, where it is impossible or expensive to hold stocks, supply will be inelastic. The supply of some perishable goods, such as fruit and vegetables, will be inelastic because they cannot be stored for very long.

SPARE CAPACITY

Supply will be more elastic if producers have spare capacity. With spare capacity, producers have the ability to produce more with their resources. In contrast, if firms are running at full capacity supply will be inelastic. This is because output cannot be increased at short notice. Given more time, though, even firms running at full capacity can increase supply. This is because they can build a bigger factory or buy more machinery, for example.

TIME

The speed with which producers can react to price changes in the market can affect PES. Generally, all producers can adjust output if they are given time. As a result, the more time producers have to react to price changes, the more elastic supply will be. Where it is not possible to increase supply quickly, due to production limitations, supply will be inelastic. For example, it will take nearly a year to increase the supply of many agricultural products in many countries because growing seasons are so long. This is discussed in more detail below.

PES FOR MANUFACTURED AND PRIMARY PRODUCTS

A number of factors can influence the speed at which producers can react. Goods that can be produced quickly are likely to have elastic supply. Modern manufacturers can be quite flexible and can adjust production levels at short notice. For example, a car engine manufacturer could increase production quickly by stepping up the rate of output in the factory. This might involve asking employees to work overtime and keeping the factory open for longer. More raw materials and components will be required but this should not be a problem. Whereas, the producers of many primary products, such as agricultural goods, are not able to react quickly to price changes. For example, a strawberry producer cannot increase supply until more strawberries can be grown. This might not be possible until next year. As a result supply is inelastic.

The supply of other primary goods, such as gold and diamonds, is likely to be inelastic. This is because there are few sources around the world. The production of such goods is also expensive and time consuming. As a result, supply is not very responsive to price changes. It is likely to be very inelastic.

MULTIPLE-CHOICE QUESTIONS

▶ 1 What is the value of price elasticity of supply for a straight-line supply curve that passes through the origin?

A 1

B –1

C 0

D Infinite

▶ 2 The price of a product rises by 12 per cent. As a result, producers increase the amount supplied by 18 per cent. What is PES?

A 12

B 0

C 1.5

D 0.67

ECONOMICS IN PRACTICE

CASE STUDY: THE GLOBAL SUPPLY OF COCONUTS

There has been a sharp increase in the global demand for coconuts (and products made from coconuts) in recent years. For example, in supermarkets, coconut milk is being sold with ring pull opening devices that allow it to be drunk like a soft drink. Also, reports have suggested that coconut sugar is a much healthier alternative to traditional sugar and celebrities have been observed consuming coconut products. For example, actress Gwyneth Paltrow claimed that she uses coconut oil as a mouthwash for oral health and whitening her teeth. The rising demand has resulted in higher prices for coconuts. Figure 9.4 shows the price of coconut oil between 2015 and 2016.

▲ Figure 9.4 Price of coconut oil, September 2015–September 2016

Unfortunately, suppliers have not been able to react to the rising prices by increasing the quantity supplied. Globally, the supply of coconuts is falling. One reason for this is linked to the age of the industry. Most coconut trees are grown in India and Southeast Asia and their trees are simply past their best. Today's coconut trees were planted more than 50 years ago, according to Hiroyuki Konoma, a representative for a United Nations Food and Argriculture Organization. That puts them more than 20 years past their peak production time. Also, the Philippines is still recovering from the damage caused by typhoon Haiyan, which wiped out about 15 per cent of its trees in 2013. It will take at least another year for new trees to bear fruit. Finally, Indonesia, the world's top producer of coconuts, has failed to replace old low-yielding coconut trees. This means that estates are less productive. The government is also encouraging more production of corn and soya. It is reckoned that production growth is currently 8 per cent behind demand growth.

▲ Many of the world's coconut trees are past their best

CHAPTER QUESTIONS

1 What is meant by price elasticity of supply?
2 Why is the supply of coconuts likely to be inelastic?
3 Describe why the price of coconuts has risen sharply recently.
4 How might the ability to store coconuts for long periods of time affect PES?

10 INCOME ELASTICITY

LEARNING OBJECTIVES

- Understand how to define and calculate income elasticity of demand
- Understand how to interpret numerical values of income elasticity of demand
- Understand the significance of price and income elasticities of demand to businesses and the government with regard to the imposition of taxes and subsidies and changes in income

GETTING STARTED

After price, income is one of the most important factors that can affect the demand for products. For most products, a change in income will result in a change in the quantity demanded. However, the change in demand may vary according to the nature of the product.

CASE STUDY: NEW CARS

In September 2016, Marion Wright was promoted at the market research agency for which she worked. The promotion came with an attractive increase in salary. It rose from £49 000 to £63 000 p.a. As a result, she planned to pay off some debt and buy a new car. She bought a new VW Golf GTI.

▲ VW Golf GTI

CASE STUDY: MILK

The Spencer family consumes 9 litres of milk per week. In 2016, Charlie Spencer was made redundant from his £65 000 p.a. sales job at an insurance company. Charlie quickly found employment as a driving instructor but only earned £31 000 p.a. However, the family's consumption of milk remained much the same at around 9 litres per week.

1 Which is most responsive to changes in income: demand for cars or demand for milk?

2 What reason can you give for your answer to (1)?

3 In pairs, draw up a list of products that might respond in the same way as the demand for new cars to changes in income. Present your findings to the rest of the class outlining the reasons for your choice.

WHAT IS INCOME ELASTICITY OF DEMAND?

SUBJECT VOCABULARY

income elasticity of demand responsiveness of demand to a change in income

Income elasticity of demand measures the responsiveness of demand to a change in income. Consider two products: A and B. If incomes rise by 10 per cent and the quantity demanded for product A rises by 25 per cent, demand for product A is very responsive to the change in income. Economists would say that demand for product A is income elastic. In contrast, if the quantity demanded for product B only rose by 5 per cent, economists would say that demand for product B is income inelastic. This is because the percentage increase in quantity demanded is less than the percentage increase in income.

CALCULATING INCOME ELASTICITY OF DEMAND

It is possible to calculate the income elasticity of demand for a good using the formula below:

$$\text{Income elasticity of demand} = \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in income}}$$

For product A in the example above, income elasticity of demand would be:

$$= \frac{25\%}{10\%} = 2.5$$

For product B in the example above, income elasticity of demand would be:

$$= \frac{5\%}{10\%} = 0.5$$

INTERPRETING THE VALUE OF INCOME ELASTICITY OF DEMAND

The values calculated above show whether demand is income elastic or income inelastic. They also show something about the nature of the goods in relation to how demand changes in response to changes in income.

NECESSITIES

Necessities are 'basic goods' that consumers need to buy. Examples include food in general, electricity and water. Demand for these types of goods will be income inelastic. Another example of a good that is income inelastic is petrol. If the value of income elasticity of demand is between +1 and –1, demand is said to be income inelastic. Demand for product B is income elastic because income elasticity is 0.5.

SUBJECT VOCABULARY

discretionary expenditure non-essential spending or spending that is not automatic

LUXURY GOODS

Luxuries are goods that consumers like to buy if they can afford them. Spending on these types of goods is called **discretionary expenditure** – this means that it is optional. Demand for these goods is income elastic. Examples include air travel, satellite television, designer clothing, and many goods and services in the leisure and tourism industry. It is also argued that the demand for imported goods is income elastic. If the value of income elasticity is greater than 1 or less than –1, demand is said to be income elastic. Demand for product A is income elastic because income elasticity is 2.5.

NORMAL GOODS

The value of income elasticity can also show whether goods are normal or inferior (see Chapter 4, pages 23–28). For normal goods, where, for example, an increase in income results in an increase in the quantity demanded, the value of income elasticity will be positive. Products A and B above are both normal goods because income elasticity is positive in both cases.

INFERIOR GOODS

For inferior goods, where, for example, an increase in income results in a decrease in the quantity demanded, the value of income elasticity will be *negative*. This shows that the quantity demanded and income have an inverse relationship. Examples of inferior goods might include those bought at 'Pound' or 'Dollar' shops, where everything sold is either £1 or US$1.

DID YOU KNOW?

As developing nations become better off, their demand for imports rises significantly.

ACTIVITY 1

CASE STUDY: CALCULATING INCOME ELASTICITY OF DEMAND

In 2016, average incomes in a country rose from €30 000 to €32 400. This caused a change in the quantity demanded for two particular products: X and Y. Total annual quantity demanded for product X rose from 24 million units to 30 million units. However, the quantity demanded for product Y fell from 10 million units to 9 million units.

1 Calculate the income elasticity of demand for products X and Y.

2 Are the two products (X and Y) income elastic or income inelastic?

3 Are the two products X and Y normal or inferior? Give an explanation in your answer.

PRICE ELASTICITY AND BUSINESSES

Price elasticity can provide useful information for businesses. For example, it can help firms predict the effect of a price change on total revenue. When a firm changes its price, there will be a change in the quantity demanded and therefore a change in total revenue. It would be useful for the firm to know what effect a particular price change might have on total revenue. The value of price elasticity can help here. Look at the example in the box.

EFFECT ON TOTAL REVENUE OF A PRICE INCREASE WHEN DEMAND IS INELASTIC

If a business has inelastic demand for one of its products, it knows that a price increase will increase revenue. For example, if price elasticity of demand (PED) = –0.8 and current demand is 2 million units, a 5% price increase from US$20 to US$21 will increase revenue. The following calculations prove this.

The change in demand is give in by:

$$\text{PED} = \frac{\%\text{ change in demand}}{\%\text{ change in price}}$$

Therefore:

$$-0.8 = \frac{\%\text{ change in demand}}{5\%}$$

$-0.8 \times 5\% = \%$ change in demand

-4% = change in demand

Therefore the new level of demand following the price increase will be:

= Previous demand –4%

= 2 million – (4% × 2 million)

= 2 million – 80 000

= 1 920 000

The change in total revenue is given by:

When price is US$20 TR = US$20 × 2 million = US$40 million

When price is US$21 TR = US$21 × 1.92 million = US$40.32 million

Therefore the price increase has resulted in a rise in total revenue of US$320 000.

The relationship between price elasticity and the effect of price changes on total revenue is fully summarised in Chapter 8 (pages 48–55).

To conclude, if firms know the value of price elasticity for their products, they can predict the effect on total revenue of any price changes they make. They will know, for example, that if demand for their product is elastic, a price reduction will increase total revenue. This might help to explain why many rail companies charge much-reduced prices for 'off-peak' rail travel. By lowering the price, more travellers are attracted and revenue rises. Demand during the 'off-peak' period must be price elastic.

INCOME ELASTICITY AND BUSINESSES

Many firms will be interested in income elasticity of demand. This is because changes in income in the economy may affect demand for their products. If firms know the income elasticity of demand for their products, they can respond to predicted changes in incomes.

Some manufacturers have flexible resources and can switch from the production of one good to another. For example, a manufacturer of plastic products may be able to switch from the production of plastic buckets to plastic toys. A predicted rise in incomes may encourage such a firm to make more plastic toys if demand for them was income elastic.

Also, firms that produce goods that are income elastic will expect changes in income to affect demand. So, if incomes are expected to rise in the future they can plan ahead, making sure they have enough capacity, for example. In contrast, if a recession were expected, such firms would plan to cut output. This is because incomes are likely to fall during a recession. In 2008, as a result of the global recession, car manufacturers started to cut their output. However, producers of inferior goods might start to build capacity if they believed a recession was coming. When incomes fall, the quantity demanded for inferior goods, such as those sold by low cost supermarkets, starts to rise.

PRICE ELASTICITY AND THE GOVERNMENT

SUBJECT VOCABULARY

excise duty government tax on certain goods, such as cigarettes, alcoholic drinks and petrol that are sold in the country

valued-added tax (VAT) tax on some goods and services – businesses pay value-added tax on most goods and services they buy and if they are VAT registered, charge value-added tax on the goods and services they sell

INDIRECT TAXES

Governments often raise revenue by imposing indirect taxes such as **value-added tax (VAT)** and **excise duty** on products. It is important for governments to select products that have inelastic demand. This is because consumers will avoid heavily taxed products if demand for them is elastic. Therefore, governments target goods that are either necessities or have few substitutes. However, most governments do not target goods, such as food and water, which are essential to human survival. Popular targets for governments when imposing taxes are cigarettes, alcohol and petrol. Demand for these products is very price inelastic. Look at the example in Activity 2.

SUBSIDIES

Governments might also consider PED when granting a subsidy to producers. The effect of a subsidy is to move the supply curve to the right (that is, to increase supply). If the subsidy is designed to help the poor by making the good cheaper, it is important that demand is price inelastic. If demand is not price inelastic, an increase in supply will only reduce the price slightly. This might explain why subsidies are often given to farmers. Since demand for many food products is inelastic, a subsidy to farmers will help to keep food prices lower.

ACTIVITY 2

CASE STUDY: PETROL TAX AND PED

One of the products chosen by many governments for indirect taxes is petrol. In December 2016, the average price of a litre of petrol in the UK was around £1.13. However, 57.95 pence of this is fuel duty that goes to the government. In addition, VAT is charged on petrol at 20 per cent. UK drivers pay some of the highest prices for petrol in the world due to taxation.

▲ Petrol filling station

1 How much fuel duty will the government collect from a driver who buys 50 litres of petrol per week?

2 If it costs a driver a total of £60 to fill up a car with petrol, how much of this is paid in VAT?

3 Comment on the amount of tax taken by the government from the sale of petrol.

4 Why do governments choose products like petrol to impose heavy duties on?

11 THE MIXED ECONOMY

LEARNING OBJECTIVES

- Understand the difference between the public and private sectors
- Understand how the ownership, control and aims of private and public sector organisations differ
- Understand what is meant by a mixed economy and how the problems of what to produce, how to produce and for whom to produce are resolved
- Understand market failure and why government intervention may be needed
- Understand the role played by the private and public sectors in the production of goods and services including public goods
- Understand the relative importance of the public and private sectors in different economies

GETTING STARTED

Goods and services are produced to meet the needs and wants of consumers. However, the way in which different countries organise the choice, production and distribution of goods will vary. For example, in some countries most goods and services are produced by privately owned businesses. In others, the state might take more responsibility. In most countries it is common for both the state and private businesses to provide goods and services. Look at the two sets of images below.

CASE STUDY: PRIVATE AND PUBLIC GOODS

▲ Figure 11.1 Groceries and consumer durables

▲ Figure 11.2 Water and policing

1 Who provides the goods and services shown in Figures 11.1 and 11.2?
2 Why do you think there are two sets of providers? Explain your answer.
3 In groups, discuss who provides most of the goods and services in your country.

THE PUBLIC AND PRIVATE SECTORS

SUBJECT VOCABULARY

economy system that attempts to solve the basic economic problem
private sector provision of goods and services by businesses that are owned by individuals or groups of individuals
public sector government organisations that provide goods and services in the economy

An **economy** is a system that attempts to solve the basic economic problem: decision makers in an economy have to decide what to produce, how to produce and for whom to produce. In any economy, goods and services may be provided by the **public sector** or the **private sector**. In the private sector, individuals or groups of individuals are free to set up businesses and supply goods and services to anyone who wants to buy them. In the public sector, a range of organisations, such as government departments, public corporations and other agencies, provide services that are often supplied inefficiently by the private sector. Examples include health care, education and defence. Most public sector services are provided free by the state and are paid for from tax revenue or borrowing.

PRIVATE SECTOR ORGANISATIONS

GENERAL VOCABULARY

durables products that are intended to have a life of more than 3 years from when they are made or bought
groceries food and other goods that are sold by a grocer or a supermarket
professions careers that need a high level of education and training in order to work in them, traditionally including medicine, law, teaching

SUBJECT VOCABULARY

shareholders people or organisations that owns shares in a company

OWNERSHIP AND CONTROL

Goods and services in this sector are provided by businesses that are owned and controlled by individuals or groups of individuals. In many countries, most consumer goods, such as **groceries** and consumer **durables** like those shown in 'Getting started', are provided by the private sector. Private sector enterprises can vary in size and type of ownership. They may be:

- **sole traders**: where the business is owned and controlled by one person (these are often retailers, and tradesmen such as plumbers, electricians or taxi drivers)
- **partnerships**: where the business is owned and controlled by two or more people working together. They are often found in the **professions** and may operate as accountants, solicitors, estate agents and architects, for example
- **companies**: where **shareholders** own the business. They elect a board of directors to run the business on their behalf. These vary in size and can be found in a number of different business sectors, such as manufacturing, construction, public transport, media, financial services, oil and gas, pharmaceuticals and engineering.

GENERAL VOCABULARY

provision the act of providing something that someone needs

In most countries, private sector businesses are relatively small and include only sole traders, partnerships and small companies. A minority of businesses are large but contribute enormously to the **provision** of goods and services. Some are multinationals, which means they have factories and other operations all over the world.

AIMS

In the private sector, the aims of firms are likely to be determined by their owners. The main aim of most owners is to make a profit. However, a number of other aims need to be considered.

- **Survival:** When a firm is first set up, many owners will not expect to make a profit immediately. It takes time to establish a business and new business owners often encounter unexpected difficulties. As a result, the initial aim of a firm might be simply to survive. Survival is also important when trading conditions are difficult. In 2008 and 2009, because of global financial difficulties and recession, many firms began to struggle due to falling sales and difficulties in raising finance. During this time, many of them were happy just to survive.
- **Profit maximisation:** The owners of most firms are in business to make a profit. Economic theory assumes that firms will aim to maximise profits (see Chapter 2, pages 12–17). This is where a firm will make as much profit as it possibly can in a period of time. Companies pay their shareholders a share of the profit through a **dividend**. Many of these shareholders want dividends to be as high as possible and therefore profit maximisation is an important objective. However, some firms are content to make just enough profit to keep the owners satisfied. In a small firm, this might mean that an owner does not want to take on the extra responsibility of growth and is content to make a satisfactory profit. In a large company, it might mean that the managers who run the firm make enough profit to satisfy shareholders.
- **Growth:** Many firms aim to grow because bigger businesses enjoy a number of advantages. For example, large firms can reduce average costs by exploiting economies of scale (see Chapter 17, pages 124–131). Growth also means that profits will be higher in the future. Growth will also benefit other stakeholders such as workers, managers and directors. For example, their jobs will be more secure. However, one of the problems with growth is that profit is often used to finance it. Shareholders may not like this because dividends may be lower.
- **Social responsibility:** An increasing number of firms aim to be good corporate citizens. This means they aim to please a wider range of stakeholders. Owing to pressure from the government, the media, environmentalists, local residents, consumers, workers and other interested parties, some firms are aiming to become more socially responsible.

SUBJECT VOCABULARY

dividend part of a company's profit that is divided among the people with shares in the company

PUBLIC SECTOR ORGANISATIONS

OWNERSHIP AND CONTROL

Public sector organisations are owned and controlled by local or central government. Some of the main examples are outlined below.

- **Central government departments**, such as, in the UK, the Ministry of Defence, which is responsible for the armed forces, the Department of Health, which is responsible for the National Health Service, and the Department for Transport, which aims to manage the provision of a reliable and safe transport system, play a significant role. These departments are usually controlled by teams or boards led by a government minister.

GENERAL VOCABULARY

sue to make a legal claim against someone, especially for an amount of money, because you have been harmed in some way

SUBJECT VOCABULARY

assets things or resources belonging to an individual or a business that has value or the power to earn money

liabilities amount of debt that is owed or must be paid

- **Public corporations or state-owned enterprises (SOEs)** are owned by the government. This means that the government selects the people who run the organisation, often a board of directors. The government is also responsible for its key policies. Public corporations are usually incorporated businesses, which means they have a separate legal identity. They can **sue**, be sued and enter into contracts under their own name. Public corporations are state-funded, which means that the government provides their capital. The money comes mainly from taxation. All the **assets** and **liabilities** of public corporations belong to the state. However, they can also borrow money and are free to re-use revenue from the sale of any goods or services. The nature and number of public corporations around the world can vary in each country. For example, although a great number of public corporations around the world exist to provide a public service, there are many that operate commercially with the aim of making a profit – in the Middle East, Russia and India, for example.
- **Local authority services**, delivered by local councils, include recreation, such as libraries, sports halls and swimming pools; emergency services, such as the provision of fire and police services; and housing, which includes the provision of council housing and facilities for the homeless. Councillors who are elected by residents in the local community run local authorities.
- **Other public sector organisations**, such as the BBC, the Post Office, the Bank of England and Network Rail (all in the UK) are run by a trust or a board led by an experienced expert selected by a government body, or the Queen, following government advice.

AIMS

Public sector organisations have different aims from those in the private sector. Without aims, they are likely to deliver poor-quality services and waste resources. Each organisation in the public sector will have its own specific aims depending on the services they provide. However, there will be some common themes.

GENERAL VOCABULARY

stakeholders individuals or groups who are considered to be an important part of an organisation or of society because they have responsibility within it and receive advantages from it

- **Improving the quality of services:** Public sector organisations generally aim to improve the standard of their services. Performance indicators may be used to monitor quality. For example, in the railway industry, targets might be set for reliability and punctuality. In the education system, league tables may be published to show student success rates in exams at individual schools. In general, performance indicators might focus on reliability, professionalism, levels of customer service and speed of service.
- **Minimising costs:** Government resources are scarce and it is important that waste is minimised. In the past, public sector organisations have been criticised for being inefficient. As a result, the government is regularly looking for ways to cut costs in all areas.
- **Allow for social costs and benefits:** Since their aim is not to make a profit, public sector organisations are better placed to take into account the needs of a wide range of **stakeholders**. As a result, when making decisions they can take into account externalities (see Chapter 13, pages 89–96).
- **Profit: in some countries, the government owns a number of large businesses that aim to make a profit.** In the UAE, Emirates Airline and Dubai World, an investment company that manages and supervises a range of businesses and projects for the Government of Dubai, are examples.

DID YOU KNOW?

Some large, public corporations are part owned by the private sector. For example, the 'Indian' government owns about 60 per cent of the State Bank of India and private individuals, financial institutions, foreign institutions and other private owners own the rest.

ACTIVITY 1

CASE STUDY: UGANDAN WATER SUPPLY

Water and sewerage services in Uganda, like many other countries in the world, are supplied by a government-owned organisation. The Ugandan government owns 100 per cent of The Ugandan National and Water Sewerage Corporation (NWSC). Its mission is: 'To sustainably and equitably provide cost effective quality water and sewerage services to the delight of all stakeholders while conserving the environment.' A board of directors, which is accountable to a government minister, runs the organisation.

NWSC has enjoyed much success in recent years. Its revenue increased from UGX 21 000 million to UGX 220 000 million between 1998 and 2016. NWSC is active in 162 towns, an increase from 27 towns in 2013. NWSC increased its number of account holders from 58 260 in 1998 to 450 000 in 2016. NWSC employs over 2800 people and has also enjoyed improvements in productivity. For example, in 1998, it took 36 staff to make 1000 connections; in 2016, this was reduced to six staff per 1000 connections.

NWSC is aiming to supply everyone with clean safe water within a 200 metre distance of all towns and urban centres (supply in these areas is currently 78 per cent). It links up with customers and local communities through NWSC Water Communication Clubs. On the NWSC website, it states that 'The customer is the reason we exist. We do everything to the delight of our customer.' According to annual surveys carried out by NWSC, 90 per cent of its customers are satisfied with the service provided.

▲ Bringing water to the people

1 Who owns and runs the Ugandan National and Water Sewerage Corporation (NWSC)?

2 What are the aims of NWSC?

3 Why do you think the government gets involved in business ownership?

TYPES OF ECONOMY

Different economies have different approaches to providing goods and services. The type of economy used to choose, produce and distribute goods varies according to the role played by the public sector. There are three types of economy. Historically, a country's type of economy was shaped by its political ideology: capitalist countries adopting a market economy and communist countries a command economy.

GENERAL VOCABULARY

monetary system of money in a particular country or the world as a whole, and the way that it is controlled by governments and central banks

- **A market or free enterprise economy** relies least on the public sector for the provision of goods and services. The vast majority are provided by private businesses. Market forces, that is, supply and demand, determine the allocation of resources. The role of the public sector is limited to providing a legal system, a **monetary** system, key state services like defence and policing and ensuring that competition exists between businesses. The most economically free countries in the world are often considered to be Singapore, Australia and the USA.
- A **command** or **planned economy** relies entirely on the public sector to choose, produce and distribute goods. All resources in planned economies belong to the government and the state is responsible for planning, organising and coordinating the whole production process. Goods are distributed from state-owned shops where they are sold to consumers at prices set by the state. There are few, if any, examples of planned economies in the world today. Cuba, Myanmar and North Korea are the closest examples.
- **A mixed economy** (see below) relies on *both* the public sector and the private sector to provide goods and services. Currently, the majority of countries have mixed economies.

THE MIXED ECONOMY

SUBJECT VOCABULARY

market failure where markets lead to inefficiency

mixed economy economy where goods and services are provided by both the private and the public sectors

In reality, no economy is entirely planned or free market. Most countries in the world have a **mixed economy** and the decisions what to produce, how to produce and for whom to produce are made by both consumers and the state.

WHAT TO PRODUCE?

A mixed economy recognises that some goods, such as consumer goods, are best provided by the private sector. Goods such as food, clothes, leisure and entertainment, and household services are best chosen by consumers. The market system ensures that businesses produce the consumer goods that people want. Other goods, such as education, street lighting, roads and protection, are more likely to be provided by the state. The public sector tends to provide goods that the private sector might fail to provide in sufficient quantities. This is often caused by **market failure**.

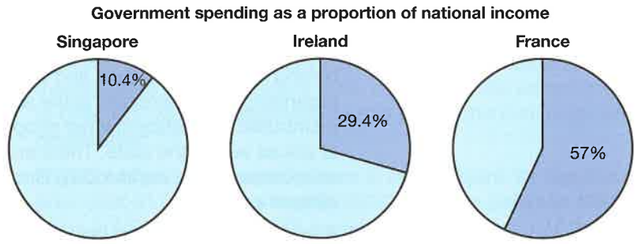
HOW TO PRODUCE?

In the private sector, individuals or groups of individuals who set up businesses with the aim of making a profit provide goods. Competition exists between these firms and this provides choice and variety for consumers. To meet consumers' needs, firms will use production methods that help them to maximise quality and minimise costs. Public sector services will be provided by the government organisations outlined above. They will decide how these services should be provided and attempt to supply them efficiently. However, some public sector goods are produced by the private sector. For example, governments are usually responsible for the provision of roads and motorways, however, they may pay private sector businesses to carry out the actual work of construction and maintenance.

FOR WHOM TO PRODUCE?

The goods produced in the private sector are sold to anyone who can afford them. The market system is responsible for their allocation. In contrast, most public sector goods are provided free to everyone and paid for from taxes. In some mixed economies, the state also makes provision for people who cannot work due to illness or disability, for example. A system of financial benefits exists to make sure that people have enough money to survive.

Finally, different governments around the world will decide on the 'degree of mixing' in this type of economy. Some countries, like France, allow the government to play a greater role in the economy. For example, government expenditure in France is around 57 per cent of its national income. In such countries, social provision is greater but taxes are higher. Figure 11.3 shows the proportion of national income spent by the government in three different countries – Singapore, Ireland and France.



▲ **Figure 11.3** General government spending as a proportion of national income in Singapore, Ireland and France

MARKET FAILURE AND THE NEED FOR GOVERNMENT INTERVENTION

Although markets may have a reputation for using resources efficiently, because of market failure, resources are sometimes wasted. Market failure is where markets lead to inefficiency. It can occur for a number of reasons.

EXTERNALITIES

Sometimes firms do not take into account all the costs of production. For example, a firm producing chemicals may pollute the atmosphere because it has not taken measures to clean its waste. This imposes a cost on society, such as poor air quality. Any damage done to people or things outside the business such as ill health, as a result of this activity is called an external cost (see Chapter 13, pages 89–96). The market system has resulted in the chemical firm failing to meet any cost imposed on those affected by the pollution.

GENERAL VOCABULARY

dominant more powerful, important, or noticeable than other people or things

LACK OF COMPETITION

A market may fail if there is no competition and it becomes dominated by one or a small number of firms. When this happens, the **dominant** firm(s) may exploit consumers, by charging higher prices and limiting choice, for example.

SUBJECT VOCABULARY

merit goods goods that are under-provided by the private sector
public goods goods that are not likely to be provided by the private sector

MISSING MARKETS

Some goods and services, called **public goods**, are not provided by the private sector. Examples include national defence, policing and street lighting. The nature of public goods is discussed below (see pages 78–79). Other goods, called **merit goods**, such as education and health care are underprovided by the private sector. This is because they are so expensive that many people would not be able to afford them.

LACK OF INFORMATION

Markets will only be efficient if there is a free flow of information to all buyers and sellers. Consumers need to know everything about the nature, price and quality of all products. Businesses also need information about the resources and production techniques used to make a product, for example. However, this is not always possible. A lack of information may result in the wrong goods being purchased or produced, or the wrong prices being paid.

FACTOR IMMOBILITY

For markets to work efficiently, factors of production need to be *mobile*. This means that factors, such as labour and capital, must be able to move freely from one use to another. In practice, though, factors can be quite immobile. For example, a specialised laser machine designed specifically to cut sheet glass may not have any further use if the glass-making factory has to close down. As a result, the machine may have to be destroyed, which is wasteful.

Owing to the threat of market failure, the government often has to intervene in markets. Some examples are given below.

- Businesses that impose externalities may be heavily **regulated** or fined for polluting the atmosphere, for example.
- The government can use **legislation** to prevent businesses from dominating markets. For example, it can investigate whether a **merger** is in the interests of consumers and block them if they are not.
- State money can be used to provide public goods and merit goods. Since these goods and services are important to the well-being of everyone, the public sector can provide them free of charge.
- To overcome the problem of poor information, the government can help by passing legislation forcing firms to provide more information about products. However, in recent years the internet has improved the flow of information about products.
- The government may be able to help to make some factors more mobile, such as retraining workers when their previous jobs become redundant. But it can do little to avoid the waste of the machine in the above example.

GENERAL VOCABULARY

legislation law or set of laws
merger occasion when two or more companies or organisations join together to form a larger company
regulated industry that is closely controlled by the government

KEY FACTS: LACK OF COMPETITION

- In many countries, most people have to buy their water supply from one provider. They have no choice and have to pay the prices charged by the water company.
- The role of the government in this case is to monitor and control the prices charged by dominant firms or pass legislation to ensure that competition exists.

ROLE OF THE PRIVATE AND PUBLIC SECTORS IN THE PRODUCTION OF GOODS AND SERVICES

In most countries, the private sector is responsible for providing the everyday goods and services bought by people. This would include food, clothes, consumer durables, such as electrical goods and cars, personal and household services, financial services, entertainment and holidays. It would also include raw materials, components, machinery and commercial services, such as cleaning maintenance, IT and insurance, which businesses buy. Very few governments would get involved in the provision of these goods and services.

However, the public sector tends to provide public services. In particular, it focuses on the provision of public and merit goods. Such goods would not be provided in sufficient quantities by the private sector. For example, public goods would not be provided at all. This is because it is virtually impossible for private firms to charge users for their consumption. The reason for this is because public goods have two particular characteristics.

- **Non-excludability:** This means that once a public good is provided in the market, any individual consumer cannot be prevented or excluded from its consumption. Also, an individual consumer cannot refuse consumption of the good even if they wanted to. For example, it is argued that the protection given by the police service is a public good. An individual cannot be excluded from the protection provided in a community by the police force. Neither can an individual living in that community refuse to benefit from that protection.
- **Non-rivalry:** This means that consumption of a public good by one individual cannot reduce the amount available to others. For example, someone benefitting from the protection provided by the police does not prevent others benefitting from the same protection.

SUBJECT VOCABULARY

free rider individual who enjoys the benefit of a good but allows others to pay for it

Governments have to provide public goods because of market failure. If the private sector were to provide public goods there would be a **free rider** problem. Since it is impossible to exclude the consumption of a public good by an individual consumer, there is little reason for people to pay for it. A free rider is someone who enjoys the benefit of a good but allows others to pay for it. Public goods like defence, policing, the judiciary system, prisons and street lighting will significantly increase the standard of living in a country. Consequently, the government takes responsibility for their provision – assuming there is enough money to pay for them.

ACTIVITY 2

CASE STUDY: PUBLIC GOODS IN BANGLADESH

Bangladesh has serious annual flooding problems. The country lies in the Ganges Delta where many tributaries flow into the River Ganges on its route to the Bay of Bengal. Flooding usually occurs during the monsoon season between June and September. To help protect large numbers of the population, flood defences are built in the country.

▲ An example of a flood defence in Bangladesh

1 Why are flood defence systems classified as a public good?

2 Why do governments need to intervene when there is market failure?

THE PUBLIC SECTOR AND PRIVATE SECTOR IN DIFFERENT ECONOMIES

The balance between public sector activity and private sector activity will vary in different countries. In some countries, governments play a key role in the provision of key public services, such as education, health care, security services and infrastructure. However, at the same time, they also own significant stakes in large commercial organisations, such as banks, airlines, water companies, energy provision and transport. Some examples of countries where the public sector plays a dominant role are China, Hungary, Russia, Sweden and the UAE.

In contrast, some governments believe that a greater quantity of goods and services should be provided by the private sector. In countries such as the USA, Singapore and Australia, the state has much less involvement in the provision of goods and services. Figure 11.3 shows that different countries vary their commitment to government involvement in the provision of public services. For example, France plays a much bigger role in the provision of goods and services than Singapore.

SUBJECT VOCABULARY

privatisation act of selling a company or activity controlled by the government to private investors

Finally, in recent years, many economies have become more market orientated. In many countries, the number of public corporations has been reduced. For example, in some countries, industries such as water provision, electricity generation and distribution and telecommunications have been transferred to the private sector. Many Eastern European countries have also transferred a lot of government-run businesses into the private sector following the break-up of the Soviet Union. The process of transferring public sector resources to the private sector is called **privatisation** and is discussed in Chapter 12 (pages 81–88).

MULTIPLE-CHOICE QUESTIONS

▶ 1 Which of the following goods or services is most likely to be provided by the public sector in a mixed economy?

A Motorways

B Cars

C Books

D Cinemas

▶ 2 Which of the following is an aim of a public sector organisation?

A Profit maximisation

B Survival

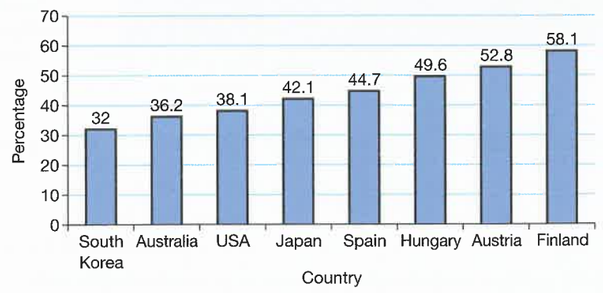
C Providing a public service

D Growth

ECONOMICS IN PRACTICE

CASE STUDY: MIXED ECONOMIES

General government spending, as a percentage of GDP, provides an indication of the size of government involvement in the provision of goods and services. The variation in this indicator shows the variety of countries' approaches to delivering public goods and services and providing social protection. Figure 11.4 shows the government expenditure as a percentage of national income for a selection of countries. All of the countries have mixed economies.



▲ Figure 11.4 Government expenditure as a percentage of GDP

South West Water's operating profit increased dramatically from £107 million to £204.7 million over the same time period.

Water privatisation also results in job losses as companies minimise costs. The privatisation is also difficult to reverse. This is because once water companies have been sold to the private sector, the cost of buying them back is too high. Plus, many of the water companies are (or are part of) giant multinationals, which have a great deal of power.

Those in favour water privatisation argue that efficiency and the quality of service will improve. This is because businesses in the private sector have to perform well or they will not survive. They also say that the private sector will provide far more investment in water infrastructure than the public sector. For example, since privatisation, UK water companies have invested nearly £120 000 million in water infrastructure, such as new pipes, treatment plants and sewers. Private companies are more capable than governments of raising funds to finance investment. This is because private companies specialise in one area whereas governments have many different areas of investment to consider.

Finally, another benefit of water privatisation is the money generated for the government. Not only does the government get the money from the sale of water companies, but it also receives taxes every year on the profits made by the water companies once they start operating in the private sector.

▲ A water treatment plant

CHAPTER QUESTIONS

1 Calculate the percentage increase in water charges for the four water companies shown in Table 12.1.

2 Describe one reason why a government might benefit from the privatisation of water supplies.

3 Why might privatisation result in better efficiency?

4 What impact might privatisation have on businesses? Give two impacts in your analysis.

5 Assess the impact of water privatisation on consumers.

13 EXTERNALITIES

LEARNING OBJECTIVES

- Understand how external costs are defined with examples
- Understand how external benefits are defined with examples
- Understand the definitions and formulae for social costs and social benefits
- Understand the government policies used to deal with externalities

SUBJECT VOCABULARY

spillover effects effect that one situation or problem has on another situation

GENERAL VOCABULARY

emissions gas or other substance that is discharged into the air.

GETTING STARTED

Economic activity, such as building a new factory or transporting a ship full of oil from Qatar to Japan, will affect those inside the business. However, economic activity can also have an impact on those outside. There are **spillover effects**, which can result from both production and consumption. Look at the examples below.

CASE STUDY: PRODUCTION

In 2016, a European waste management company was fined €1.4 million for breaking **emissions** limits in an urban area. For 2 years, residents had complained to the local authorities about the 'dreadful smell' coming from the waste disposal plant located near to the area. The plant was using an industrial incinerator to burn refuse that it collected from households. A local television broadcaster interviewed one resident. She said, 'The situation has become intolerable. There are times when the smell penetrates through the structure of the house. If you go outside into the garden sometimes your eyes sting from the fumes.' A spokesman from the company said that measures would now be taken to reduce emissions to comply with EU standards.

CASE STUDY: CONSUMPTION

Every year from 1 December, children and many adults, look forward to passing the house belonging to Mr and Mrs Salomonsson. This is the day that the couple turn on their Christmas lights. They spend 2 weeks decorating their house in Gothenburg, Sweden, with around SEK 5000 of new lights. People from many miles away make a special journey to ensure that they pass the attractive display of lights.

▲ Christmas lights

1 Describe one possible reason why a business might continue to impact negatively on those outside the business as a result of its production activities.

2 How might the consumption of a good by one person bring benefits to third parties? Use this case as an example in your explanation.

3 In pairs, make a list of examples of business activity that has an impact on third parties. Present your ideas to the rest of the class, explaining the various impacts.

EXTERNAL COSTS OF PRODUCTION

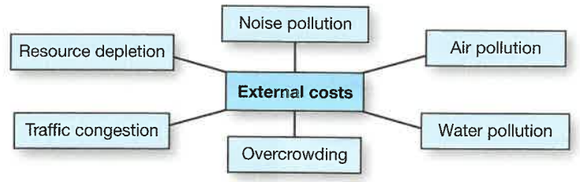
GENERAL VOCABULARY

third parties someone who is not one of the two main people or organisations involved in an agreement or legal case

SUBJECT VOCABULARY

external costs negative spillover effects of consumption or production – they affect third parties in a negative way

Some production activity results in costs that are incurred by **third parties**. Third parties are people outside the business. They are neither owners nor employees – they may be individuals, such as local residents, organisations and property owners, or a resource, such as a river. These **external costs** are the spillover effects of production. In 'Getting started', the effect of the emissions discharged by the waste management company was an example of an external cost. Residents living close to the waste disposal plant felt this cost. Some other examples of external costs are shown in Figure 13.1.



▲ **Figure 13.1** Examples of external costs

ACTIVITY 1

CASE STUDY: EXTERNALITIES IN FACTORY FARMING

Factory farming involves raising a large number of farm animals in a restricted space. The farm operates as a factory attempting to produce the highest output at the lowest cost by relying on economies of scale, modern machinery and biotechnology. However, this approach requires medicines and chemicals, such as antibiotics and pesticides, to control the spread of disease caused by crowded living conditions. Factory farming has resulted in farms that are easier to run with lower labour costs and more output. However, it has also resulted in:

- serious animal welfare problems
- an increased number of antibiotic-resistant bacteria due to the excessive use of antibiotics
- air quality problems
- the pollution of rivers, streams, and coastal waters with animal waste.

▲ An example of factory farming

1 What is meant by external costs? Use the example in this case in your explanation.

2 Discuss how the growth in the popularity of free-range chickens might affect the size of the external costs in this case.

EXTERNAL BENEFITS OF CONSUMPTION

SUBJECT VOCABULARY

external benefits positive spillover effects of consumption or production – they bring benefits to third parties

The consumption of certain goods can have positive spillover effects. These are called **external benefits** and might be enjoyed by third parties such as individuals, organisations and communities. Some examples of external benefits are outlined below.

EDUCATION

Education will clearly benefit those who attend schools, universities and colleges. They are likely to get better jobs, earn more money and enjoy a better quality of life. However, education can also benefit the wider society. This is because if people are well educated they may do highly skilled and socially useful jobs, such as doctors, teachers, pilots, senior administrators or research scientists. As a result, productivity will be higher and the standard of living for society as a whole will rise. It could also be argued that higher levels of individual education will lower unemployment, improve household mobility and raise rates of political participation – all of which will benefit the wider society.

HEALTH CARE

Individuals that consume health care will benefit if their own personal health improves. They will feel less pain, can return to work and enjoy life more. However, the consumption of health care by an individual can also benefit third parties. For example, if people are healthier they are able to work more effectively making contributions to economic output and paying taxes. This will benefit the wider society.

VACCINATIONS

If an individual receives an injection to protect against an infectious disease, he or she benefits directly. This is obviously beneficial to the individual but third parties will also benefit. This is because if more individuals are given vaccinations to prevent infection, the likeliness of others (who do not get vaccinated) contracting disease is lower. This is because the number of people who might pass on the disease is reduced because they have been vaccinated.

SOCIAL COST

SUBJECT VOCABULARY

private costs costs of an economic activity to individuals and firms

The production or consumption of a good will have costs that can be divided into **private costs** and external costs. Those who consume or produce a good meet private costs. For example, the private cost to a smoker might be the US$100 per month that is spent on cigarettes. The external cost will be the discomfort and health risk that a third party might be exposed to as a result of inhaling cigarette smoke.

In production, the private cost to a property developer of building a retail centre might be the US$220 million financial cost of the project. The external costs might include the:

- noise generated from the development site during construction
- congestion caused in the local area by construction vehicles and workers arriving and leaving the site each day.

SUBJECT VOCABULARY

social costs costs of an economic activity to society as well as the individual or firm

The costs to society as a whole of an economic activity, the **social cost**, are made up of private costs and external costs.

Social cost = Private costs + External costs (negative externalities)

SOCIAL BENEFIT

The production or consumption of a good will also have benefits that can be divided into **private benefits** and external benefits. Those who produce or consume a good enjoy private benefits. In 'Getting started', the private benefits to Mr and Mrs Salomonsson of spending SEK 5000 on their Christmas lights

SUBJECT VOCABULARY

private benefits rewards to third parties of an economic activity, such as consumption or production
social benefits benefits of an economic activity to society as well as to the individual or firm

is the satisfaction and pleasure they receive from designing their display and seeing the lights when they are switched on. They might also get pleasure from the fact that others come to see the lights. The external benefit in this example is the enjoyment third parties get from seeing the displays. These are the people who did not pay for the Christmas lights but nevertheless are able to enjoy the display as they pass the house.

In production, the private benefits to the property developer of building the retail centre described above are the financial returns it makes from the investment. This might include the rents received from those who rent the retail units. The external benefits are the benefits enjoyed by third parties such as the creation of employment and the provision of a brand new shopping facility in the area.

The benefits to society as a whole of an economic activity, the **social benefits**, are made up of private benefits and external benefits.

Social benefits = Private benefits + External benefits (positive externalities)

ACTIVITY 2

CASE STUDY: COSTS AND BENEFITS OF CAR OWNERSHIP

After starting a new job for a global software developer, Sally Wright took out a US$12 000 loan to buy a new car. However, she was a little shocked when she had to pay US$3300 for a year's insurance. She decided to pay this in 12 monthly instalments to spread the cost over the year. She had been looking forward to the convenience and flexibility that car-ownership provides for many months. She was also looking forward to taking her mum shopping each week.

1 What are the possible private **(a)** costs and **(b)** benefits to Sally of buying the car?

2 What are some of the possible external costs resulting from Sally's purchase?

3 What is meant by social cost? Use an example from this case in your explanation.

GOVERNMENT POLICIES TO DEAL WITH EXTERNALITIES

A government will want to discourage economic activities that result in negative externalities and encourage those that result in positive externalities. How can this be done?

TAXATION

KEY FACTS: TAXATION

- In the UK, the government imposed a tax on dumping waste in landfill sites.
- Since 2000, the amount of waste sent to landfill has dropped by 70 per cent and the average household recycling rates have risen from 18 per cent to 44 per cent.

Taxation can be used to reduce external costs of production. For example, if a tax is imposed on a chemical firm that produces damaging emissions, production costs will increase and the prices charged by the firm will rise. This should result in a fall in demand for the firm's product and therefore a reduction in pollution.

Taxes can also be used to reduce the external costs of consumption. For example, high taxes on cigarettes should reduce supply, which will raise the price. As a result the demand for cigarettes should fall and fewer third parties will be affected by smoke. However, cigarettes are addictive and when prices rise as a result of the tax, demand may not fall by very much.

SUBSIDIES

DID YOU KNOW?

One reason why rail companies are subsidised in many countries is because they take traffic off the road and therefore help to reduce congestion and carbon emissions. Subsidies also reduce demand for new roads and the expense of repairing and maintaining existing roads.

The government can offer money, such as subsidies and other financial rewards, to firms as an incentive to reduce external costs. For example, a firm might receive a subsidy if it builds a plastics recycling plant. This might encourage households and firms to recycle their plastic waste instead of dumping it. The government can also give subsidies to firms that generate external benefits. For example, some governments around the world have given subsidies to the producers of solar energy. This results in an increase in the supply of solar energy, which should stimulate more demand. If more solar energy is used to generate power, then less 'dirty' energy will be produced, which will benefit the environment. Subsidies to university students, in the form of grants, should encourage more people into higher education. As a result, the wider society will benefit from a better-educated population.

One of the problems with government subsidies is the opportunity cost. The money spent by governments on subsidies to reduce external costs or raise external benefits might be spent more effectively on other government projects.

FINES

In some countries, a system of fines is used to reduce external costs. For example, fines may be imposed on those who damage the environment. In 2016, a court in China ordered six unnamed companies to pay a total of US$26 million for polluting the environment discharging waste chemicals into rivers. Also, in Kenya, Mombasa County Government said in 2016 that it would introduce fines to reduce pollution in the nation's main tourist spots. For example, vehicle owners found dumping litter in the streets would be fined KSH 250 000 and motorists or matatu (mini-bus) owners whose vehicles emit smoke would be fined KSH 200 000. Also, drivers who play loud music would be charged a similar amount.

GOVERNMENT REGULATION

Pressure has grown on governments in recent years to pass more legislation to protect the environment. Much of the pressure has emerged because of growing concerns about global warming. Many countries around the world have laws that are designed to protect the environment. Most of these laws are directed at businesses and aim to reduce the external costs of production. For example, in the UK, the Environment Act 1995 was set up to monitor and control pollution. It also laid down regulations relating to polluted land, abandoned mines, national parks, air quality and waste. One of the problems

with government regulation in some countries is that even though laws exist, it is not easy to make companies and people obey them. Governments may lack the commitment to enforce laws or they may not have enough resources for enforcement. Also, some of the companies responsible for pollution are powerful, well-resourced multinationals and are prepared to stand firmly against governments in legal disagreements.

POLLUTION PERMITS

Governments can issue a **pollution permit** to a company. These documents give businesses the right to discharge a certain amount of polluting material – say 1 tonne per year. These permits are 'tradable'. This means that a business can sell its pollution permit to another business if it has found a way of reducing its own level of pollution. Therefore, a business that is struggling to control levels of pollution can buy a permit and discharge more polluting material legally. This further creates an incentive in the market for companies to introduce new technology that reduces pollution because they can then sell their pollution permits for cash. This can help to raise profits.

One problem of using pollution permits is that a government has to decide how many of these permits to issue. It will be affected by carbon dioxide reduction deals that each country has signed up to. However, pollution is difficult to measure and a government might end up giving out too few or too many permits. Also, the costs of permit administration are quite high and businesses may disguise their levels of pollution if it is difficult to measure.

GENERAL VOCABULARY

pollution permit government issued document that gives a business the right to discharge a certain quantity of a polluting material into the environment

MULTIPLE-CHOICE QUESTIONS

▶ 1 Which of the following is an example of an external cost resulting from production?

A Smoke fumes from cigarettes

B Loud music from a noisy neighbour

C Noise pollution from an aircraft

D Job creation resulting from the development of a brownfield site

▶ 2 Which of the following represents social cost?

A Private costs + Private benefits

B Private benefits + External benefits

C Private costs + External costs

D Private costs – Private benefits

ECONOMICS IN PRACTICE

CASE STUDY: POLLUTION IN CHINA

AIR POLLUTION

In recent years, rapid economic growth in China has resulted in some serious pollution problems. For example, in 2010 a report said that in about one-third of the 113 Chinese cities surveyed air quality was below national 'safe' standards. According to the World Bank, 16 of the world's 20 most polluted cities were in China and even the Chinese government admits that about one-fifth of city dwellers breathe badly polluted air. A World Health Organisation (WHO) study said that the amount of airborne suspended particulates in northern China is about 20 times higher than 'safe levels'.

Much of the pollution comes from heavy industry. Many cities are spoiled by the smell of high-sulphur coal and cheap petrol. In Shanghai and Beijing, the pollution is so bad that airports have to be closed because of poor visibility. It has been said that people living above the fifth floor in some city tower blocks cannot see the ground beneath them and the sight of blue sky is rare. At the end of 2015, Beijing authorities finally issued a 'red alert' for air pollution.

WATER POLLUTION

Another problem in China is water pollution. For example, around 60 per cent of China's underground water supplies are polluted. In addition, much of the drinking water in rural areas is unfit for human consumption because of pollution from fertilisers, pesticides and industrial activity. A report in a UK newspaper said that Chinese water authorities admitted in 2012 that up to 40 per cent of the country's rivers are 'seriously polluted'. Also, a report in 2012 found that up to 200 million rural Chinese have no access to clean drinking water. Pollution-induced algae blooms, causing the surface of the water to turn a bright green, often affect China's lakes. In many rural areas there are no systems to treat wastewater.

GOVERNMENT INTERVENTION

In 2016, the Chinese government planned to ban industrial plants, paper mills and refineries that pollute the country's water supplies. This was part of a wider plan to improve water quality. The government wanted to increase the proportion of good quality water to more than 70 per cent by 2020 in seven major river basins. Already the government has blocked some industrial projects, such as coal gasification plants, because they use up too much water or pollute water systems. The plan will focus on small-scale paper factories, leather, printing and dying, oil refineries, electronic plating and pharmaceutical factories. One of the benefits of this plan was expected to be a CN¥ 1.9 trillion boost in China's environmental protection industries.

In addition to higher water and wastewater prices, the wastewater discharge permits and new stricter industrial standards should help to reduce pollution. The price of water discharge permits traded has already risen sharply, as will fines. The new environmental laws will mean tough penalties for polluters with threats of jail for parties responsible for pollution. Recently, the China National Petroleum Corporation agreed to pay CN¥ 100 million