

Chapter 2

Competitive markets: demand and supply

In this chapter we examine what lies at the heart of every market-based economy: the forces of demand and supply.

2.1 Introduction to competitive markets

◆ Outline the meaning of the term 'market'.

Markets

The nature of markets

A market originally was a place where people gathered to buy and sell goods. Such markets still exist today, for example cattle markets, fish markets, fruit and vegetable markets, and flea markets, involving a physical meeting place where buyers and sellers meet face to face.

The term **market** has since evolved to include any kind of arrangement where buyers and sellers of goods, services or resources are linked together to carry out an exchange.

The market may be in a specific place (such as a vegetable market), or it may involve many different places (such as the oil market). Buyers and sellers may meet (say, in a shop), or they may never meet, communicating by fax, phone, internet, classified ads, or any other method which allows them to convey information about price, quantity and quality.

A market can be local, where the buyers and sellers originate from a local area; it may be national, in which case the buyers and sellers are from anywhere within a country; or it may be international, with buyers and sellers from anywhere in the world. For example, small neighbourhood bakeries produce and sell bread and other baked goods for the local

community – this is a local market. Local takeaway restaurants also produce for the local market. The labour market, on the other hand, tends to be mostly a national market. By contrast, the world oil market includes oil producers in different countries, and buyers of oil virtually everywhere in the world, as well as wholesalers, retailers and other intermediaries involved in buying and selling oil around the world.

Goods and services are sold in product markets, while resources (factors of production) are sold in resource markets (factor markets).

Test your understanding 2.1

- 1 What is a market?
- 2 Suggest more examples of local, national and international markets.

The meaning of a competitive market

Competition is generally understood to be a process in which rivals compete in order to achieve some objective. For example, firms may compete with each other over who will sell the most output, consumers may compete over who will buy a scarce product, workers compete over who will get the best jobs with the highest salaries, countries compete over which will capture the biggest export markets, and so on. Beyond this everyday sense, competition in microeconomics occurs when there are many buyers and sellers acting independently, so that no one has the ability to influence the price at which a product is sold in the market. This should be contrasted with *market power*, also known as *monopoly power*, which refers to the control that a seller may have over the price of the product it sells.

The greater the market power, the greater is the control over price. On the other hand, the greater the degree of competition between sellers, the smaller their market power, and the weaker is their control over the price.

In this chapter we will study **competitive markets** composed of large numbers of sellers and buyers acting independently, so that no one individual seller or small group of sellers has the ability to control the price of the product sold. Instead, the price of the product is determined by the interactions of many sellers and buyers, through the forces of demand and supply.

2.2 Demand

Understanding the law of demand and the demand curve

Demand is concerned with the behaviour of buyers. Consumers (or households) are buyers of goods and services in product markets, whereas firms (or businesses) are buyers of factors of production in resource markets. In our analysis of demand and supply we will focus mainly on product markets and therefore on the behaviour of consumers as buyers (though the same general principles described here apply also to the behaviour of firms as buyers in resource markets).

Individual demand

- ◆ Explain that a demand curve represents the relationship between the price and the quantity demanded of a product, *ceteris paribus*.
- ◆ Draw a demand curve.

Consumers buy goods and services in product markets. As buyers, they are demanders of those items they wish to buy.

The **demand** of an individual consumer indicates the various quantities of a good (or service) the consumer is *willing and able to buy* at different possible prices during a particular time period, *ceteris paribus*.

A consumer's demand for a good can be presented as a demand schedule, or a table listing quantity demanded at various prices. Table 2.1 shows a consumer's demand schedule for chocolate bars. When the price of chocolate bars is \$5, the consumer is willing and able to buy two chocolate bars in a

Price of chocolate bars (\$)	Quantity of chocolate bars demanded (per week)
5	2
4	4
3	6
2	8
1	10

Table 2.1 Demand schedule for a consumer

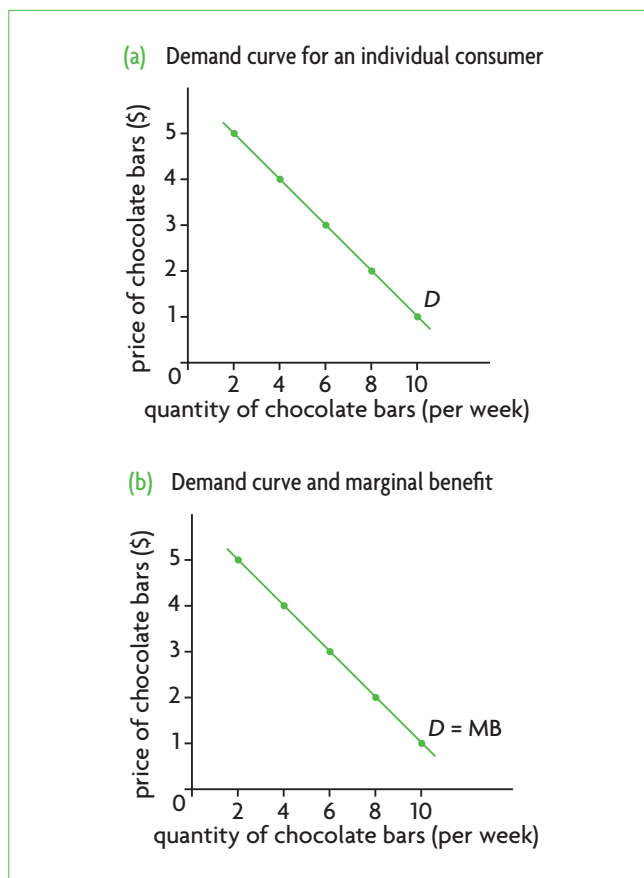


Figure 2.1 Demand and marginal benefit

week. When the price is \$4, the consumer is willing and able to buy four chocolate bars in a week, and so on.

'Willing' means the consumer wants to buy the good; 'able' means that the consumer can afford to buy it. (You may want to buy a Ferrari, but can you afford it? If not, your desire to buy one will not show up as demand for Ferraris.)

Ceteris paribus means that all things other than price that can affect how much the consumer is willing and able to buy are assumed to be constant and unchanging (see Chapter 1, page 10, and 'Quantitative

techniques' chapter on the CD-ROM, page 11). In fact, the consumer's demand is affected not only by price, but also by many other things, like income, tastes and prices of related goods. For the moment, we put all those other things aside and concentrate only on the relationship between the quantity of a good the consumer is willing and able to buy, and its price. Later we will also consider the effects of other influences on the consumer's demand.

The information contained in the demand schedule can be plotted as a graph, shown in Figure 2.1(a). The price of chocolate bars is plotted on the vertical axis and quantity of chocolate bars on the horizontal axis. The curve in Figure 2.1(a) is a **demand curve**. Note that even though this is a straight line, it is referred to as a 'curve'.

The demand schedule and demand curve do not tell us anything about how many chocolate bars the consumer will actually buy and what price the consumer will pay. This information will be given to us later through the interaction of demand with supply. The demand information only tells us how many chocolate bars the consumer would be prepared to buy if the price were \$5, or \$4, and so on.

The law of demand

◆ Explain the negative causal relationship between price and quantity demanded.

The demand curve plotted in Figure 2.1(a) illustrates a very important relationship: as the price of a good falls, the quantity of the good demanded increases. When two variables change in opposite directions, so that as one falls, the other increases, they are said to have a 'negative' (or 'indirect') relationship. This relationship is a 'causal' one, because changes in price *cause* changes in quantity demanded (for more information on causal relationships, see 'Quantitative techniques' chapter on the CD-ROM, page 11). The negative causal relationship between price and quantity demanded is known as the law of demand.

According to the **law of demand**, there is a **negative causal relationship** between the price of a good and its quantity demanded over a particular time period, *ceteris paribus*: as the price of the good increases, quantity demanded falls; as the price falls, quantity demanded increases, *ceteris paribus*.

The law of demand is most likely to be consistent with your experience. The higher the price of a good, the less of it you are probably willing and able to buy; as

the price falls, the good becomes more affordable, and you are likely to want and be able to buy more of it.

Why the demand curve slopes downward: marginal utility theory or marginal benefits

What is the economic reasoning behind the relationship in the law of demand? Consumers buy goods and services because these provide them with some benefit, or satisfaction, also known as utility. The greater the quantity of a good consumed, the greater the benefit derived. However, the extra benefit provided by each additional unit increases by smaller and smaller amounts. Imagine you buy a soft drink, which provides you with a certain amount of benefit. You are still thirsty, so you buy a second soft drink. Whereas you will enjoy this, you will most likely enjoy it less than you had enjoyed the first; the second soft drink provides you with less benefit than the first. If you buy a third, you will get even less benefit than from the second, and so on with each additional soft drink. The extra benefit that you get from each additional unit of something you buy is called the **marginal benefit** or *marginal utility* (marginal means extra or additional).

Since each successive unit of the good you consume produces less and less benefit, you will be willing to buy each extra unit only if it has a lower and lower price. It follows then that:

An explanation for the shape of the demand curve can be found in the principle of decreasing marginal benefit: since marginal benefit falls as quantity consumed increases, the consumer will be induced to buy each extra unit only if its price falls.

Therefore the demand curve in Figure 2.1(a) can also be called a marginal benefit (*MB*) curve, shown in Figure 2.1(b).

Note that different consumers have different preferences (likes and dislikes), and therefore derive different marginal benefits from consumption of a good. This is reflected in different demands (or demand curves) for different consumers.

From individual demand to market demand

◆ Describe the relationship between an individual consumer's demand and market demand.

So far we have considered the demand for a good of one individual consumer. *Market demand* shows the total quantities in the market for the good consumers are willing and able to buy at different prices (during

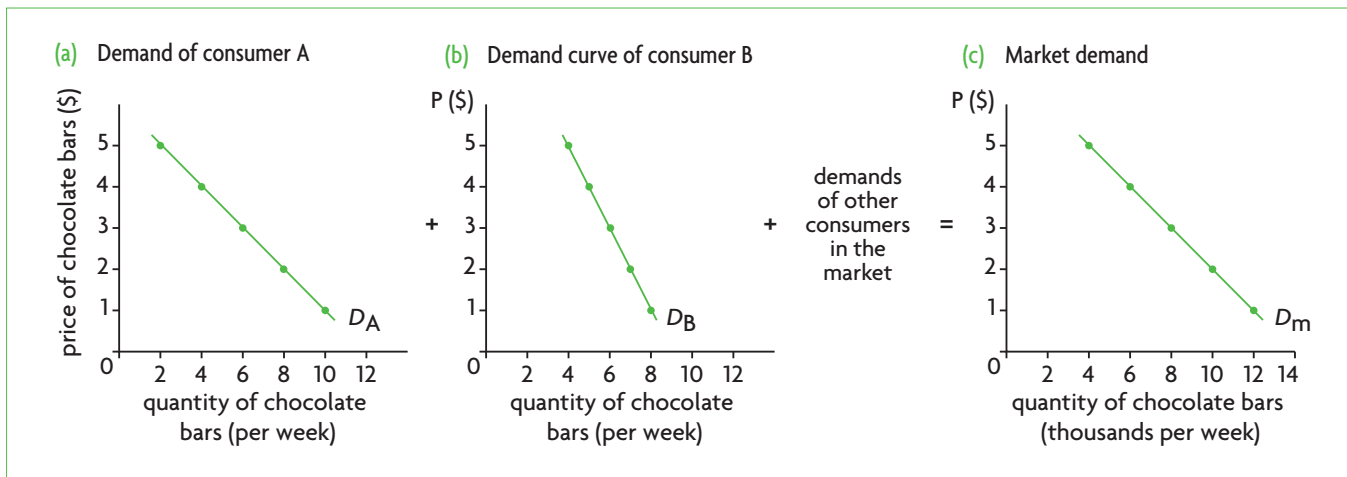


Figure 2.2 Market demand as the sum of individual demands

a particular period of time, all other things equal). Market demand is the sum of all individual demands for that good. Figure 2.2 shows how the quantity demanded by consumer A is added to the quantity demanded by consumer B, and so on until all the quantities demanded by all consumers of chocolate bars are added up. (Note that consumer A has a different demand for chocolate bars than consumer B, indicating different preferences, and therefore different marginal benefits.) For example, at the price of \$4, we add the 4 bars demanded by consumer A to the 5 bars demanded by consumer B, and so on to all the quantities demanded by other consumers, to arrive at the sum of 6000 chocolate bars per week. This sum is a point on the market demand curve D_m . When we add individual demands in this way for each of the possible prices, we derive the entire market demand curve D_m , showing the total demand in the chocolate bar market.

Market demand is the sum of all individual demands for a good. The market demand curve illustrates the law of demand, shown by the negative relationship between price and quantity demanded. The market demand curve is also the sum of consumers' marginal benefits.

Non-price determinants of demand and shifts of the demand curve

The non-price determinants

- ◆ Explain how factors including changes in income (in the cases of normal and inferior goods), preferences, prices of related goods (in the cases of substitutes and complements) and demographic changes may change demand.

The **non-price determinants of demand** are the variables other than price that can influence demand. They are the variables assumed to be unchanging by use of the *ceteris paribus* assumption when the relationship between price and quantity demanded was being examined (see 'Quantitative techniques' chapter on the CD-ROM, page 11, for a full explanation). We will now see what happens to the demand curve when these variables change.

Changes in the determinants of demand cause shifts in the demand curve: the entire demand curve moves to the right or to the left. In Figure 2.3, note that the vertical axis is labelled 'P', standing for price, and the horizontal axis is labelled 'Q', standing for quantity. (This is the standard labelling practice we will be following from now on.) Suppose that the original demand curve is given by D_1 . If price is P_1 , then the demand curve D_1 indicates that quantity Q_1

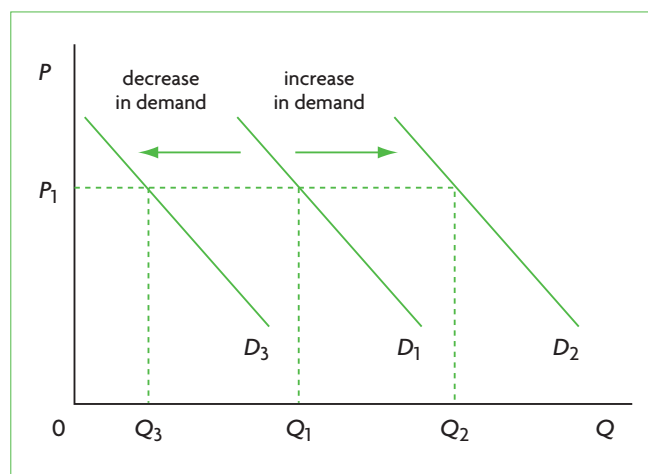


Figure 2.3 Shifts in the demand curve

will be demanded. If the demand curve shifts to the right, to D_2 , at the same price P_1 a larger quantity, Q_2 , will be demanded. If, on the other hand, the demand curve shifts to the left, from D_1 to D_3 , then a smaller quantity, Q_3 , will be demanded at the same price P_1 .

A rightward shift of the demand curve indicates that more is demanded for a given price; a leftward shift of the demand curve indicates that less is demanded for a given price. A rightward shift of the curve is called an *increase in demand*; a leftward shift is called a *decrease in demand*.

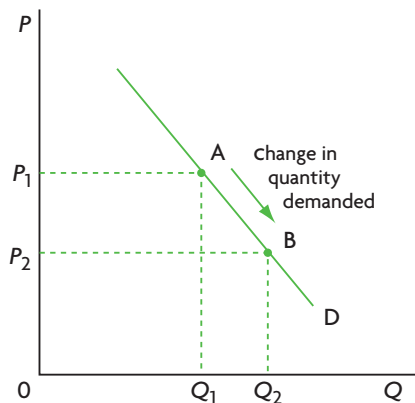
The non-price determinants of market demand include:

- **Income in the case of normal goods.** A good is a **normal good** when demand for it increases in response to an increase in consumer income (demand for the good varies directly with income). Most goods are normal goods. Therefore, an increase in income leads to a rightward shift in the demand curve, and a decrease in income leads to a leftward shift.
- **Income in the case of inferior goods.** While most goods are normal, there are some goods where the demand falls as consumer income increases; the good is then an **inferior good** (the demand for the good varies inversely with income). Examples of inferior goods are second-hand clothes, used cars and bus tickets. As income increases, consumers switch to more expensive alternatives (new clothes, new cars and cars or aeroplanes rather than travelling by bus), and so the demand for the inferior goods falls. Thus an increase in income leads to a leftward shift in the demand curve and a decrease in income produces a rightward shift.
- **Preferences and tastes.** If preferences and tastes change in favour of a product (the good becomes more popular), demand increases and the demand curve shifts to the right; if tastes change against the product (it becomes less popular), demand decreases and the demand curve shifts to the left.
- **Prices of substitute goods.** Two goods are **substitutes (substitute goods)** if they satisfy a similar need. An example of substitute goods is Coca-Cola® and Pepsi®. A fall in the price of one (say, Coca-Cola) results in a fall in the demand for the other (Pepsi). The reason is that as the price

of Coca-Cola falls, some consumers switch from Pepsi to Coca-Cola, and the demand for Pepsi falls. On the other hand, if there is an increase in the price of Coca-Cola, this will result in an increase in the demand for Pepsi as some consumers switch from Coca-Cola to Pepsi. Therefore, for any two substitute goods X and Y , a decrease in the price of X produces a leftward shift in the demand for Y , while an increase in the price of X produces a rightward shift in the demand for Y . In brief, in the case of substitute goods, the price of X and demand for Y change in the same direction (they both increase or they both decrease). Other examples of substitute goods are oranges and apples, Cadbury's and Nestlé chocolate, and milk and yoghurt.

- **Prices of complementary goods.** Two goods are **complements (complementary goods)** if they tend to be used together. An example of complementary goods is DVDs and DVD players. In this case, a fall in the price of one (say, DVD players) leads to an increase in the demand for the other (DVDs). This is because the fall in the price of DVD players results in a bigger quantity of DVD players being purchased, and the demand for DVDs increases. Therefore, for any two complementary goods X and Y , a fall in the price of X leads to a rightward shift in the demand for Y , and an increase in the price of X leads to a leftward shift in the demand for Y . In the case of complementary goods, the price of X and the demand for Y change in opposite directions (as one increases, the other decreases). More examples of complementary goods are computers and computer software, tennis shoes and tennis rackets, and table-tennis balls and table-tennis rackets. Note that most goods are not related to each other; these are called independent goods. For example, pencils and apples, cars and ice cream, telephones and books are unrelated to one another, and the change in the price of one will have little or no effect on the demand for the other.
- **Demographic (population) changes, i.e. changes in the number of buyers.** If there is an increase in the number of buyers (demanders), demand increases and therefore the market demand curve shifts to the right; if the number of buyers decreases, demand decreases and the curve shifts to the left. This follows simply from the fact that market demand is the sum of all individual demands.

- (a) A movement along the demand curve, caused by a change in price, is called a 'change in quantity demanded'



- (b) A shift of a demand curve, caused by a change in a determinant of demand, is called a 'change in demand'

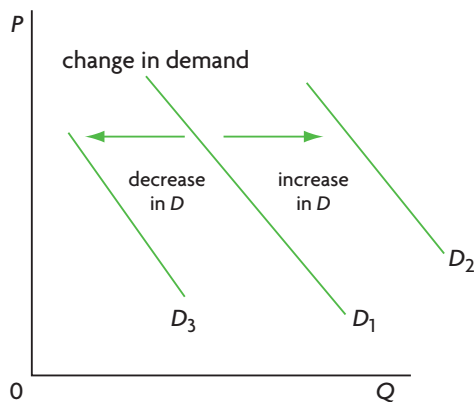


Figure 2.4 Movements along and shifts of the demand curve

Movements along a demand curve and shifts of the demand curve

- ◆ Distinguish between movements along the demand curve and shifts of the demand curve.
- ◆ Draw diagrams to show the difference between movements along the demand curve and shifts of the demand curve.

It is important to distinguish between movements on or along a demand curve, and shifts of a demand curve. Whenever the price of a good changes, *ceteris paribus*, it leads to a movement along the demand curve. In Figure 2.4(a), if the price falls from P_1 to P_2 , the quantity of the good demanded increases from Q_1 to Q_2 . A movement along the demand curve

from A to B has occurred; this is referred to as an *increase in quantity demanded*. An increase in price gives rise to a *decrease in quantity demanded*.

By contrast, any change in a non-price determinant of demand results in a shift in the entire demand curve, as shown in Figure 2.4(b); this is called a *change in demand*. For example, if there is an increase in the number of buyers, the demand curve shifts rightward from D_1 to D_2 ; this is called an *increase in demand*, shown in Figure 2.4(b). A decrease in the number of buyers causes a leftward shift of the demand curve from D_1 to D_3 ; this is called a *decrease in demand*. To summarise:

Any change in price produces a *change in quantity demanded*, shown as a movement on the demand curve. Any change in a non-price determinant of demand leads to a *change in demand*, represented by a shift of the entire demand curve.

Test your understanding 2.2

- 1** (a) Define 'demand'. (b) What is the law of demand? (c) Explain whether the law of demand shows a negative or positive relationship. (d) Show the law of demand in a diagram. (e) What is the relationship between individual demand and market demand? (f) Distinguish between a 'change in demand' and a 'change in quantity demanded' and explain the cause or causes of each. (g) How would you show the difference between a movement along the demand curve and a shift of the demand curve in a diagram? (h) What are the non-price determinants of demand?
- 2** Using diagrams, show the impact of each of the following on the demand curve for product A.
 - (a) The number of consumers in the market for product A increases.
 - (b) Consumer income increases and product A is an inferior good.
 - (c) Consumer income decreases and product A is a normal good.
 - (d) A news report claims that use of product A has harmful effects on health.
 - (e) The price of substitute good B falls.
 - (f) The price of complementary good B increases.