Part 1
Microeconomics

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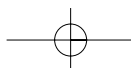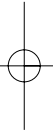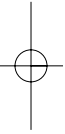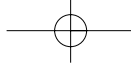
Chapter 2
Demand

🖉 Learning outcomes

By the end of this chapter, you should understand:

💡 Economic Theory

- ◆ That demand describes the behaviour of buyers
- ◆ How price affects the quantity demanded
- ◆ How demand curves illustrate this behaviour
- ◆ Other determinants of demand
- ◆ When demand curves shift
- ◆ Substitution and income effects
- ◆ The effects of real income changes
- ◆ Tastes and marginal utility
- ◆ Diminishing marginal utility
- ◆ The market demand curve

2-1 The demand curve

In 2000, the then Mayor of London, Ken Livingstone, introduced a congestion charge of £5 a day to drive into central London. Subsequent studies concluded that the effect of this had been to reduce demand for road use in London by up to 20 per cent *relative to what it would otherwise have been.* Of course, as income rose, more and more people could afford cars and booming businesses needed more deliveries by lorry. So vehicle use and congestion did not change a lot *relative to what it had been before.*

However, the correct way in which to judge the impact of a policy change is to compare the subsequent outcome with what would have happened if the policy change had not taken place. Comparison with the past is the wrong comparison. The congestion charge did indeed make a difference.

This success led the mayor to raise the charge to £8 in 2005. But price is not the only determinant of demand. Demand depends on more than the price of the good or service itself. We need to develop a framework in which to think things through.

In this chapter we explore demand, the behaviour of buyers, in detail. Chapter 3 will discuss supply, the behaviour of sellers. Combining the analysis of demand and supply, we can then deepen our understanding of how markets work.

Demand is the quantity buyers wish to purchase at each conceivable price.

Demand is not a particular quantity but a full description of the quantity buyers would purchase at each and every possible price. We can show this relationship between price and quantity demanded as a *demand curve*, *DD* in Figure 2-1. This relationship may happen to be a straight line, as shown in the figure, but may often instead be a curve, not a straight line. We use the term demand curve to cover both possibilities.

In Figure 2-1, we plot price on the vertical axis. The vertical distance measures the price of the good or service. The horizontal distance measures the corresponding quantity demanded. Thus, each point on *DD* indicates a price and corresponding quantity demanded at that price.

Figure 2-1 **The demand for bread Quantity (hundred loaves/week)**
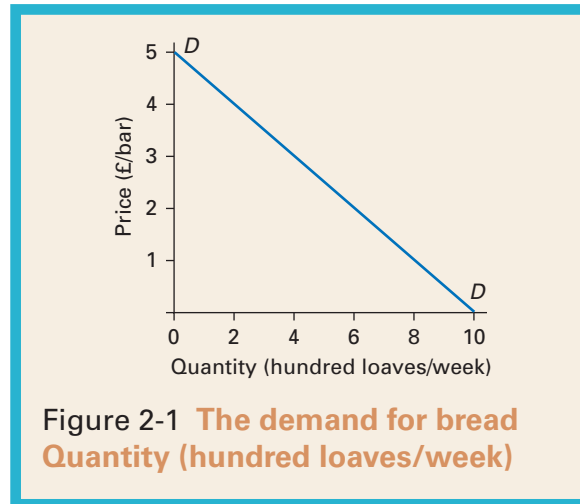
A **demand curve** shows the quantity demanded at each possible price, other things equal.

Even when bread is free, only a finite amount is wanted: beyond 1000 loaves a week, everyone is stuffed with bread and can't eat any more. As the price of food rises, the quantity demanded falls, other things equal. In Figure 2-1, this corresponds to moving *along* the line *DD* – leftwards and upwards – buying less and less bread as the price is increased, until buyers demand no bread at all once the price reaches £5 a loaf.

We can use a similar figure to think about the congestion charge. Think of the vertical axis as measuring the congestion charge (the price of using London roads), and the horizontal axis as measuring the extent of vehicle traffic in London. Initially, drivers did not have to pay any direct charge for using London streets. They paid for petrol, but there was no additional fee for driving down Oxford Street rather than going round London on the M25 ring road. So drivers simply used London streets as much as they wanted. They were free. With a zero price, daytime demand for London streets exceeds the capacity of London streets to cope with this amount of traffic.

Figure 2-2 shows the demand curve *DD* for daytime car use in London. Initially, with no congestion charge, the outcome is at point *A*. Traffic is heavy and Piccadilly Circus is congested because the quantity of car and lorry trips demanded is so large. Introducing the congestion charge at the level *CC* shown in Figure 2-2 raises the price of car use, and moves buyers up the demand curve from *A* to *B*. As a result, traffic falls from point *A* to point *E*. The purpose of the congestion charge was therefore to make people demand less use of London streets, and in so doing to reduce congestion, allowing traffic to flow more freely. How much a given price increase reduces the quantity demanded depends principally on how easily buyers can find alternative

Figure 2-2 **The demand for London road use**
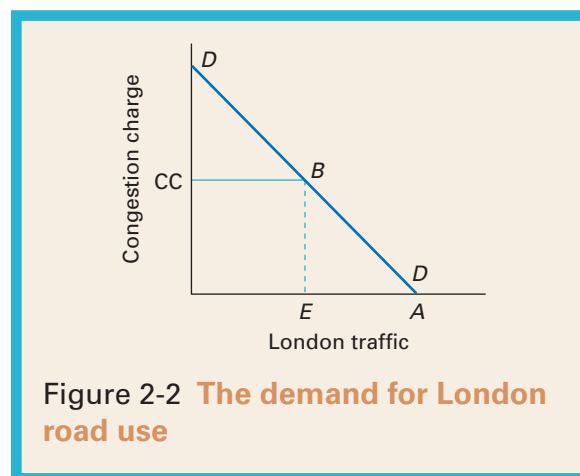
goods and services that perform a similar function. With brilliant public transport available, a modest congestion charge on cars might induce large numbers of people to switch to buses. The demand curve *DD* for car travel is then relatively *flat*, showing that small price rises reduce the quantity demanded a lot. If public transport is unreliable, slow and dirty, a big rise in the price of road use may reduce the demand for road use by only a little. We would then draw a *steep* curve *DD* to show that car use is fairly insensitive to the level at which the congestion charge is set.

If higher prices make demanders move upwards *along* a given demand curve, how then do we represent the surge in demand for car travel after the London bomb explosions on public transport?

2-2 **Behind the demand curve**

Other things equal, lower prices are accompanied by higher quantities demanded, and vice versa. But prices are not the only determinant of demand. Other things do not always remain constant. We now study three other influences: the price of related goods, the income of buyers, and tastes or preferences of buyers.

1 **The price of other goods**   *Higher* bus fares may *raise* the quantity of car travel demanded at each possible price of car use. In everyday language, buses are a substitute for cars. Higher prices for substitutes for cars make people switch towards more car use. Conversely, petrol and cars are not substitutes but complements. You can't use a car without using fuel. A *rise* in the price of petrol tends to *reduce* the demand for cars since it raises the price of using a car.

   A rise in the price of one good raises the demand for **substitutes** for this good, but reduces the demand for **complements** to the good.

   Most goods are substitutes for each other. If the price of food rises, you will generally demand a little less food and a little more entertainment. Complementarity is usually a more specific feature (mobile phones and SIM cards, coffee and milk, shoes and shoelaces). If milk becomes more expensive, fewer people will buy a cappuccino.

2 **Consumer incomes**   When incomes rise, the demand for most goods rises. Typically, richer consumers buy more of everything. Compared with what you demand, Victoria Beckham buys more cars, more restaurant meals, more holidays, larger houses and more legal advice. However, there are exceptions. You probably buy more baked beans and use more launderettes than she does.

   For a **normal good**, demand rises when income rises. For an **inferior good**, demand falls when income rises.

   Most goods are normal goods. As we have got richer over the last 100 years, we have bought more food, more travel and more household goods. Inferior goods are cheap, low-quality goods that people would prefer not to buy if they could afford to spend a little more. Students buy cheap cuts of meat but graduate to steaks when they get a good job. The Queen does not have to take her clothes to a public launderette. She can afford to install expensive washing machines or even employ people to hand wash everything.

3 **Tastes**   Tastes or preferences of consumers are shaped by convenience, custom and social attitudes. The fashion for the mini-skirt reduced the demand for textile material. The emphasis on health and fitness has increased the demand for jogging equipment, health foods and sports facilities but reduced the demand for cream cakes, butter and cigarettes.

So why did people buy fewer barbeques during the absent UK summer of 2008? Not because the price of barbeques changed. The lower quantity of barbeque use demanded was *not* a movement downwards along a given demand curve *DD* in response to a lower price of barbeques. The only other

possibility was that the very wet summer *shifted* the *entire* demand curve to the left, leading to lower barbeque demand. Figure 2-3 shows this as a shift from the original demand curve *D'D'* to the new demand curve *DD*. At any price (a given vertical distance), buyers now wish to purchase a lower quantity (smaller horizontal distance) than before. In particular, at the original price *P'*, the quantity demanded now falls from *G* to *E*.

Changes in the price of the good (or service) move us *along* a *given* demand curve: other things equal, higher prices reduce quantity demanded. But other things do not always remain fixed. When they change, we have to shift the entire demand curve. Changes in other determinants of demand (changes in the price of substitutes or complements, changes in incomes or changes in tastes) *shift* the demand curve. Such changes that *increase* demand *shift* the demand curve to the *right* (from *DD* to *D'D'* in Figure 2-3). Such changes that *reduce* demand *shift* the demand curve to the *left* in Figure 2-3 (from the demand curve *D'D'* to *DD*).

Figure 2-3 **A shift in the demand curve**

When the wet summer reduced the demand for barbeques form *D'D'* to *DD*, which of the 'other things equal' behind the demand curve then changed? There was no significant change in consumer incomes during the rain, so it must have been one of the other two potential channels.

The most obvious solution is to say that the rain changed consumer tastes for outdoor barbeques, the demand for which fell as a result. The entire demand curve shifted to the left in Figure 2-3.

To sum up, the quantity demanded reflects four things: its own price, prices of related goods, incomes and tastes. We could draw a two-dimensional diagram relating quantity demanded to any one of these four things. The other three would be the 'other things equal' for that diagram. In drawing demand curves, we always choose the price of the commodity itself to put in the diagram with quantity demanded. The other three things become the 'other things equal' for a demand curve.

Why single out the price of the commodity itself to plot against quantity demanded? Because, once we add supply, we can show the self-correcting mechanism by which a market reacts to excess demand or excess supply, by changing the *price* to restore equilibrium. We want to show how quantities are affected by prices as the market does its job. But when one of the other important determinants of demand changes, we have to show these as shifts in the demand curve. Things that increase demand shift the entire demand curve to the right (more quantity at any price). Things that reduce demand shift the entire demand curve to the left (less quantity at any price).

Here is a chance to see if you have understood. Try completing Table 2-1, describing what happens to the demand curve for UK higher education in response to each of six important events.

The effect of income on demand

Having studied changes in prices, we now study changes in income. For the moment, we neglect saving and assume higher income is all spent. This tends to raise the quantity demanded of most individual goods. However, quantities demanded don't all change by the same amount, so budget shares change with income.

The **budget share** of a good is the spending on that good as a fraction of total consumer spending.
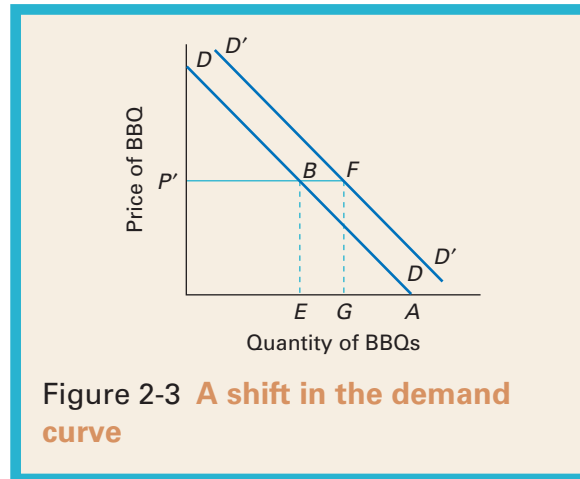
Table 2-1 **Shifts in the demand curve (please tick the appropriate box in each line)**

Event	Demand curve for UK university places	
	Shifts right	Shifts left
1 UK top-up fees abolished		
2 Other EU countries raise university fees		
3 UK gets richer		
4 Young people lose faith in education, and instead volunteer for a lifetime of service in Africa		
5 Bill Gates subsidizes all UK university places		
6 An earthquake destroys five UK universities		

(Answers provided on page XX, but complete the table before skipping to them)

Table 2-2 **Budget shares, 1997–2005**

	Real consumer spending (2003 £bn)	% budget share	
		Food and drink	Recreation goods
1997	558	10	3
2005	731	9	7

Source: ONS, *UK National Accounts.*

Table 2-2 shows the share of UK consumer spending devoted to (a) food and drink and (b) recreational goods between 1997 and 2005. Real consumer spending rose over the period, from £558 billion to £731 billion (both measured at 2003 prices). The budget share of food and drink fell from 10 per cent to 9 per cent. Even so, the absolute amount spent on food and drink must have risen: 9 per cent of £731 billion is a lot more than 10 per cent of £538 billion. The budget share of recreational goods increased strongly (more golf clubs and music systems as people felt richer).

Does the quantity demanded always increase when a person's income increases? The answer is usually but not always. The few exceptions are called inferior goods: quantity demanded actually falls when income rises. Inferior goods are low-quality goods for which higher quality but more expensive alternatives are available. Poor people buy fish fingers and polyester shirts. With more income, they buy seafood and comfortable cotton shirts. Higher income reduces the demand for fish fingers and polyester shirts. These are inferior goods.

The demand for an **inferior good** (or service) falls when consumer income rises. The demand for a **normal good** increases when consumer income rises. For **luxuries**, quantity demanded rises even

Case study 2-1   One little piggy went to market

The 1996 BSE crisis – the outbreak of mad cow disease – led to a temporary collapse in the demand for British beef. The demand curve for beef shifted downwards, rather like the demand curve for barbeques in the wet summer of 2008. In the latter case, people ordered pizza and stayed indoors. In the former case, a few beef eaters decided this was the moment to become vegetarians, but most continued to indulge their taste for meat by switching to eating chicken and pork.

Questions for discussion:

1 What do you think happened to the demand for pork, and hence to the price of pork, when BSE broke out?

2 How would you expect pork farmers to have responded?

3 What effect should this then have had on pork prices?

4 And in turn on beef prices?

The nice thing about historical case studies from the real world is that we can actually look at what happened next, and whether or not it is consistent with the theory we have been developing. Let's start with the theory. When consumers switched from beef to pork, this should have bidden up the price of pork but bidden down the price of beef. If you were a farmer, this would have reduced the incentive to continue supplying beef, but increased the incentive to supply pork. You went out and bought lots of piglets to fatten up, but when these piglets were later brought to market in a glut – all your farming friends having also decided that they should get into pig farming – the large increase in pork supply might actually have outstripped the increase in pork demand that had been caused by the BSE scare in the first place. Also, if beef farmers eradicated disease, and confidence returned, beef prices should have been expected to recover as beef demand was restored. If consumers gradually switched back to beef, they might even have started abandoning pork at the very time that the glut of piglets matured into marketable pigs.

This account gives some idea of the ebb and flow of prices as markets adjust to swings in supply and demand. But is this really what happened? We can look at historical UK data to examine the answer.

The left-hand figure below shows how the real prices of beef and pork evolved after 1996. In each case, for convenience, we set the 1996 price at 100 and express subsequent prices relative to this baseline. Initially, pork prices soared as our theory predicts. But then they reverted to earlier levels again. Since 2002, pork prices have climbed once more. Beef prices fell, as our theory predicts, but by 2002, beef prices had made up all the ground they had lost when BSE led to the collapse of demand in 1996.

The right-hand figure helps us understand these price movements by showing what was happening to supply and production. As expected, we see the dramatic fall in beef production as animals were slaughtered. Even by 2003, the quantity of UK beef production had not recovered its pre-1996 levels. This partly explains why beef prices eventually recovered – despite the fact that some consumers were permanently turned off beef – a corresponding permanent fall in beef supply made beef sufficiently scarce that the price recovered.

The right-hand figure also shows the surge in pork production. Farmers responded to high pork prices by increasing pork production by nearly a third. But demand for pork could not be sustained at that level. As the price of pork fell back after 1997 (left-hand diagram), farmers stopped rearing pigs and by 1998 the volume of pork coming to market was also in steep decline.
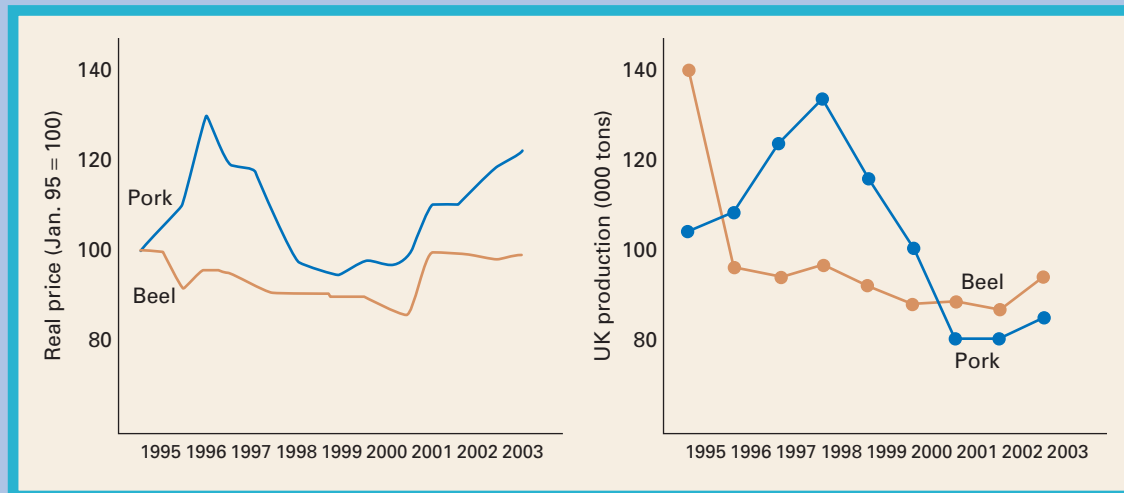
Here is another piggy puzzle to see how your grasp of economics is coming along. By 2008, the price of pigs was booming again. Was this good news or bad news for pig farmers? Don't read on. Try and think of the possible answers for yourself!

You are probably aware that oil was not the only commodity whose price was soaring by 2008. In addition to other minerals, many 'soft commodities' such as rice and grain were also experiencing sharp rises in price. Cereals are not just food for people, they are also fed to animals. So a higher price of cereals represents a higher cost of producing adult pigs. It is bad news for pig farmers. Some will go bankrupt, others will scale back. As pig production falls, pigs get scarcer in the market and the price of pork rises, not because demand has risen but because supply has fallen.

Demand and supply are concepts at the heart of market economies. As you become a more experienced economist, you will become more skilful at diagnosing which changes were induced by shifts in supply and which were induced by shifts in demand. In the BSE example, demand for beef fell and demand for pork increased. This bid up the price of pork and bid down the price of beef. In 2008, higher cereal prices caused a lower supply of pork, which bid up the price of pork despite the fact that demand had not changed much.

faster than income, so that the budget share of this good or service increases with income. Goods or services that are not luxuries are called **necessities**, which are therefore either inferior goods (or services) or else they are normal goods (or services) but not luxuries. Necessity is a technical term in economics – higher incomes lead to a lower budget share – not to be confused with the everyday meaning that you cannot do without it.

Luxury goods are high-quality goods for which there are lower-quality, but adequate, substitutes: Mercedes cars not small Fords, foreign not domestic holidays. Inferior goods are low-quality goods that people readily abandon as they get richer. Necessities that are normal goods lie between these two extremes. As incomes rise, the quantity of food demanded rises, but only a little.

Table 2-2 showed that recreational goods are luxuries whose budget share rose with UK income after 1996. Food is not a luxury; its budget share fell as income rose. Nor is it an inferior good. At constant

Table 2-3 **Demand responses to a rise in income**

Good	Quantity demanded	Budget share	Example
Normal	Rises with income		
Luxury	Rises strongly with income	Rises	BMW
Necessity	Rises weakly with income	Falls	Food
Inferior	Falls	Falls	Bread

prices which adjust for the effects of inflation, during 1997–2005 real food spending *increased* from £55.8 billion (10 per cent of £558 billion) to 65.8 billion (9 per cent of £731 billion).

Table 2-3 summarizes the demand responses to higher income, holding constant the prices of all goods. Lower income has the opposite effect.

These patterns of demand response are vital to business and government in forecasting the changing pattern of consumer demand as the economy grows and people get richer. Suppose incomes grow at 3 per cent a year for the next five years. The demand for luxuries, such as restaurants, will rise strongly. In contrast, the demand for some necessities such as bread may hardly rise at all, and the demand for cheap cuts of meat, such as tripe, will fall. The growth prospects of the three industries are very different.

The answers to Table 2-1 are provided in Table 2-1A below.

Inflation and demand

Chapter 1 distinguished *nominal* variables, measured in prices at the time, and *real* variables, measured in constant prices to adjust for inflation. If all nominal variables double, every good costs twice as much, but all incomes are twice as high. Nothing has really changed. Quantities demanded are unaltered.

This does not contradict our analysis of price and income elasticities of demand. The former shows the effect of changing one price, holding constant other prices and nominal income. This is not relevant when all prices and incomes rise at the same rate. The latter shows the effect of higher real income. But real income does not change under pure inflation.

2-3 Demand and consumer choice

Measuring past behaviour is a good guide to the future when nothing dramatic changes. Sometimes, however, we need to think about what people might do in a future situation which is completely different from the past. To predict demand behaviour, we need a *theory* of how consumers make choices. A successful theory is consistent with past behaviour but also helps predict responses in new situations.

Effects of a price change: substitution and income effects

As the price of a good falls, people buy more of it, so surely demand curves slope down? Unfortunately, things are not this simple. Suppose the price of bread falls. For the rest of your life, you need to remember this has two quite different effects.

The **substitution effect** says that, when the relative price of a good falls, quantity demanded rises.

Table 2-1A

	Demand curve for UK university places	
Event	Shifts right	Shifts left
1 UK top-up fees abolished	Demand curve shifts neither left nor right – reducing the price of UK university education moves us downwards along the original demand curve. Quantity demanded increases, but only because the price fell.	
2 Other EU countries raise university fees	The demand curve for UK university education shifts to the right. At each and every price, the quantity of UK university places demanded is larger than it would have been before.	
3 UK gets richer	At any price, people demand more UK university places than before, demand curve shifts right.	
4 Young people lose faith in education, and instead volunteer for a lifetime of service in Africa		Change in tastes reduces demand for UK university places, demand curve shifts left.
5 Bill Gates subsidizes all UK university places	Price falls and moves downwards along a given demand curve – unless the fact that Bill is cool after his Live 8 appearance means more young people become interested in university, in which case the change in tastes also shifts the demand curve to the right.	
6 An earthquake destroys five UK universities	Loss of universities is a change in supply not a change in demand. If greater scarcity then drives up the price, this moves people up a given demand curve. If the loss of university professors implies that total income falls, this may shift the demand curve down (but not by much – professors don't get paid a lot).	

Your intuition will always discover the substitution effect, the bit that is obvious. You have to train yourself to look for, and find, the second effect.

The **income effect** says, for a given nominal income, a fall in the price of a good raises real income, affecting the demand for all goods.

If bread is a normal good, the demand for bread will rise when real income (spending power) rises. Both the income effect and the substitution effect raise the quantity of bread demanded when the price of bread falls. Bread is relatively cheaper, so people buy more. Moreover, cheaper bread raises the purchasing power of the given nominal income; this also raises the demand for bread.

Hence, for normal goods, our theory says the demand curve must slope down. Price cuts lead to a higher quantity demanded. However, if bread were an inferior good, higher real income would lead to a *fall* in the quantity demanded. Now the income effect of a price cut would go in the opposite direction from the substitution effect. A fall in the price of bread makes it relatively cheaper, but also raises spending power. For inferior goods, theoretical reasoning alone cannot deduce which of the two effects is larger. We need empirical evidence to resolve the issue. In practice, demand curves for goods and services usually slope down. Inferior goods and services are rare.

In other markets, the 'perverse income effect' that outweighs the 'obvious substitution effect' is more common. Here is a quick taster of things to come. Higher interest rates increase incentives to save, don't they?

> **Saving** means not spending all today's income, reducing consumption today to raise consumption later.

Think of the interest rate as the price of time, the cost of consuming today instead of later. When the cost of consuming today rises, you choose less of it. Surely?

Your intuition has found the substitution effect. Consuming today has got relatively more costly, and you consume less, thus saving more. Where is the income effect lurking? To afford that foreign holiday next year, you don't have to save so much if interest rates are higher and your assets cumulate more quickly! This makes you save less. Empirically, it is very hard to find whether interest rates have much effect on total saving. Politicians think higher interest rates boost saving, and are always devising schemes like PEPs and ISAs to provide tax breaks, hoping that higher after-tax interest rates will boost national saving. Economists are pessimistic that this will work. Much of it is just a subsidy to the rich, something to remember if you become Chancellor of the Exchequer!

Effects of income changes

Real income can rise either because nominal income increases while prices are constant, or because the price of a commodity falls while nominal income is constant. The former leads to a pure income effect, the latter must be decomposed into separate income and substitution effects.

Successive rises in real income lead to large increases in the quantity demanded if the good (or service) is a luxury with a large income elasticity of demand. Quantity demanded increases less quickly for normal goods or services with smaller, but still positive, income elasticities. For inferior goods, higher income reduces quantities demanded. Poor students given up beans on toast once they become rich bankers.

Tastes and demand

Different people may have different tastes, making different choices even when facing the same prices and enjoying the same income.

> **Tastes** describe the utility a consumer gets from the goods consumed. **Utility** is happiness or satisfaction.

Tastes depend on culture, history, familiarity, relationships with others, advertising, and so on. Explaining these influences is the role of other social sciences, like psychology and sociology. Economists treat them as an 'other things equal' assumption behind a particular demand curve.

However, tastes can change, with important effects. In the past few decades there have been big changes in social attitudes to organic food and the formality of dress. The demand curve for organic

food shifted outwards, but the demand curve for top hats shifted inwards. We shift demand curves when there are changes in the 'other things equal'.

Marginal utility and demand

Fred goes clubbing and drinks lager. Initially, he goes to one club but has no lager. Fred is thirsty and can't enjoy himself. With a lager, he'd be a lot happier.

> The **marginal utility** of a good is the *extra* utility from consuming one more unit of the good, holding constant the quantity of other goods consumed.

Fred's first lager gives him high marginal utility. A second lager gives him extra utility, but not as much extra utility as the first one did. A third and fourth lager add less and less extra utility.

> Tastes display **diminishing marginal utility** from a good if each extra unit adds successively less to total utility when consumption of other goods remains constant.

Figure 2-4 shows Fred's marginal utility, which falls the more he drinks. It also shows the price of each lager. If a lager costs £4, and Fred gets £6 of marginal utility from it, he should buy another one. If he only gets £2 of marginal utility from his last lager, he has bought too many. He should buy lager up to the point at which the marginal cost (£4 for the last lager) equals the marginal benefit or marginal utility. Figure 2-4 shows Fred choosing point *A* when lagers cost £4 each.

Figure 2-4 **Marginal utility and lager demand Price, marginal utility**

Figure 2-4 suggests that if the price of lager falls from £4 to £3, Fred will definitely buy more lager because of diminishing marginal utility. But the figure only shows the substitution effect! The marginal utility curve assumes quantities of other goods remain constant. However, as the price of lager falls, Fred can afford more club nights too. Whether this shifts Fred's marginal utility curve up or down depends on whether lager is a normal or an inferior good, which is the income effect at work.

If lager is a normal good, the income effect shifts the marginal utility curve outwards to *MU*, in Figure 2-4. This also makes Fred consume more lager (point *C*). Income and substitution effects go the same way. The demand curve for lager, drawn through *A* and *C*, slopes down. If lager was an inferior good, the *MU* curve might have shifted *inwards* enough to make Fred consume less lager when its price fell.

So far, marginal utility analysis merely reinforces our earlier and simpler discussion of income and substitution effects. However, it was worth learning, as Box 2-2 confirms.

From individual to market demand curve

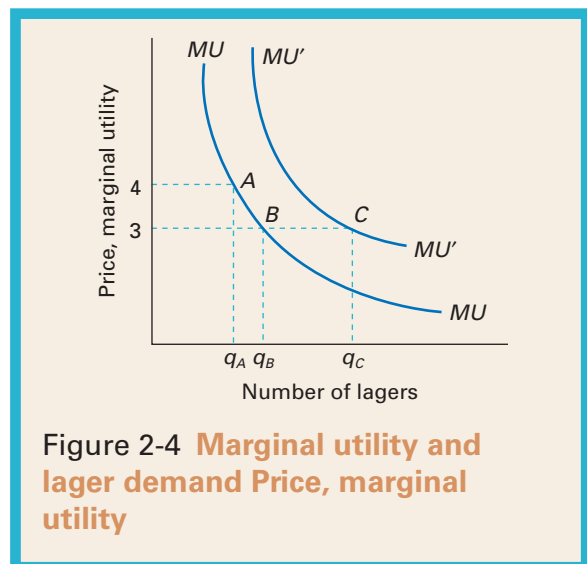How do we aggregate individual demand curves to get the total demand in a particular market?

> ### → Box 2-1 **To die for**
>
> Maria Sharapova will make more from advertising than from winning Wimbledon. David Beckham's move to Real Madrid boosted the value of their football shirts as well as the skills of their football team, and LA Galaxy wanted the Beckham brand as much as his ability to bend free kicks. For many years, Thierry Henry was the suave image of the Renault Clio. Why do the manufacturers pay superfees to superstars to promote their wares? They are trying to change your tastes. There are lots of small cars, but only one has va-va-voom. It's the one to die for. No other will do.
>
> You could buy a car magazine and find out whether the Clio's suspension geometry really is different. But that's not the point. This advertising is about *style.* Not what you think is nice, but what *other people* think is nice. Renault is assuring you that other people, stylish people, think it's cool to drive a Clio. Do so and you can be cool too. This *interdependence* of tastes is what opens the door for so much advertising and PR.

> ### → Box 2-2 **The water–diamond paradox**
>
> Here's a riddle for your friends who don't study economics. Why is the price of water, essential for survival, so much lower than the price of decorative diamonds? Diamonds are scarcer than water. Yet consumers clearly get more total utility from water, without which they die.
>
> Marginal utility solves the puzzle. The marginal benefit of the first unit of water is enormous. But we each consume lots of water. Since water is relatively abundant, the supply curve for water lies well to the right and the equilibrium price is low. Consumers have moved a long way down their marginal utility of water curve.
>
> If water is supplied free, consumers should use water up to the point at which its marginal utility is zero. May as well wash the car again. Even a small rise in price may lead to a large cutback in usage – demand is very elastic in this region of the demand curve.

The **market demand curve** is the horizontal sum of individual demand curves in that market.

We always plot price on the vertical axis. All consumers in a market face the same price P. Suppose at a price of £2 the first consumer demands a quantity of A and the second consumer a quantity of B, the market demand is a quantity of $C = A + B$ when the price is £2. Repeating this procedure at each and every possible price we trace out the market demand curve. Figure 2-5 shows how two individual demand curves D_1 and D_2 are
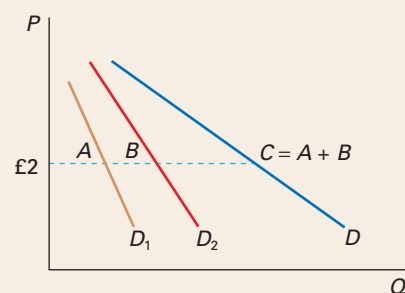

Figure 2-5 **The market demand curve**

horizontally aggregated to get the market demand curve *D*. In most markets, where there are lots of purchasers, the market demand curve is obtained by adding horizontally the demand curves of every individual in the market.

The market demand curve is important because, together with the market supply curve, it determines the price that clears the market in equilibrium. Having seen how the individual demand decisions can be aggregated to derive the market demand curve, we turn next to a more detailed analysis of supply decisions.

Case study 2-2   Conspicuous consumption

This chapter has introduced the theory of demand, and examples of how the theory can be applied to real-world behaviour and the data that it generates. By now we hope you are convinced that the theory makes sense and is consistent with the facts. But are there important exceptions that we have glossed over?

Here is an example for you to think about. The next time a new generation of Nike trainers appear, you know that you will simply have to have them. In fact, the more they cost, the more exclusive they will seem and the more you will probably be determined to have them. Your mother may feel the same about Gucci shoes and your father about the Porsche Boxster. So have economists got it wrong?

Question for discussion: *Do demand curves really slope up for such goods: the more they cost, the larger the quantity demanded?*

Try to formulate an answer before you read on. We will however give you one clue – the answer is nothing to do with income effects and inferior goods. One thing on which we can all agree is that Gucci and Porsche brands are bought only by rich people, not poor people.

The phenomenon of *conspicuous consumption* – demanding goods precisely because they are expensive and therefore exclusive – was first discussed by US economist Thorstein Veblen (1857–1929), after whom they are sometimes referred to as 'Veblen goods'. They are goods designed to create envy among others.

However, this need not pose any difficulty for our theory of demand. Indeed, Box 2-2 above already contains the beginning of the answer, the interdependence of preferences. The diagram below shows two demand curves, *MM* for a mass-produced version of a good and *EE* for an exclusive version that is highly admired by the trendy elite. The elite version is more desirable for two reasons. First, it may be innately better. On most objective tests, a Boxster outperforms a Mondeo. Second, however, it is also more fashionable, more esteemed by the in-crowd, and therefore more desirable, whatever its objective characteristics. For both reasons, the demand curve *EE* lies above the demand curve *MM*. At any given quantity (a distance to the right in the horizontal quantity direction), people will pay more (higher vertical distance) for the exclusive good than the mass-market good.

Conditional on the attributes of the exclusive good – in Nike's case how comfortable they are and how your friends think they look – the less you had to pay, the more of them you would buy. Your demand curve *EE* is high up because of
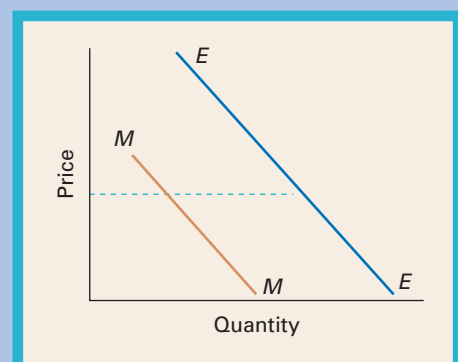
▶ the attributes that make them exclusive, but still slopes down – other things equal, you will buy more if they are cheaper.

Believing that Veblen goods are evidence of an upward-sloping demand curve is to make the mistake of confusing movements along a given demand curve with shifts in the demand curve itself. When a good is more exclusive, its demand curve has shifted further upwards. But the demand curve still slopes downwards. If other things remain equal, cutting the price then means sliding downwards along the given demand curve.

✎ Recap

- The quantity demanded depends mainly on four things: the price of the good itself, the price of substitutes and complements for that good, income and spending of buyers, and tastes of buyers.

- A demand curve highlights the relation between the quantity demanded and one of these four things, namely the price of the good itself, holding constant the other three influences on quantity demanded.

- When one of the other three influences changes, we have to reflect this as a shift in the demand curve. When the price of the good itself changes, we show this as a movement along a given demand curve.

- For inferior goods, quantity demanded falls as income rises. Goods that are not inferior are normal goods.

- For luxury goods, quantity demanded rises more than 1 per cent when income rises by 1 per cent. Hence, their budget share increases as income increases. Goods that are not luxuries are necessities, whose budget share falls as income rises. All inferior goods are necessities. Normal goods are necessities only if they are not luxuries.

- Doubling all nominal variables has no effect on demand since the real value of incomes and the real price of goods are unaltered.

- A price change has a substitution (relative price) effect and an income (purchasing power) effect. Intuition usually locates the substitution effect. You must also find the income effect.

- Demand curves slope down for normal goods. A sufficiently inferior good could have an upward-sloping demand curve; such goods are very rare.

- Because of the income effect, higher interest rates need not encourage more saving.

- Marginal utility is the extra benefit of consuming the last unit of a good, holding constant consumption of other goods. Tastes display diminishing marginal utility. This explains the water–diamond paradox.

- At each price, the market demand curve is the sum of the quantities demanded by different people facing that price.

Review questions To check your answers to these questions, go to page 000.

1 Suppose the demand for peaches is not very sensitive to price: to sell 10 per cent more you have to cut the price by 20 per cent. You are the only fruit seller in town, and your fruit stall has 100 ripe peaches that can usually be sold for £1 each. You now discover ten of your peaches are rotten and can't be sold. (a) What quantity do you now wish to sell at once? (b) What is the new equilibrium price? (c) Do you get more or less revenue than the £100 you had originally expected to earn?

2 Two possible ways to reduce global warming are: (a) a tax on emissions of carbon dioxide from cars and power stations; and (b) a ban on driving cars except at the weekend. Which policy works by shifting the demand curve for energy to the left, and which works by moving consumers leftwards along a given demand curve for energy?

3 For vegetables, quantity demanded rises 0.2 per cent when the price falls 1 per cent, but rises 0.9 per cent when income rises 1 per cent. For catering, quantity demanded rises 2.6 per cent when the price falls 1 per cent but rises 1.6 per cent when consumer incomes rise 1 per cent. Are vegetables and catering luxuries or necessities?

4 During 1975–2008, UK households' spending on bread and cereals rose from £1.5 million to over £5 million. Does this mean bread is a normal good? Could it be an inferior good? Which seems more likely to you?

5 Why are these statements wrong? (a) Because cigarettes are a necessity, tax revenue on cigarettes must rise when the tax rate is raised. (b) Farmers should insure against bad weather that might destroy half the crops of all farmers. (c) Farmers should not insure against events that affect their crops alone.

6 Do higher consumer incomes always benefit producers?

7 'A higher hourly wage makes people want to work longer by making work more attractive than leisure.' 'A higher wage makes people better off, raising the quantity of leisure demanded, and thereby reducing the length of time people wish to work.' Which is the income effect, and which is the substitution effect?

8 Suppose Glaswegians have a given income, and like weekend trips to the Highlands, a three-hour drive away. (a) If the price of petrol doubles, what is the effect on the demand for trips to the Highlands? Discuss both income and substitution effects. (b) What do you expect to happen to the price of Highland hotel rooms?

9 Explain the concepts of: (a) utility, (b) marginal utility and (c) diminishing marginal utility.

10 Name a good for which your marginal utility falls so much that you get negative marginal utility when you consume too much of this good.

11 **Harder question** Air conditioners are luxury goods. (a) Name two countries that you expect to have the highest per capita demand for air conditioners at present. (b) If people continue to get richer and global warming continues to increase, what is likely to happen to the quantity of air conditioners demanded? And what will this do to global warming? And hence to the demand for air conditioners? (c) Could this process spiral out of control?

12 **Harder question** Why are these statements wrong? (a) Inflation reduces demand since prices are higher and goods are more expensive. (b) Abolishing income tax on the income from saving must make people save more.

13 **Essay question** We observe a person behaving differently in apparently similar situations. Either the situations were not similar or the person is 'irrational'. Which approach would an economist take? Why? Is it realistic to think that we account for behaviour in every situation?

To help you grasp the key concepts of this chapter check out the extra resources posted on the Online Learning Centre at www.mcgraw-hill.co.uk/textbooks/begg

There are additional case studies, self-test questions, practice exam questions with answers and a graphing tool.