Supply

As with demand, we first need to meet the agents that are responsible for the behaviour we are going to study.

Firms

A **firm** is the agent on the supply side of the theory of market price. It is defined as the unit that employs factors of production to produce products that it sells to other firms, to consumers, or to government. For obvious reasons, a firm is often called a producer. Elementary economic theory gives firms several attributes.

First, each firm is assumed to make consistent decisions, as though it were composed of a single individual. This strand of theory ignores the internal problems of how particular decisions are reached by assuming that the firm's internal organization is irrelevant to its decisions. This allows the firm to be treated, at least in elementary theory, as the individual unit of behaviour on the production or supply side of product markets, just as the consumer is treated as the individual unit of behaviour on the consumption or demand side.[8]

Second, economists assume that, in their role as producers, firms are the principal users of the services of factors of production. In 'factor markets' where factor services are bought and sold, the roles of firms and consumers are thus reversed from what they are in product markets: in factor markets, firms do the buying and consumers do the selling.

Motivation Economists assume that most firms make their decisions with a single goal in mind: to make as much profit as possible. This goal of *profit maximization* is analogous to the consumer's goal of utility maximization.

The nature of supply

The amount of a product that firms are able and willing to offer for sale is called the **quantity supplied**. Supply is a desired flow: how much firms are willing to sell per period of time, not how much they actually sell.

We make a brief study of supply in this chapter, establishing only what is necessary for a theory of price. In later chapters we study the determinants of supply in some detail. In those chapters we first study the behaviour of individual firms, and then aggregate individual behaviour to obtain the behaviour of market supply. For present purposes, however, it is sufficient to go directly to market supply, the collective behaviour of all the firms in a particular market.

The determinants of quantity supplied: the supply function

Four major determinants of the quantity supplied in a particular market are

1. The price of the product
2. The prices of factors of production
3. The goals of producing firms
4. The state of technology

This list can be summarized in a **supply function**:

$$q_n^s = S(p_n, F_1, \ldots, F_m),$$

where q_n^s is the quantity supplied of product n; p_n is the price of that product; $F_1, \ldots, F_m$ is shorthand for the prices of all factors of production; and the goals of producers and the state of technology determine the form of the function S. (Recall, once again, that the form of the function refers to the precise quantitative relation between the variable on the left-hand side and the variables on the right-hand side.)

Supply and price

For a simple theory of price, we need to know how quantity supplied varies with a product's own price, all other things being held constant. We are only concerned, therefore, with the *ceteris paribus* relation, $q_n^s = S(p_n)$. We will have much to say in later chapters about the relation between quantity supplied and price. For the moment, it is sufficient to state the hypothesis that, *ceteris paribus, the quantity of any product that firms will produce and offer for sale is positively related to the product's own price, rising when price rises and falling when price falls.*[9]

The reasons for this relation are fully laid out in Chapter 12. In the meantime, all we need to note is that the costs of increasing output by another unit tend to be higher, the higher is the existing rate of output. So, for example, if the firm is already producing 100 units per week, the cost of increasing output to 101 per week might be £1, while if 200

[8] At the more advanced level, many studies look within the firm to ask questions such as: does the firm's internal organization affect its behaviour? We briefly consider such questions in Chapter 17.

[9] As we did with demand, we introduce the relation between price and quantity supplied as an assumption in this chapter. In Chapter 12 we derive it as a prediction from more basic assumptions about the behaviour of firms.

units were already being produced, the cost of increasing output to 201 units might be £2. Clearly, the firm will not find it profitable to increase output if it cannot at least cover the additional costs that are incurred. As the price of the product rises, the firm can increase its output until the cost of producing an additional unit rises to the level where it is just covered by the price at which that unit can be sold. In summary, because the cost of raising output increases the more is being produced already, higher and higher prices are needed to induce firms to make successive increases in output. The result is a positively sloped supply curve indicating that the higher the price the more will be produced. Do not worry if this does not seem obvious; it will become so after Chapter 12 has been studied.

We now extend the numerical example of the carrot market to include the quantity of carrots supplied. The **supply schedule** given in Table 4.4 is analogous to the demand schedule in Table 4.2, but it records the quantities all producers wish to produce and sell at a number of alternative prices, rather than the quantities consumers wish to buy.

Next, the six points corresponding to each price–quantity combination shown in the table are plotted in Figure 4.7. When we draw a smooth curve through the six points, we obtain a **supply curve** for carrots. The curve shows the quantity produced and offered for sale at each price. Since we are not considering individual firms in this chapter, all supply curves are market curves showing the aggregate behaviour of all firms in the market. Where that is obvious from the context, the adjective 'market' is usually omitted.

Table 4.4 A market supply schedule for carrots

Reference letter	Price (£ per kg)	Quantity supplied ('000 kg per month)
u	0.20	5.0
v	0.40	46.0
w	0.60	77.5
x	0.80	100.0
y	1.00	115.0
z	1.20	122.5

The table shows the quantities that producers wish to sell at various prices, *ceteris paribus*. For example, row *y* indicates that if the price were £1.00 per kilogram, producers would wish to sell 115,000 kg of carrots per month.

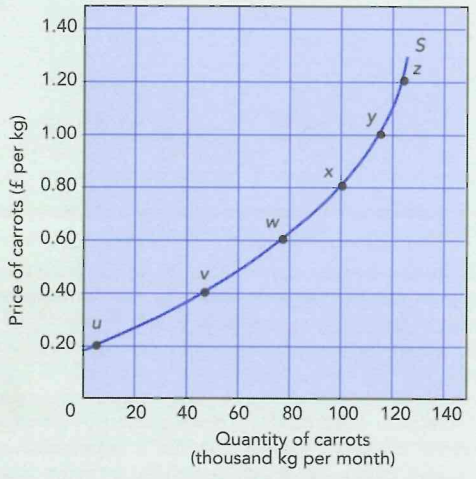


Fig 4.7 A supply curve for carrots

This supply curve relates quantity of carrots supplied to the price of carrots; its positive slope indicates that quantity supplied increases as price increases. The six points correspond to the price–quantity combinations shown in Table 4.4. Each row in the table defines a point on the supply curve. The smooth curve drawn through all of the points, labelled *S*, is the supply curve.

The supply curve in Figure 4.7 has a positive slope. This is a graphical expression of the following assumption:

The market price and the quantity supplied are positively related to each other.

SHIFTS IN THE SUPPLY CURVE

A shift in the supply curve means that, at each price, a different quantity will be supplied. An increase in the quantity supplied at each price is illustrated in Table 4.5 and plotted in Figure 4.8. This change appears as a rightward shift in the supply curve. A decrease in the quantity supplied at each price would appear as a leftward shift.

For supply-curve shifts, there is an important general rule similar to the one stated earlier for demand curves:

When there is a change in any of the variables (other than the product's own price) that affect the amount of a product that firms are willing to produce and sell, the whole supply curve for that product will shift.

The major possible causes of such shifts are summarized in the caption of Figure 4.9 and are considered briefly below.

Prices of inputs All things that a firm uses to produce its outputs—such as materials, labour, and machines—are called the firm's *inputs*. Other things being equal, the higher the price of any input used to make a product, the less will be the profit from making that product. Thus, the higher the price of any input used by a firm, the lower will be the amount that the firm will produce and offer for sale at any given price of the product.

Table 4.5 Two alternative market supply schedules for carrots

(1)	Price of carrots (£ per kg) (2)	Original quantity supplied ('000 kg per month) (3)	New quantity supplied ('000 kg per month) (4)	(5)
u	0.20	5	28	*u'*
v	0.40	46	76	*v'*
w	0.60	77.5	102	*w'*
x	0.80	100	120	*x'*
y	1.00	115	132	*y'*
z	1.20	122.5	140	*z'*

An increase in supply means a larger quantity is supplied at each price. For example, the quantity that is supplied at £1.00 per kilogram rises from 115,000 to 132,000 kg per month. A similar rise occurs at every price. Thus, the supply schedule relating columns (2) and (3) is replaced by one relating columns (2) and (4).

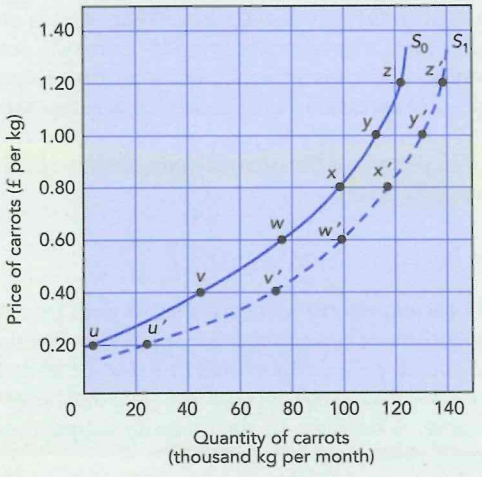


Fig 4.8 Two supply curves for carrots

The rightward shift in the supply curve from S_0 to S_1 indicates an increase in the quantity supplied at each price. The lettered points correspond to those in Table 4.5. A rightward shift in the supply curve indicates an increase in supply in the sense that more carrots are supplied at each price.

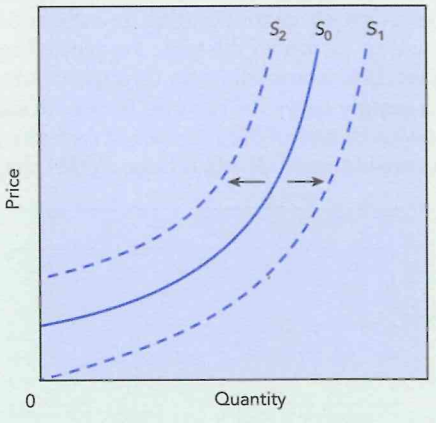


Figure 4.9 Shifts in the supply curve

A shift in the supply curve from S_0 to S_1 indicates an increase in supply; a shift from S_0 to S_2 indicates a decrease in supply. An increase in supply means that more is supplied at each price. Such a rightward shift can be caused by some changes in producers' goals, improvements in technology, or decreases in the costs of inputs that are important in producing the commodity. A decrease in supply means that less is supplied at each price. Such a leftward shift can be caused by some changes in producers' goals, or increases in costs of inputs that are important in producing the commodity.

A rise in the price of any input shifts the supply curve to the left, indicating that less will be supplied at any given price; a fall in the cost of inputs shifts the supply curve to the right.

Goals of the firm In elementary economic theory, firms are usually assumed to have a single goal: profit maximization. Firms could, however, have other goals, either in addition to, or as substitutes for, profit maximization. If firms worry about risk, they will pursue safer lines of activity even though these lines promise lower probable profits. If firms value size, they may produce and sell more than the profit-maximizing quantities. If they worry about their image in

society, they may forsake highly profitable activities when there is major public disapproval.

As long as firms prefer higher to lower profits, they will respond to changes in the profitabilities of alternative lines of action, and supply curves will have positive slopes. But if the importance that firms give to other goals changes, the supply curve will shift, indicating a changed willingness to supply the quantity at each given price.

Technology At any time, what is produced and how it is produced depends on the technologies in use. Over time, knowledge and production technologies change; so do the quantities of individual products supplied.

A technological change that decreases costs will increase the profits earned at any given price of the product. Since increased profitability leads to increased production, this change shifts the supply curve to the right, indicating an increased willingness to produce the product and offer it for sale at each possible price.

MOVEMENTS ALONG SUPPLY CURVES VERSUS SHIFTS

As with demand, it is essential to distinguish between a movement along the supply curve (caused by a change in the product's own price) and a shift of the whole curve (caused by a change in something other than the product's own price). We adopt the same terminology as with demand: **supply** refers to the whole relation between price and quantity supplied, and quantity supplied refers to a particular quantity actually supplied at a particular price of the product. Thus, when we speak of an *increase* or a *decrease in supply*, we are referring to shifts in the supply curve such as the ones illustrated in Figures 4.8 and 4.9. When we speak of a *change in the quantity supplied*, we mean a movement from one point on the supply curve to another point on the same curve.[10]

The determination of price

SO far, demand and supply have been considered separately. We now come to a key question: how do the two forces of demand and supply interact to determine price in a competitive market?

The concept of a market

Markets are basic concepts in economics. Originally the term designated a physical place where products were bought and sold. Once developed, however, theories of market behaviour were easily extended to cover products such as wheat, which can be purchased anywhere in the world at a price that tends to be uniform the world over. Thus, the concept of 'the wheat market' extends our viewpoint well beyond the idea of a single place to which the consumer goes to buy something.

For present purposes, a **market** may be defined as an area over which buyers and sellers negotiate the exchange of some product or related group of products. It must be possible, therefore, for buyers and sellers to communicate with each other and to make meaningful deals over the whole market.

Individual markets differ in the degree of competition among the various buyers and sellers. In the next few chapters we shall confine ourselves to markets in which the number of buyers and sellers is sufficiently large that no one of them has any appreciable influence on price. This is a very rough definition of what economists call *perfectly competitive markets*. Starting in Chapter 13, we will consider the behaviour of markets that do not meet this competitive requirement.

The graphical analysis of a market

Table 4.6 brings together the demand and supply schedules from Tables 4.2 and 4.4. Figure 4.10 shows both the demand and the supply curves on a single graph; the six points on the demand curve are labelled with upper-case letters, while the six points on the supply curve are labelled with lower-case letters, each letter referring to a common price on both curves.

QUANTITY SUPPLIED AND QUANTITY DEMANDED AT VARIOUS PRICES

Consider first the point at which the two curves in figure

[10] As with demand, an alternative terminology refers to an increase in the quantity supplied as an **expansion of supply** and a reduction in the quantity supplied as a **contraction of supply**.

Table 4.6 Demand and supply schedules for carrots and equilibrium price

Price per kg (£)	Quantity demanded ('000 kg per month)	Quantity supplied ('000 kg per month)	Excess demand (quantity demanded minus quantity supplied) ('000 kg per month)
0.20	110.0	5.0	105.0
0.40	90.0	46.0	44.0
0.60	**77.5**	**77.5**	**0.0**
0.80	67.5	100.0	–32.5
1.00	62.5	115.0	–52.5
1.20	60.0	122.5	–62.5

Equilibrium occurs where quantity demanded equals quantity supplied so that there is neither excess demand nor excess supply. These schedules are repeated from Tables 4.2 and 4.4. The equilibrium price is £0.60. For lower prices, there is excess demand; for higher prices, there is excess supply, which is shown as negative excess demand.

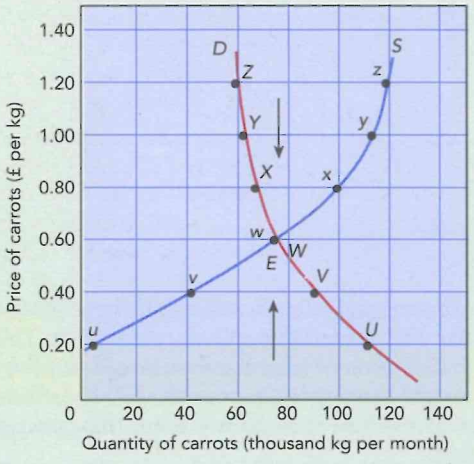


Figure 4.10 Determination of the equilibrium price of carrots

The equilibrium price corresponds to the intersection of the demand and supply curves. Point *E* indicates the equilibrium. At a price of £60, quantity demanded (point *W*) equals quantity supplied (point *w*). At prices above equilibrium, there is excess supply and downward pressure on price. At prices below equilibrium, there is excess demand and upward pressure on price. The pressures on price are represented by the vertical arrows.

4.10 intersect. Both the figure and Table 4.6 show that the market price is £0.60, the quantity demanded is 77.5 thousand kilograms, and the quantity supplied is the same. At that price consumers wish to buy exactly the same amount as producers wish to sell. Provided that the demand curve is negatively sloped and the supply curve positively sloped throughout their entire ranges, there will be no other price at which the quantity demanded equals the quantity supplied.

Now, consider prices below £0.60. At these prices, consumers' desired purchases exceed producers' desired sales. It is easily seen, and you should again check one or two examples, that, at all prices below £0.60, the quantity demanded exceeds the quantity supplied. Furthermore, the lower the price, the larger the excess of the one over the other. The amount by which the quantity demanded exceeds the quantity supplied is called the **excess demand**, which is defined as quantity demanded *minus* quantity supplied ($q^d - q^s$). This is shown in the last column of Table 4.6.

Finally, consider prices higher than £0.60. At these prices consumers wish to buy less than producers wish to sell. Thus, quantity supplied exceeds quantity demanded. It is easily seen, and again you should check a few examples, that, for any price above £0.60, quantity supplied exceeds quantity demanded. Furthermore, the higher the price, the larger the excess of the one over the other. In this case there is negative excess demand ($q^d - q^s < 0$). This is also shown in the last column of Table 4.6.

Note that negative excess demand is usually referred to as **excess supply**, which measures the amount by which supply exceeds demand ($q^s - q^d$).

CHANGES IN PRICE WHEN QUANTITY DEMANDED DOES NOT EQUAL QUANTITY SUPPLIED

Where there is excess demand, consumers will be unable to buy all they wish to buy; when there is excess supply, firms will be unable to sell all they wish to sell. In both cases some people will not be able to do what they would like to do, and we might expect some action to be taken as a result.

To develop a theory about how the market does behave in the face of excess demand or excess supply, we now make

two further assumptions. First, we assume that, *when there is excess supply, the market price will fall.* Producers, unable to sell some of their goods, may begin to offer to sell them at lower prices; purchasers, observing the glut of unsold output, may begin to offer lower prices. For either or both of these reasons, the price will fall.

Second, we assume that, *when there is excess demand, market price will rise.* Individual consumers, unable to buy as much as they would like to buy, may offer higher prices in an effort to get more of the available goods for themselves; suppliers, who could sell more than their total production, may begin to ask higher prices for the quantities that they have produced. For either or both of these reasons, prices will rise.

THE EQUILIBRIUM PRICE

For any price above £0.60, according to our theory, the price tends to fall; for any price below £0.60, the price tends to rise. At a price of £0.60, there is neither excess demand creating a shortage, nor excess supply creating a glut; quantity supplied is equal to quantity demanded and there is no tendency for the price to change. The price of £0.60, where the supply and demand curves intersect, is the price towards which the actual market price will tend. It is called the **equilibrium price**: the price at which quantity demanded equals quantity supplied. The amount that is bought and sold at the equilibrium price is called the **equilibrium quantity**. The term 'equilibrium' means a state of balance; it occurs when desired purchases equal desired sales.

When quantity demanded equals quantity supplied, we say that the market is in **equilibrium**. When quantity demanded does not equal quantity supplied we say that the market is in **disequilibrium**. We may now summarize our theory.

Assumptions concerning a competitive market:

1. All demand curves have negative slopes throughout their entire range.
2. All supply curves have positive slopes throughout their entire range.
3. Prices change if, and only if, there is excess demand; rising if excess demand is positive and falling if excess demand is negative.

Implications:

1. There is no more than one price at which quantity demanded equals quantity supplied: equilibrium is unique.
2. Only at the equilibrium price will the market price be constant.
3. If either the demand or the supply curve shifts, the equilibrium price and quantity will change.

The laws of demand and supply

Earlier in this chapter, we studied shifts in demand and supply curves. Recall that a rightward shift in the relevant curve means that more is demanded or supplied *at each market price*, while a leftward shift means that less is demanded or supplied *at each market price*. How does a shift in either curve affect price and quantity?

The answers to this question are called the 'laws' of supply and demand. Each of the laws summarizes what happens when an initial position of equilibrium is upset by some shift in either the demand or the supply curve, and a new equilibrium position is then established. The sense in which it is correct to call these propositions 'laws' is discussed in Box 4.1.

To discover the effects of each of the curve shifts that we wish to study, we use the method known as **comparative statics.**[11] We start from a position of equilibrium and then introduce the change to be studied. The new equilibrium position is determined and compared with the original one. The differences between the two positions of equilibrium must result from the change that was introduced, for everything else has been held constant.

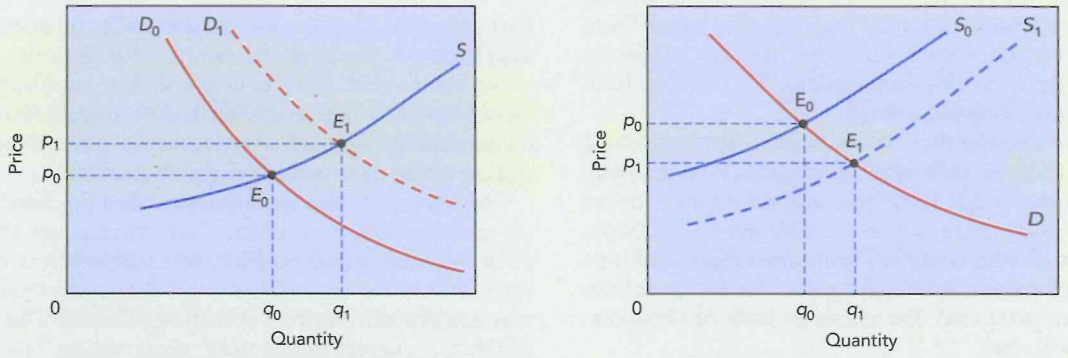
The four laws of demand and supply are derived in Figure 4.11, the caption of which must be carefully studied. The analysis of that figure generalizes our specific discussion about carrots. Because it is intended to apply to any product, the horizontal axis is simply labelled 'quantity' and the vertical axis 'price'.

The laws of supply and demand are:

1. A rise in the demand for a product (a rightward shift of the demand curve) causes an increase in both the equilibrium price and the equilibrium quantity bought and sold.
2. A fall in the demand for a product (a leftward shift of the demand curve) causes a decrease in both the equilibrium price and the equilibrium quantity bought and sold.
3. A rise in the supply of a product (a rightward shift of the supply curve) causes a decrease in the equilibrium price and an increase in the equilibrium quantity bought and sold.
4. A fall in the supply of a product (a leftward shift of the supply curve) causes an increase in the equilibrium price and a decrease in the equilibrium quantity bought and sold.

The Appendix to this chapter provides an algebraic treatment to finding equilibrium prices and quantities and to deriving these four laws of supply and demand.

[11] The term 'static' is used because we are not concerned about the actual path by which the market goes from the first equilibrium position to the second. Analysis of that path would be described as *dynamic analysis.*



(i) The effect of shifts in the demand curve

(ii) The effect of shifts in the supply curve

Figure 4.11 The 'laws' of demand and supply

The effects on equilibrium price and quantity of shifts in either demand or supply are called the laws of demand and supply. *An increase in demand.* In part (i), assume that the original demand and supply curves are D_0 and S, which intersect to produce equilibrium at E_0, with a price of p_0 and a quantity of q_0. An increase in demand shifts the demand curve to D_1, taking the new equilibrium to E_1. Price rises to p_1 and quantity rises to q_1.
A decrease in demand. In part (i), assume that the original demand and supply curves are D_1 and S, which intersect to produce equilibrium at E_1, with a price of p_1 and a quantity of q_1. A decrease in demand shifts the demand curve to D_0, taking the new equilibrium to E_0. Price falls to p_0 and quantity falls to q_0.
An increase in supply. In part (ii), assume that the original demand and supply curves are D and S_0, which intersect to produce an equilibrium at E_0, with a price of p_0 and a quantity of q_0. An increase in supply shifts the supply curve to S_1, taking the new equilibrium to E_1. Price falls to p_1 and quantity rises to q_1.
A decrease in supply. In part (ii), assume that the original demand and supply curves are D and S_1, which intersect to produce an equilibrium at E_1, with a price of p_1 and a quantity of q_1. A decrease in supply shifts the supply curve to S_0, taking the new equilibrium to E_0. Price rises to p_0, and quantity falls to q_0.

In Figures 4.5 and 4.9 we summarized the many events that cause demand and supply curves to shift. Using the four 'laws' derived in Figure 4.11, we can understand the link between these events and changes in market prices and quantities. To take one example, a rise in the price of butter will lead to an increase in both the price of margarine and the quantity bought (because a rise in the price of one product causes a rightward shift in the demand curves for its substitutes, and 'law' 1 tells us that such a shift causes price and quantity to increase).

We shall see in subsequent chapters that the theory of the determination of price by demand and supply is beautiful in its simplicity and yet powerful in its range of applications. In the meantime, Box 4.2 suggests some simple applications.

Prices in inflation

Up to now we have developed the theory of the prices of individual products under the assumption that all other prices remain constant. Does this mean that the theory is inapplicable during an inflationary period when almost all prices are rising? Fortunately, the answer is no.

We have mentioned several times that what matters for demand and supply is the price of the product in question relative to the prices of other products. The price of the product expressed in money terms is called its **money price** or its **absolute price**; the price of a product expressed as a relation to other prices is called a **relative price**.

In an inflationary world, a product's relative price can be measured by changes in the product's own price relative to changes in the average of all other prices, which is called the *general price level.* If, during a period when the general price level rose by 40 per cent, the price of oranges rose by 60 per cent, then the price of oranges rose relative to the price level as a whole. Oranges became *relatively* expensive. However, if the price of oranges had risen by only 30 per cent when the general price level had risen by 40 per cent, then their relative price would have fallen. Although the money price of oranges rose, oranges became *relatively* cheap.

In Lewis Carroll's famous story *Through the Looking Glass*, Alice finds a country where everyone has to run in order to stay still. So it is with inflation. A product's price

BOX 4.1

The 'laws' of demand and supply

As with all theories, the implications of the theory of demand and supply may be looked at in two quite distinct ways. First, they are logical deductions from a set of assumptions about behaviour. When we consider the truth of the implications, we are concerned with whether or not they are logically correct deductions. If we discovered that we made mistakes in our reasoning process, then we would conclude that the alleged implications are false in the sense that they do not follow from the assumptions of the theory. Second, the implications are predictions about real-world events. When we consider the truth of the implications, we are concerned with whether or not they are empirically correct. If one or more of the assumptions are empirically incorrect, the predictions of the theory are likely to be found to be at variance with the facts. In this case, we would conclude that the predictions are false in the sense that they are contradicted by real-world observations.

Consider an example. The sentence '*If* the demand curve for cars is negatively sloped, and *if* the supply curve is positively sloped, *then* an increase in demand for cars will raise their equilibrium price' is logically correct in the sense that the 'then' statement follows logically from the two 'if' statements. The single statement 'A rise in the demand for motor cars will increase the price of motor cars' is one that may or may not be empirically true. If any one of the assumptions of the theory is not empirically correct for motor cars, the statement may be found to be empirically false, even though it is a correct logical deduction from the theory's assumptions. If, for example, the market for cars does not respond to excess demand with a rise in price, the statement may be empirically false: even though a rise in demand for motor cars does create excess demand, market price will not rise.

Economists are concerned with developing implications that are correct in both senses: that they follow logically from the assumptions of a theory, and that they are factually correct.

Use of the term 'laws' in the popular phrase 'the laws of supply and demand' implies that the four implications have been shown to be true in the empirical sense. We must remember, however, that these 'laws' are nothing more than predictions that are always open to testing. There is considerable evidence that the predictions are consistent with the facts in many markets. In other markets, especially those for durable consumer goods such as cars and TV sets, it is not so clear that they are fully consistent with all relevant empirical observations.

Strictly, the theory of demand and supply applies only to cases in which no single buyer or seller has any influence over the market price. In Chapter 6, however, we will learn to extend demand and supply analysis to situations in which those price-taking assumptions are not true for suppliers. The theory may still generate useful predictions, but the proof of the value of these extensions is an empirical one: does the theory generate predictions that agree with the facts?

must rise as fast as the general level of prices just to keep its relative price constant.

It has been convenient in this chapter to analyse a change in a particular price in the context of a constant price level. The analysis is easily extended, however, to an inflationary period by remembering that any force that raises the price of one product when other prices remain constant will, given general inflation, raise the price of that product relative to all other prices. Consider the example of a change in tastes in favour of carrots that would raise their price by 20 per cent when other prices were constant. If, however, the general price level goes up by 10 per cent, then the price of carrots will rise by 32 per cent.[12] In each case the price of carrots rises 20 per cent *relative to the average of all prices.*

In price theory, whenever we talk of a change in the price of one product, we mean a change relative to the general price level.

[12] Let the price level be 100 in the first case and 110 in the second. Let the price of carrots be 120 in the first case and x in the second. To preserve the same relative price, we need x such that $120/100 = x/110$, which makes $x = 132$.

Individual markets, sectors, and the economy

IN this final section, we start with the concept of an economy as a whole and then consider various subdivisions of the economy, which are called *sectors.*

The concept of an economy

An **economy** is a rather loosely defined term for any broad

BOX 4.2

Demand and supply: what really happens

'The theory of supply and demand is neat enough,' said the sceptic, 'but tell me what really happens.'

'What really happens,' said the economist, 'is that demand curves have negative slopes; supply curves have positive slopes; prices rise in response to excess demand and fall in response to excess supply.'

'But that's theory,' insisted the sceptic. 'What about reality?'

'That is reality as well,' said the economist.

'Show me,' said the sceptic.

The economist produced the following passages from the press:

How deep is the art market's recession? . . . in today's unforgiving economic climate, the sales of contemporary, impressionist and modern works of art took hits at this week's auctions. Sales totalled just under £60 million compared with £500 million just one year ago. Many paintings on offer went unsold, and those that did sell went for well under their predicted price.

Coffee prices at the London Commodity Exchange staged another spectacular rise, putting them above their level at the start of the year. . . . Mr Barbosa (President of the Association of Coffee Producing Countries) said that the supply shortages that are underpinning prices would last quite some time.

Japan's six leading electronics companies plan to increase investment in semiconductor making capacity by 15.3 per cent to a combined ¥461 billion (£2.93 billion) in the year to March 1995 in response to a surge in demand for personal computers in the United States and Japan.

Increased demand for macadamia nuts causes price to rise above competing nuts. A major producer now plans to double the size of its orchards during the next five years.

OPEC countries once again fail to agree on output quotas. Output soars and prices plummet.

Fish which were once the poor people's staple in Mediterranean countries are now eaten almost exclusively by rich tourists. Over-fishing is blamed.

The effects of [the first year of] deregulation of US airlines were spectacular: cuts in air fares of up to 70 per cent in some cases, record passenger jam-ups at the airports, and a spectacular increase in the average load factor [the proportion of occupied seats on the average commercial flight].

The sceptic's response is not recorded, but you should be able to tell which clippings illustrate which of the economist's four statements about 'what really happens'.

collection of interrelated productive activities. It may refer to productive activity in a region of one country, such as *the economy of eastern Canada*; it may refer to one country, such as *the UK economy*, or it may refer to a group of countries, such as *the economy of Western Europe.*

A typical economy consists of thousands and thousands of markets. There are markets for wheat, strawberries, steel, cement, coal, oil, new cars, used cars, TVs, shirts, skis, compact discs, haircuts, video rentals, air travel, financial consulting, accounting services, consumer loans, mortgages, foreign currencies, and the myriad other goods and services that are found in a modern economy. Each is produced and sold in its own individual market.

Goods and factor markets

For many purposes, it is useful to group these markets into two types. **Goods markets** are those where goods and services are bought and sold.[13] The sellers in such markets are usually firms; the buyers may be consumers, other firms, or the central authorities. **Factor markets** are those where factor services are bought and sold. The sellers in such markets are the owners of factors of production (usually individuals, but sometimes firms); the buyers are usually firms and governments. As we shall see many times throughout this book, demand and supply analysis helps us to understand the operation of both goods markets and factor markets. The latter determine how much we earn, while the former determine how much our income will buy.

Relations among markets

Although each of the individual markets referred to above is distinct, all are interrelated and we need to see why.

[13] Since these markets include both goods and services, it might seem better to refer to them as *commodity markets.* Unfortunately, this term is in common use in the business world to refer to markets where basic commodities such as rubber, tin, and jute are sold. To avoid confusion, economists often speak of 'goods markets' where, in their own terminology, 'commodity markets' would be better.