Contents

CHAPTER 2

Demand, Supply and Market Equilibrium

'The price of ability does not depend on merit, but on supply and demand.'[1]

George Bernard Shaw

'We might as reasonably dispute whether it is the upper or the under blade of a pair of scissors that cuts a piece of paper, as whether value is governed by utility or cost of production.'[2]

Alfred Marshall (1842–1924)

CHAPTER OBJECTIVES

Upon completing this chapter, the student should understand:

- demand and the demand curve;
- supply and the supply curve;
- factors influencing demand and supply;
- the price mechanism and market equilibrium;
- price controls.

OUTLINE

INTRODUCTION

Why do consumers pay €7.50 for a kilogram of Irish beef and €40 for a haircut? The answer lies in the analysis of 'the market'. We begin our analysis by looking at the market for a particular product (i.e. good or service) like beef or haircuts. The willingness of consumers to purchase a particular product is the basis of market demand. The willingness of producers or suppliers to produce or provide a particular product is the basis of market supply. The interaction of consumers and producers determines the market price for a product. While Chapter 2 focuses on the market demand curve, Chapter 4 examines an individual consumer's demand curve.

After considering the components of a market and the way in which price is determined, we will look at price controls. These are actions taken by government to promote the interests of either the producer or the consumer or society more generally (i.e. some combination of consumers and producers).

2.1 DEMAND AND CONSUMERS

If you were asked to provide an example of a 'market' your description might vary from a stock exchange, to a website (e.g. eBay), to a corner shop. In an economic context, we usually discuss the market for a particular product like a chocolate bar or a haircut. In this case, the 'market' is not a place, but a theoretical concept or model.

Definition

The market is any institutional arrangement that facilitates the buying and selling of a product.

Broadly interpreted, the term 'product' can encompass factors of production (e.g. labour) and future commitments (e.g. futures market) as well as goods, services or commodities. Generally, there is also a time dimension. This recognises that market conditions of demand and supply for a particular product last for only a limited period of time. The appropriate length of time varies with the particular product. Developments in oil-producing countries mean that the price of a barrel of oil on the world market is constantly changing. We may want to look at the market for oil on a daily or even hourly basis. The market for chocolate bars is more stable. It may be possible to look meaningfully at a market for this product over a longer period of time – a month or even a year.

The model of the market shows the interaction of consumers and producers. Consumers generate the demand for a product.

Definition

Demand is the quantity of a product that consumers are willing to purchase at each conceivable price during a particular time period.

Demand relates not to what consumers want, but to what they want and can afford. Sometimes this is called 'effective' demand. It is the desire for a product backed up by an ability to pay.

Demand does not refer to a particular quantity, but to a whole range of quantities. The reason we associate a particular price with a product is because in a market system, price is determined by the interaction of the consumers and the suppliers. If we observe consumers in isolation, we are then faced with a range of prices, and subsequently with a range of quantities.

What determines the level of demand? Why do consumers demand a small or large quantity of a product? One of the key factors which determine demand is the price of the product. We can write this relationship in mathematical form:

$$\mathbf{Qd = f(P)} \qquad \textbf{[2.1]}$$

where: Qd = Quantity demanded; P = Price.

This relationship can be expressed in a number of different ways. For example,

Quantity demanded is a function of price

or

Quantity demanded depends on price

or

Each level of quantity demanded is associated with its own price

Equation 2.1 is called the demand function. It involves two variables where a variable is defined as a symbol that can represent any unspecified number or value. Price is the explanatory variable in that it serves to explain the specific level of quantity demanded. Price is autonomous or independent. Quantity demanded is the dependent variable. It is conditional on the level of price.

We can examine the relationship between price and quantity for a product by considering a demand schedule.

Definition

A demand schedule is a schedule or table which indicates the quantity of a particular product which consumers are willing to purchase at various prices during a specified time period.

In this definition, we implicitly assume that any other factors which could conceivably influence the quantity demanded do not change during the relevant time period. Using the terminology of the economist, we say that a demand schedule examines the relationship between price and quantity demanded, *ceteris paribus*.

Definition

Ceteris paribus *is a Latin phrase which means 'other things being equal'. In the study of economics, this phrase is used to mean that the relationship between two variables can be examined, assuming that other factors are not changing.*

The factors which are held constant when we consider the demand schedule include the prices of related products, consumers' income and their tastes (e.g. the incidence of vegetarianism).

Table 2.1 shows the demand schedule for beef measured in kilograms for a one-month period. For each price, there is a corresponding level of quantity demanded.

TABLE 2.1: THE DEMAND SCHEDULE FOR BEEF (PER MONTH)

Price, P (Euros)	**Quantity demanded, Qd (thousands of kilograms)**
5.00	2,625
5.50	2,500
6.00	2,375
6.50	2,250
7.00	2,125
7.50	2,000
8.00	1,875
8.50	1,750
9.00	1,625
9.50	1,500

We can see from this schedule that when price increases from €7.00 per kilogram to €7.50 per kilogram, the quantity demanded falls from 2,125,000 kilograms to 2,000,000 kilograms.

This demand schedule is a specific example of a general relationship. With few exceptions, as the price of a product falls, the quantity demanded of that product rises. This relationship is observed so frequently that we call it the principle of demand.

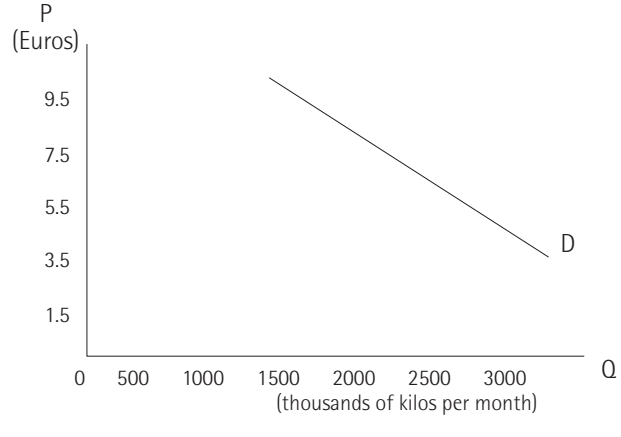
Definition

The principle of demand refers to the inverse or negative relationship between price and quantity demanded, ceteris paribus.

Generally, we illustrate this relationship using a two-dimensional graph. It is customary to represent price on the vertical axis and quantity on the horizontal axis. We plot the points from the demand schedule and join them together to form the demand curve.

Figure 2.1 illustrates the demand curve for beef described by the demand schedule. Because the relationship between price and quantity is negative, the demand curve is downward sloping.

FIGURE 2.1: THE DEMAND CURVE FOR BEEF



The demand curve alone cannot tell us the actual selling price or the quantity sold in the market. This information is only determined when the consumers (represented by the demand curve) interact with producers (represented by the supply curve) to form a functioning market.

At this stage we only offer an intuitive explanation as to why the demand curve is generally downward sloping. Recall that when we discussed the principle of demand, we stated that other factors that affect demand are 'held constant'. Among those factors are the prices of related products. A number of products can be substituted for beef – chicken or lamb, for example. As the price of beef increases, some consumers will purchase substitute goods in place of beef. Therefore, as the price of beef rises, the quantity of beef demanded falls. Alternatively, if the price of beef falls, it becomes cheaper relative to other types of meat, or food more generally. People will purchase more beef at a lower price instead of chicken or lamb. We offer a more detailed explanation of the downward sloping individual consumer's demand curve, and examine possible exceptions, in Chapter 4.

When the demand curve is a straight line, it can be represented in a simple linear form, as follows:

$$\boxed{Qd = a - bP} \qquad [2.2]$$

where: Qd = Quantity demanded; P = Price; a and b = constants.

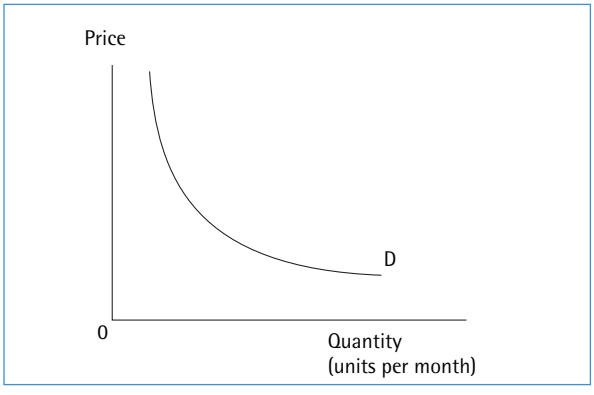
Equation 2.2 shows the general form of a linear relationship between price and quantity demanded. The negative relationship between the two variables is reflected in the minus sign before price, the independent variable. The demand schedule for beef, which we have been discussing, is based on a linear demand relationship. The equation for this specific relationship is:

$$Qd = 3{,}875{,}000 - 250{,}000P$$

A demand curve is not always a straight line. A convex demand curve which is bowed towards the origin is shown in Figure 2.2.

The exact shape of the demand curve depends on the nature of the relationship between the change in price and the subsequent change in quantity demanded. We will examine this in greater detail in Chapter 3.

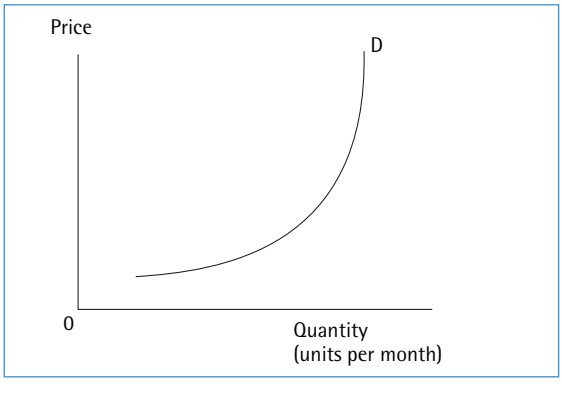
FIGURE 2.2: A CONVEX DEMAND CURVE



Exceptions to the downward sloping demand curve

There are a few exceptional cases where the demand curve is not downward sloping. For a limited number of products and over a limited range of prices, the demand curve may be 'perverse' or upward sloping as shown in Figure 2.3.

FIGURE 2.3: A 'PERVERSE' DEMAND CURVE



Arguably, one exception is provided by a snob or Veblen good. The demand curve of a Veblen good is upward sloping over a range of prices. The behaviour that underlies this demand curve was coined 'conspicuous consumption' by Thorstein Veblen, the American Institutional economist and author of *The Theory of the Leisure Class* (1899). He argued that certain sections of society, in particular the 'leisure' class, may not act like the consumers whom we have just described.

Veblen suggested that the ownership of goods that are expensive and frivolous confers status on the owner because others realise that these 'ostentatious' goods can only be purchased by members of the upper economic class. Status increases when the price of the good increases. If the price of the good falls, the 'snob' value also falls, since it is now less expensive and more affordable to lower classes. In some circumstances the demand for the 'snob' good may actually fall when the price falls, resulting in an upward sloping demand curve. Rolex watches and BMWs are possible examples, albeit only over a limited range of prices.

However, many economists argue that a snob or Veblen good should not really be regarded as an exception as the nature of the good and, in particular, tastes for the good change as its price changes, i.e. the *ceteris paribus* assumption does not hold.

A clearer exception to the principle of demand is provided by a Giffen good. The 'Giffen paradox' was described by Sir Robert Giffen (1837–1910) who, it is said, observed that an increase in the price of bread in nineteenth-century London, '. . . makes so large a drain on the resources of the poorer labouring families . . . that they are forced to curtail their consumption of meat and the more expensive farinaceous foods: and, bread being still the cheapest food which they can get and will take, they consume more, and not less of it'.[3]

This quotation suggests that the observation of a Giffen good requires a very specific set of circumstances. First, income levels must be low and the good must constitute a significant part of a consumer's purchases. Second, the good in question must have few affordable substitutes. Even so, an increase in demand in response to an increase in price will probably only occur over a very narrow range of prices. In western economies, characterised by relatively high levels of income and the existence of numerous substitutes, most economists believe that the Giffen paradox is no longer relevant.

In summary, although a 'perverse' market demand curve is theoretically possible, this relationship is seldom if ever observed. In general, we can rely on the negative relationship between price and quantity demanded described by the principle of demand.

Other factors influencing demand

In reality there is a wide range of factors that determine the level of quantity demanded. Here we focus on the more important determinants or, as they are sometimes referred to, underlying conditions of demand. Until now, these determinants were 'held constant' according to the *ceteris paribus* condition.

1. The price of related products

If two products are related, they are either substitutes for, or complements to, each other.

> **Definition**
>
> *Two products are substitutes if consumers consider each product as an alternative for the other product. If the price of either product falls, demand for the other product falls and if the price of either product rises, the demand for the other product rises.*

Beef and lamb, butter and margarine, tea and coffee, and bus and rail transport are likely examples of substitute goods and services. If the price of a return ticket on a bus between Galway and Dublin falls, we expect the demand for railway tickets for the same journey to fall. If we test this hypothesis and find that this relationship exists, we consider these products to be substitutes.

Definition

Products which are complements are bought and consumed together. This implies that if the price of either product falls, demand for the other product rises and if the price of either product rises, the demand for the other product falls.

Plausible examples of complementary products include beef and horseradish sauce, CDs and CD players, personal computers and printers, airline tickets and hotel accommodation, automobiles and automobile insurance. Consider CDs and CD players. When they first appeared on the market, CD players were reasonably priced but CDs were expensive. Subsequently, the demand for CD players increased dramatically when the price of CDs fell significantly, indicating that these products are complements.

2. Consumers' income (Y)

Income was also 'held constant' when we considered the demand schedule. However, it is another explanatory variable. This means that if income changes, it will usually have an effect on demand. Normal and inferior goods are defined in terms of income.

Definition

For a normal good, there is a positive relationship between income and demand. Demand for a normal good increases as income increases and decreases as income decreases.

There are many types of beef. Round steak and sirloin are better cuts of beef. The demand for superior cuts or organic beef increases with income. Most goods (or, more generally, products, i.e. goods and services) from a iPod to an automobile are examples of normal goods.

Definition

For an inferior good, there is a negative relationship between income and demand. Demand for an inferior good decreases as income increases and increases as income decreases.

Minced beef and bus rides, albeit only over a limited range of income, are examples of inferior goods. Consider minced beef. If income increases, consumers sometimes substitute a better grade of meat for minced beef. By establishing a negative relationship between demand for minced beef and income, we classify minced beef as an inferior good.

3. Consumers' tastes (T)

Tastes and preferences for the product also affect demand. Taste, in this context, is a broad concept. It is shaped by time, custom, tradition, fashion, location and social attitudes.

Economists generally believe that tastes change slowly over time. Therefore, they are comfortable with the assumption that consumers' preferences 'can be held constant' when the price/quantity relationship is examined. However, as the case study at the end of this section illustrates, the health scare caused by contaminated pork products in 2008 had an immediate impact on the demand for Irish pork products.

4. Other factors (O)

Advertising, expectations about future market conditions and access to foreign markets are some additional factors that lead to changes in demand for a particular product. For example, as a result

of 'Mad Cow Disease', beef trade with Russia was curtailed and beef trade with Iran was discontinued. This led to a deterioration in the conditions of demand for Irish beef.

Hence, the quantity of a product demanded is determined by the price of the product itself and by the price of related products, by the consumers' income, by the consumers' tastes and by a range of other factors. The complete mathematical representation for our demand function is in the form of:

$$\mathbf{Qd = f(P, Related\ goods, Y, T, O)} \qquad [2.3]$$

where: Qd = Quantity demanded; P = Price; Y = Income; T = Tastes; O = Other factors.
In this demand function, as in the original demand function, quantity demanded is the dependent variable. The variables within the parentheses represent independent variables.

Suppose we want to examine the relationship between quantity demanded and price. We can show this using the demand function:

$$Qd = f\ (P, \overline{\text{Related goods}}, \overline{Y}, \overline{T}, \overline{O})$$

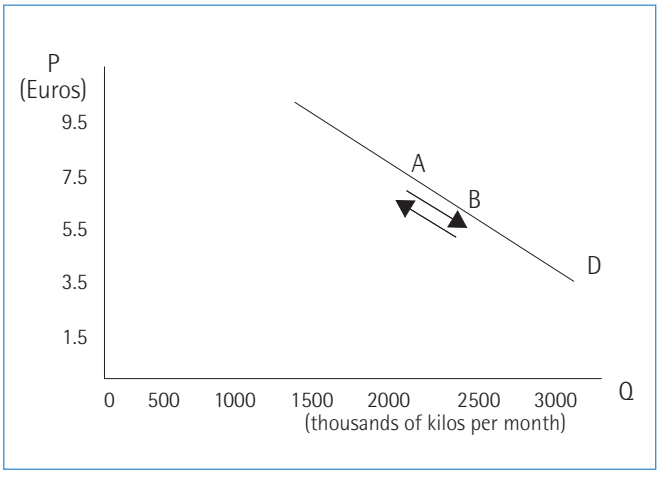
There is a line over all of the independent variables with the exception of price. The line indicates that underlying variables or the conditions of demand are held constant. We can interpret this function in the same way that we interpreted the original demand function. Quantity demanded depends on price, *ceteris paribus*.

We now examine the distinction between a movement along the demand curve and a shift of the demand curve.

A movement along the demand curve

A movement along the demand curve is caused by a change in price. Because of the *ceteris paribus* clause, all other factors influencing demand are held constant. For example, a move along the demand curve from A to B, as in Figure 2.4, is caused by a fall in price. As price falls from €7.50 to €6.00 per kilogram, the quantity of Irish beef demanded increases from 2,000,000 to 2,375,000 kilograms per month. Similarly, a movement from B to A is caused by an increase in price.

FIGURE 2.4: A MOVEMENT ALONG THE DEMAND CURVE



A shift of the demand curve

Suppose that one of the conditions of demand changes. For example, assume that income rises and beef is a normal good.

We can show this using the demand function:

$$Qd = f\ (\overline{P}, \overline{\text{Related goods}}, Y, \overline{T}, \overline{O})$$

In this case, there is a line over all of the independent variables except for Y, which represents income, the variable which is changing.

If one of the underlying variables changes, then each single point on the demand curve moves either out to the right or in to the left. Figure 2.5 shows the original demand curve, D. The second demand curve, D^1, reflects the increase in income. Every conceivable price corresponds to a higher level of demand. For example, at price P^0, demand increases from Q to Q^1. An improvement in the conditions of demand leads to a rightward shift of the demand curve.

FIGURE 2.5: A RIGHTWARD SHIFT OF THE DEMAND CURVE

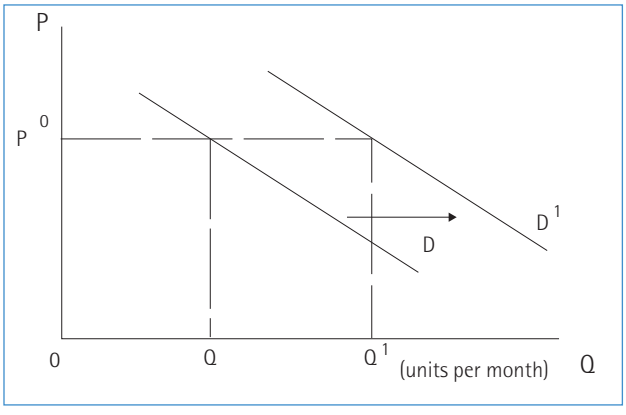


FIGURE 2.6: A LEFTWARD SHIFT OF THE DEMAND CURVE

If income had fallen for a normal good the shift would have been to the left. A deterioration in the conditions of demand leads to a leftward shift of the demand curve. This is shown in Figure 2.6.

Table 2.2 contains a number of possible changes in underlying factors which would result in either a rightward or a leftward shift of the demand curve. Draw these for yourself.

TABLE 2.2: CHANGES IN INDEPENDENT VARIABLES THAT CAUSE SHIFTS OF THE DEMAND CURVE

Independent variable	Rightward shift of demand curve	Leftward shift of demand curve
↑P substitute good	√	
↓P substitute good		√
↑P complement good		√
↓P complement good	√	
↑Y (normal good)	√	
↓Y (normal good)		√
↑Y (inferior good)		√
↓Y (inferior good)	√	
Preference improves	√	
Preference disimproves		√

CASE STUDY

Extract from *The Irish Independent*
Food firms 'must test for dioxins': Safety boss signals stricter regulations for businesses after pork scare
by Aideen Sheehan

Food businesses in Ireland will be expected to test for dioxins in meat products in future, the Food Safety Authority of Ireland (FSAI) said yesterday. FSAI Deputy Chief Executive Alan Reilly told an Oireachtas Agriculture Committee looking into last month's pork contamination scare that Ireland historically had very low dioxin levels in the environment and in food, but its low-risk assessment would have to be reviewed. 'From now on, the FSAI would expect dioxins to be a hazard that is actively controlled in meat and meat products by . . . supplier control and testing by food business operators,' he said. Defending the proportionality of the total recall of Irish pork products, Mr Reilly said dioxins could cause cancer, disruption of the reproductive and immune systems, and damage to the skin in humans, and the more of them you put in your body, the greater the risk. 'Are we going to expose our children to these levels?' he said. People would not want to buy Irish pork containing 200 times the legal limit for dioxins when they could buy a competitive product below the legal threshold, he added. The FSAI concluded that ongoing exposure to the level of dioxins found in Irish pork during the crisis would have put consumers' health at risk.

The European Food Safety Authority calculated that the concentration of dioxins in the human body could have increased by 10% for an average consumer during the limited timescale of the incident, which affected Irish pork from September to December 2008. Dr Claudia Heppner of EFSA told the committee that, as effective measures had been taken, they considered this increase was of no concern. People who ate large amounts of contaminated pork throughout the period would not necessarily suffer adverse health effects, she added.

Mr Reilly stressed that the FSAI's remit extended from the farm gate onwards, with animal feed controls and inspections the responsibility of the Department of Agriculture.

Fine Gael Agriculture spokesman Michael Creed asked if a single agency should have control over the entire food and feed industry. Mr Reilly said that might be one of the topics considered in a review of the incident. The reason all Irish pork had to be withdrawn was that it was it impossible to distinguish between contaminated and uncontaminated pork at slaughterhouses, despite full traceability of individual pigs before slaughter, he added. The legislation could be amended to require full traceability but there would be likely to be a cost involved, he said. Committee Chairman Johnny Brady said the committee would produce its report on the scare in the coming weeks.

Source: *The Irish Independent*, 15 January 2009.

Questions

1. On one diagram, show the demand curve for Irish pork products before the pork scare and immediately after the pork scare. What changing variable caused the change in demand?
2. Did the above-mentioned change in the market for Irish pork products have 'knock-on' effects in any other markets? Explain your answer.
3. Consider the market for fish. Using the demand function, identify changes to underlying conditions which affected demand for this product. Show these changes on a diagram.

Answers on website

2.2 SUPPLY AND PRODUCERS

Supply and the quantity supplied can be analysed in a similar fashion to that of demand and the quantity demanded.

Definition

Supply is the quantity of the product that sellers are willing to offer at each conceivable price during a particular period of time.

It is not a particular quantity, but a whole set of quantities. Whereas demand is related to wants (supported by the ability to pay), supply is related to the use of resources. The time period may be hours, weeks, months or years.

Resources are 'inputs' which are used to produce products. These inputs or factors of production are land (or natural resources more generally), capital (or previously manufactured resources, e.g. machinery), labour and enterprise (or entrepreneurship). It is the cost of these factors of production that underlie the supply curve. This will be discussed in greater detail in Chapters 5, 6 and 7.

Again, we begin with price as the main explanatory variable. Quantity supplied is the dependent variable. This relationship can be written in a mathematical form, as follows:

$$\mathbf{Qs = f(P)} \qquad [2.4]$$

where: Qs = Quantity supplied; P = Price.

This equation states that the quantity supplied depends on price. It is a function of price. There is a positive relationship between price and quantity supplied. We can examine the relationship between these two variables by looking at a supply schedule for beef.

Definition

A supply schedule is a schedule or table which indicates the quantity of a particular product which producers are willing to supply at various prices, over a particular period of time.

In this case, the factors that we are 'holding constant' include the wage of labour, the price of raw materials, the state of technology and government regulations (e.g. safety and environmental regulations). Table 2.3 shows the supply schedule for beef.

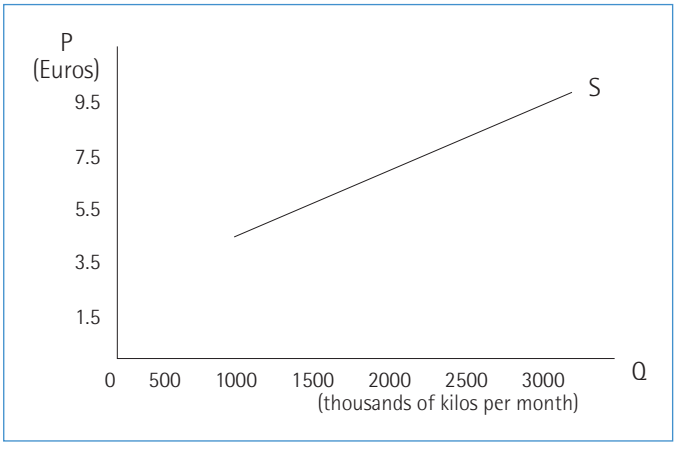
TABLE 2.3: THE SUPPLY SCHEDULE FOR BEEF (PER MONTH)

Price, P (Euros)	Quantity supplied, Qs (thousands of kilograms)
5.00	1,000
5.50	1,200
6.00	1,400
6.50	1,600
7.00	1,800
7.50	2,000
8.00	2,200
8.50	2,400
9.00	2,600
9.50	2,800

From the table, we can see that there is a positive relationship between price and quantity supplied. At €6.00 per kilogram, 1,400,000 kilograms of beef are supplied to the market. If the price increases to €7.50, producers are willing to supply 2,000,000 kilograms of beef to the market.

Again, we illustrate this relationship by plotting a supply curve on a two-dimensional graph. By plotting the range of prices on the vertical axis and the levels of quantity supplied on the horizontal axis, we can derive the upward sloping supply curve. Figure 2.7 illustrates the positive relationship between the two variables.

FIGURE 2.7: THE SUPPLY CURVE OF BEEF



At this point, we will only offer an intuitive explanation about why the supply curve is upward sloping. A more rigorous explanation will be advanced in Chapter 6.

Notice that the supply curve starts above the origin. We can interpret this as meaning that if the price is less than €2.50 per kilogram, beef will not be supplied to the market. Producers must pay for inputs that include feedstuffs for cattle, fertiliser and machinery. At a price below €2.50, even the most efficient producer cannot cover costs and make a profit. Applying a concept we discussed in Chapter 1, the opportunity cost of producing beef is too high. Since we assume that producers attempt to maximise profits, we expect them to divert resources whenever possible to markets where they can do this. Farmers may move into tillage or sheep production until market conditions for beef improve.

At a price above €2.50, beef manufacturers begin production. As price increases, production expands. In doing so, resources may have to be diverted from the production of other goods to produce beef.

The supply curve can be represented in a linear form, as follows:

$$Qs = c + dP \quad [2.5]$$

where: Qs = Quantity supplied; P = Price; c and d = constants.

Equation 2.5 is the general form of a linear relationship between price and quantity. The plus sign before the price variable reflects the positive relationship between the price and the quantity supplied. As price increases, so does the quantity supplied. The supply schedule for beef, which we have been discussing, is based on a linear relationship. The specific equation for this example is:

$$Qs = -1{,}000{,}000 + 400{,}000P$$

A supply curve may not be a straight line, depending on the nature of the producers' costs. A non-linear upward sloping supply curve is shown in Figure 2.8.

FIGURE 2.8: A NON-LINEAR UPWARD SLOPING SUPPLY CURVE

Exceptions to the upward sloping supply curve

The positive relationship between price and quantity supplied holds true for most products produced in competitive markets (see Chapter 6 for further details). There are, however, exceptions to this rule. One example is illustrated below.

FIGURE 2.9: AN EXCEPTION TO THE UPWARD SLOPING SUPPLY CURVE

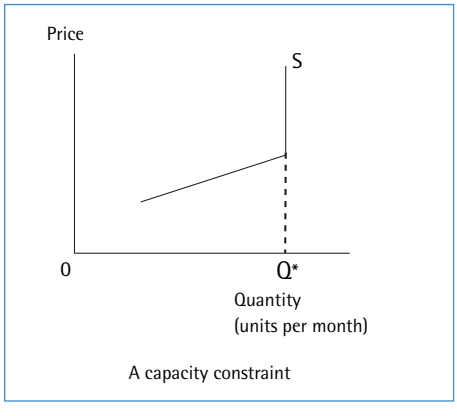


Figure 2.9 depicts a 'kinked' supply curve. The supply curve is upward sloping over a range of production. Then the supply curve changes and is vertical. Beyond Q*, firms operating in this market cannot respond to an increase in price because of limitations imposed by plant size, non-access to raw materials or the non-availability of skilled labour. The vertical part of the supply curve reflects maximum production capacity. It is impossible to produce beyond output level Q* because of this capacity constraint.

Factors such as the level of technology, the price of inputs or raw materials and the extent of government regulations will affect the position and shape of the supply curve.

Other factors influencing supply

1. Technology (T)

A supply curve is drawn for a particular technological process. A technological improvement means that suppliers can use inputs more efficiently, and the cost of producing a unit of output

falls. A technological improvement can result from improved machinery. It can also result from different work practices that make labour more efficient. Often, a technological improvement involves both new machinery and changing work practices.

2. Input prices (I)
Output is produced by using a certain combination of inputs, including labour, raw materials and machinery. A supply curve is drawn for a particular price (or cost) level for these factors of production. A reduction in input prices (e.g. lower wages, lower fertiliser costs, lower rental prices for machinery) induces farmers to supply more output at each price. Higher input prices, making production less profitable at each conceivable price, results in less output.

3. Government regulations (G)
Government regulations can positively or negatively affect producers' costs. Safety regulations that reduce accidents and safeguard the health of workers may be cost-reducing (e.g. the ban on smoking in the workplace). Compliance with restrictions and environmental regulations legislated by government can also increase the costs of firms operating in particular markets. Depending on the nature of the regulation, supply can be either positively or negatively affected.

4. Taxes (Tx)
Taxes on wages, property, utilities or other inputs increase the costs of production. A reduction in taxes decreases the costs of production.

5. Subsidies (Sy)
Government subsidies to producers decrease the cost per unit of output. Farmers have received extensive subsidies from the Irish government and the European Union. These were generally designed to supplement farm income so as to encourage people to remain in farming.

6. Other factors (O)
Other factors influencing the level of quantity supplied include the price of other commodities, expectations of the future, weather or climatic conditions and other unpredictable events.

The extended supply function is of the form:

$$\boxed{\mathbf{Qs = f(P, T, I, G, Tx, Sy, O)}} \qquad \textbf{[2.6]}$$

where: Qs = Quantity supplied; P = Price; T = Technology; I = Input costs;
G = Government regulations; Tx = Taxes; Sy = Subsidies; O = Other Factors.

Suppose we want to examine the relationship between quantity supplied and price. We can show this using the supply function:

$$Qs = f\,(P, \overline{T}, \overline{I}, \overline{G}, \overline{Tx}, \overline{Sy}, \overline{O})$$

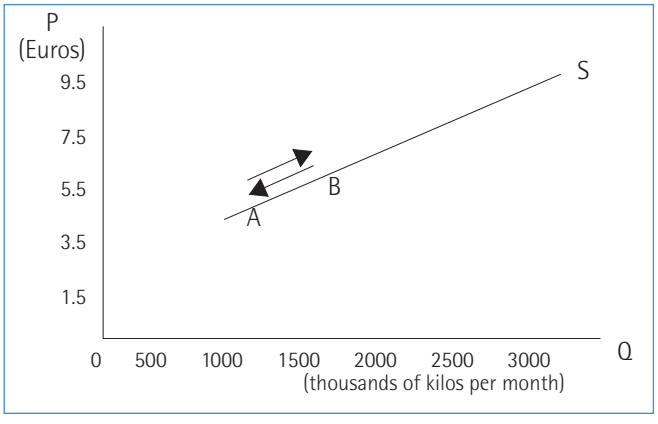
There is a line over all of the independent variables with the exception of price. The line indicates that underlying variables or the conditions of supply are held constant. We can interpret this function in the same way that we interpreted the original supply function. Quantity supplied depends on price, *ceteris paribus*.

We now examine the distinction between a movement along the supply curve and a shift of the supply curve.

A movement along the supply curve

A movement along the supply curve is caused by a change in price. This is illustrated in Figure 2.10. The move along the supply curve from A to B is caused by an increase in price. As price rises from €5.00 to €6.50, quantity supplied rises from 1,000,000 to 1,600,000 units. Similarly, a decrease in price from €6.50 to €5.00 results in a fall in the level of quantity supplied. This is represented by a movement from B to A.

FIGURE 2.10: A MOVEMENT ALONG THE SUPPLY CURVE



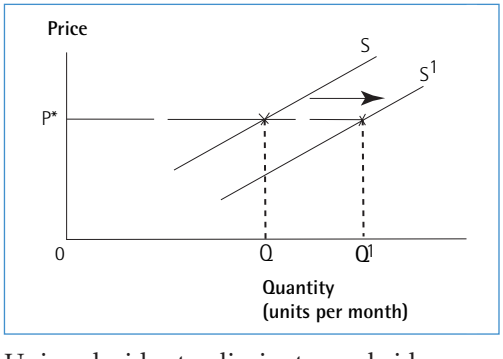
A shift of the supply curve

Suppose that one of the conditions of supply changes. For example, suppose the price of hay, which is used to feed cattle in the winter, falls. Hay is one input used in the production of beef. We can show this change using the supply function.

$$Qs = f(\overline{P}, \overline{T}, I, \overline{G}, \overline{Tx}, \overline{Sy}, \overline{O})$$

In this case, there is a line above all of the variables with the exception of I, which represents the price of an input which is changing. Because the price of the input falls, farmers can supply cattle, which are used for beef, at a lower cost.

FIGURE 2.11: A RIGHTWARD SHIFT OF THE SUPPLY CURVE



We can illustrate this improvement by a rightward shift of the supply curve, as shown in Figure 2.11. Because of the change in an underlying variable, the supply curve shifts from S to S^1. If we hold the quantity constant, we observe that Q units of beef can be produced at a lower cost per kilogram.

This rightward shift indicates an increase in supply. For example, at price P*, the quantity of beef supplied increases from Q to Q^1. At each price, more kilos of beef are produced.

Alternatively, suppose that the European Union decides to eliminate a subsidy payment on cattle. We can show this change using the supply function:

$$Qs = f(\overline{P}, \overline{T}, \overline{I}, \overline{G}, \overline{Tx}, Sy, \overline{O})$$

In this case, the line is above all of the variables with the exception of Sy, which represents the subsidy which is changing.

Figure 2.12 shows the original supply curve (S) which reflects beef production with the subsidy in place. Supply curve S^1 illustrates the new supply curve reflecting the elimination of the subsidy. This model predicts that if the subsidy on cattle is eliminated, it will lead to a reduction in the supply of beef.

Table 2.4 contains a number of possible changes in the underlying factors that result in either a rightward or a leftward shift of the supply curve. Draw the supply curves for yourself.

FIGURE 2.12: A LEFTWARD SHIFT OF THE SUPPLY CURVE

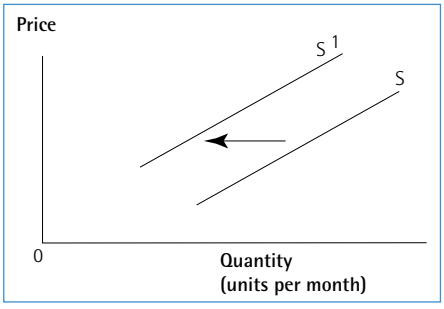


TABLE 2.4: CHANGES IN UNDERLYING FACTORS THAT CAUSE SHIFTS OF THE SUPPLY CURVE

Independent variable	Rightward shift of supply curve	Leftward shift of supply curve
Technological improvement	√	
↑ I	√	
↓ I		√
G (cost saving)	√	
G (cost increasing)		√
↑ Tx	√	
↓ Tx		√
↑ Sy		√
↓ Sy	√	

2.3 MARKET EQUILIBRIUM AND THE PRICE MECHANISM

So far, we have looked at consumers and producers separately. In a market, the (market) demand curve, which represents the collective purchasing decisions of all consumers for a particular product, interacts with the (market) supply curve, which shows how much of the same product firms produce. When consumers and firms interact, as reflected in the intersection of the demand curve and the supply curve, price and quantity are established, as we will soon demonstrate.

Market equilibrium

Alfred Marshall (1842–1924), the economist most noted for bringing demand and supply to the forefront of economic thinking, compared demand and supply to the blades of a pair of scissors (see Appendix 2.1). The demand curve shows the negative relationship between price and quantity demanded. The supply curve shows the positive relationship between price and quantity supplied.

In a market economy, price is determined by both sides of the market.

Definition

Price can be defined as that which is given in exchange for a product.

It is impossible to say whether it is (market) demand or (market) supply that determines the market price, just as it is impossible to say which blade of Marshall's scissors does the actual cutting. Price is determined by the interactions of consumers and producers. Theoretically, the consumer and the producer are equally important participants in the market.

It is the interaction of the demand curve and the supply curve that determines the quantity that will be traded in the market and the price that will be charged. There is one price and one quantity where the actions of the buyers and sellers coincide. We call this point equilibrium, a concept used frequently by economists.

Definition

Equilibrium implies a state of balance, a position from which there is no tendency to change.

At equilibrium, the market 'clears' in the sense that the quantity demanded equals the quantity supplied. At all other prices, either quantity demanded is greater than quantity supplied (excess demand) or quantity supplied is greater than quantity demanded (excess supply).

The equilibrium price does not reflect equity or fairness or any other moral concept. It simply reflects the positions of the demand and supply curves, which, in turn, represent the interaction of the two basic economic agents in the marketplace.

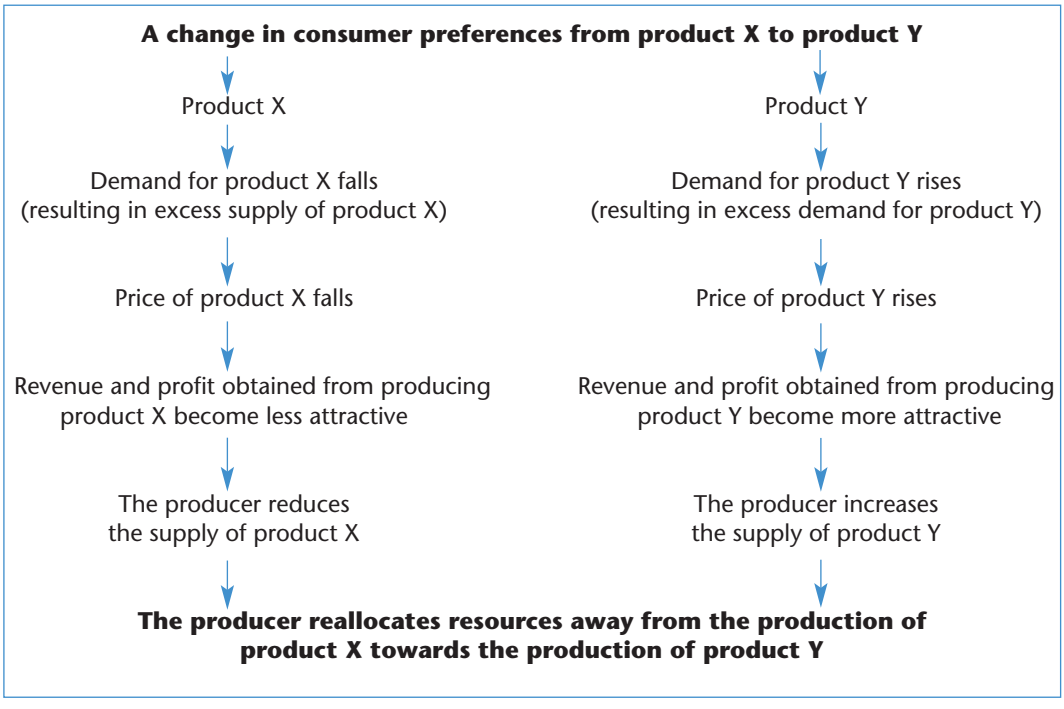
The role of price

The role of price in a market economy is very important. Price can signal, allocate and motivate. Think of how much information is conveyed by this single piece of information. In most cases, we do not have to conduct a market survey to see if consumers like a product or if they value it in comparison to other products. Similarly, we do not have to contact all possible producers to examine their production methods. Instead, price is the information link between buyers and sellers. Buyers indicate that a price is too high if they do not purchase a product, causing inventories to accumulate. Similarly, producers may deduce that a price is too low if inventories are depleted and consumers are left waiting for a product. Price is the signal used to communicate information between buyers and sellers.

Price also has an important role in allocating society's resources. Figure 2.13 illustrates the price mechanism at work in the market. By observing a change in consumer preferences from product X to product Y, we can clearly see the important role of price.

The falling price of product X and the higher price paid for product Y signals a change in the market, which is communicated from the consumers to current and potential producers. The potential for higher profits causes a reallocation of resources away from the production of product X and towards the production of product Y. It is profit which is assumed to act as the motivating force in a market economy. This means that more of the scarce resources of society are being allocated to the production of product Y, the product preferred by consumers.

FIGURE 2.13: THE ROLE OF PRICE IN THE ALLOCATION OF RESOURCES



In all economies and societies, some form of mechanism must exist in order to allocate resources. In a pure market economy, it is the price mechanism that addresses the three basic questions in economics: what is produced, how it is produced and for whom it is produced. The price mechanism is an automatic process. No central agency is required to signal, allocate or motivate. The market, through adjustments in prices, carries out these functions.

This does not mean that we can rely on the price mechanism to ensure that all the products that we value as a society are produced. In particular, in many cases, the demand curve and the supply curve do not convey all the important information needed to allocate society's resources. We will discuss externalities, the provision of public goods and market failures more generally in Chapter 8.

Figure 2.14 illustrates a market for beef. The demand curve is represented by D and the supply curve is represented by S. It is the intersection of the consumers' demand curve D with the producers' supply curve S which determines the equilibrium price and quantity E in this market. The intersection is at a price of €7.50. This is the only price where quantity demanded (2,000,000 kilograms) is equal to quantity supplied (2,000,000 kilograms). In equilibrium, there is neither excess demand nor excess supply.

The equilibrium price and quantity (P, Q) can also be derived mathematically from a pair of linear equations. The general format of the two-variable demand and supply equations is as follows:

$$Qd = a - bP \qquad [2.2]$$

$$Qs = c + dP \qquad [2.5]$$

We can solve for price and quantity using these equations. In general, the equilibrium condition is as follows:

$$\mathbf{Qd = Qe = Qs} \qquad [2.7]$$

where: Qe = equilibrium quantity.

The demand curve for beef was given by the equation Qd = 3,875,000 – 250,000P, whereas the supply curve was given by Qs = –1,000,000 + 400,000P. Solve for price and quantity using these simultaneous equations as follows:

$$3{,}875{,}000 - 250{,}000P = Qe = -1{,}000{,}000 + 400{,}000P$$

Solving for the unknown P, we get:

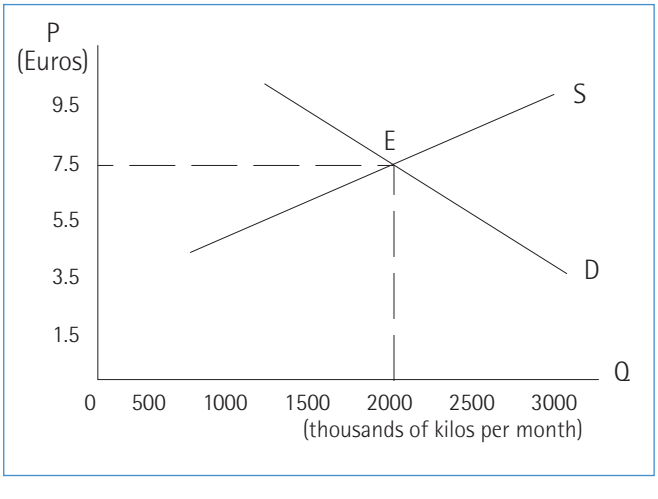
$$3{,}875{,}000 - 250{,}000P = -1{,}000{,}000 + 400{,}000P$$
$$4{,}875{,}000 = 650{,}000P$$
$$P = 7.50$$

If P = 7.50, then we can solve for the unknown Qe. This is solved by substituting P = 7.50 into either the demand or the supply equation since, in equilibrium, the quantity demanded equals the quantity supplied.

$$Qe = 3{,}875{,}000 - 250{,}000(7.50) = 3{,}875{,}000 - 1{,}875{,}000 = 2{,}000{,}000$$

The equilibrium price and quantity is (7.50, 2,000,000). This is the same equilibrium which is illustrated using the demand curve and the supply curve in Figure 2.14.

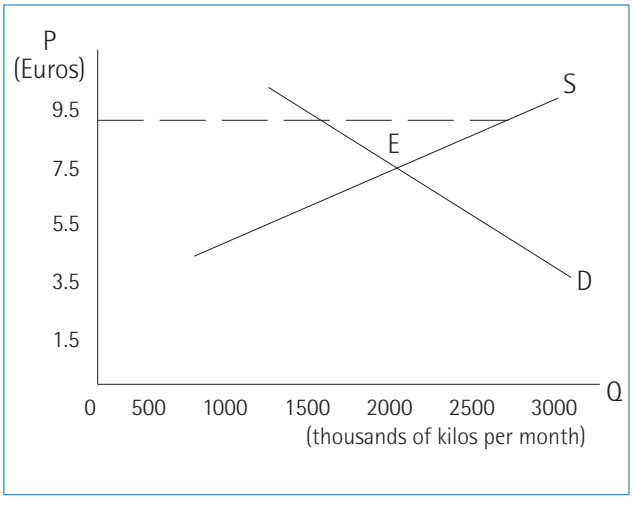
FIGURE 2.14: THE MARKET FOR BEEF



Tending towards market equilibrium

At all prices above the equilibrium price, quantity supplied is greater than quantity demanded. This is illustrated in Figure 2.15.

FIGURE 2.15: EXCESS SUPPLY IN THE MARKET FOR BEEF



At €9.00, suppliers are willing to supply 2,600,000 kilos, whereas consumers demand only 1,625,000 kilos. At this price there exists excess supply or surplus. We can actually estimate the amount of excess supply. At a price of €9.00 there is an excess supply of 975,000 kilos of beef (2,600,000 – 1,625,000).

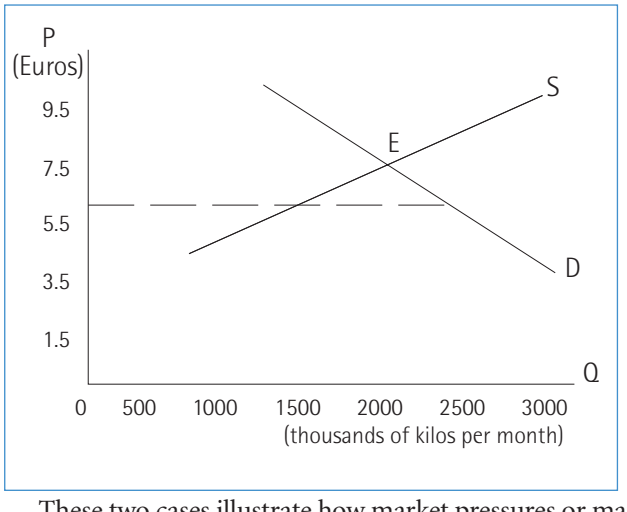
In order for the market to clear, quantity demanded must equal quantity supplied. In this particular case, suppliers cut price in order to eliminate the excess inventory or surplus. Price continues to fall. As price falls, quantity supplied falls whereas quantity demanded rises. Thus, as price adjusts downwards, the excess is eliminated.

Remember, in a market economy, prices are allowed to adjust in order for markets to clear. Prices are continually cut until the excess is eliminated. In this particular market, price must fall to €7.50 before the excess is completely eliminated. At €7.50 the beef market returns to equilibrium.

At all prices below the equilibrium price, quantity demanded is greater than quantity supplied. This is illustrated in Figure 2.16.

At €6.00, consumers demand 2,375,000 units, but suppliers are only willing to supply 1,400,000 units. In this example there exists excess demand or a shortage. We can estimate the actual amount of excess demand. At a price of €6.00 there is excess demand of 975,000 kilos of beef (2,375,000 – 1,400,000).

FIGURE 2.16: EXCESS DEMAND IN THE MARKET FOR BEEF



In order for the market to clear, quantity demanded must equal quantity supplied. Suppliers increase price, and by doing so the excess demand or shortage is eliminated. As price rises, quantity supplied rises and quantity demanded falls. Price continues to rise until quantity demanded is equal to quantity supplied. At €7.50 the market returns to equilibrium.

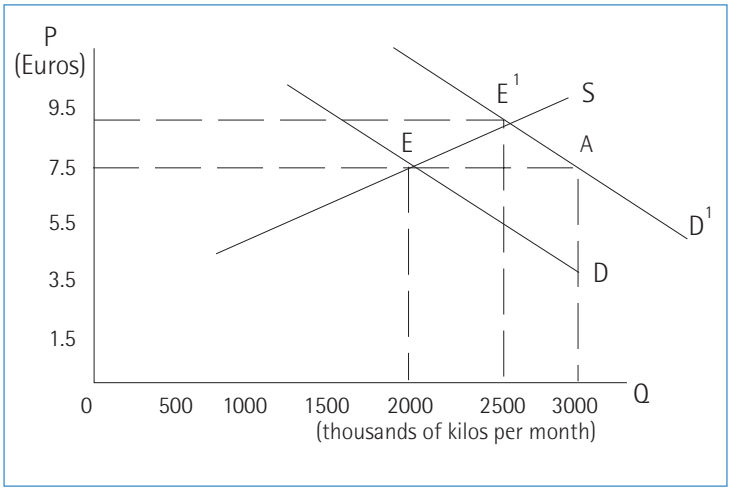
These two cases illustrate how market pressures or market forces, operating through the price mechanism, lead to equilibrium. The speed of the adjustment in prices depends on a number

of factors. The size of transaction costs, the number of competitors in the market and the availability of information influence the speed of adjustment. The equilibrium level of price and quantity remains constant unless there is a change in either the conditions of demand or supply or a combination of both.

A change in the conditions of demand

Figure 2.17 illustrates an equilibrium position, E, with quantity demanded equal to quantity supplied.
Suppose income rises. For a normal good, an increase in income shifts the demand curve out and to the right from D to D^1. Equilibrium is no longer at E. A new equilibrium is reached at E^1.

FIGURE 2.17: A CHANGE IN THE CONDITIONS OF DEMAND



The diagram indicates an increase in equilibrium price and an increase in equilibrium quantity. We need to explain the adjustment process by which we move from E to E^1.

At the old equilibrium price of €7.50, quantity demanded is equal to quantity supplied. However, as income increases the quantity demanded increases at that particular price (and at all other price levels). At €7.50, the new level of quantity demanded is 3,000,000 kilos. Quantity supplied is still at the old level of 2,000,000 units. At the old equilibrium price there is excess demand. This is shown by the segment marked |EA| in Figure 2.17. The actual amount of excess demand is 3,000,000 – 2,000,000 = 1,000,000 kilos.

In a market economy, excess demand signals disequilibrium. Price adjusts in order for equilibrium to be restored. Suppliers respond to excess demand by increasing price. As price rises from €7.50, quantity supplied rises and quantity demanded falls. Price continues to be pushed up until all the excess demand disappears. As price approaches €9.00 the excess demand is eliminated. At €9.00 the market clears. The new equilibrium quantity is 2,600,000 kilos. Due to an increase in income, both equilibrium price and equilibrium quantity increase.

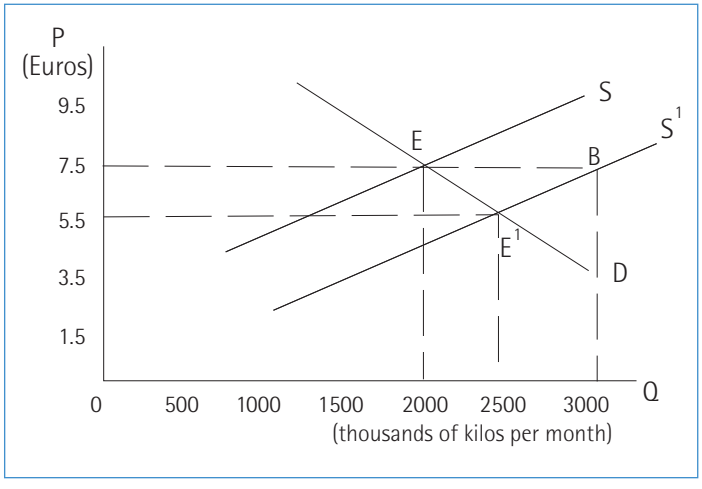
A change in any factor that results in a rightward shift of the demand curve leads to an increase in the equilibrium price and quantity. Similarly, a change in any factor which results in a leftward shift of the demand curve leads to a decrease in both equilibrium price and quantity.

A change in the conditions of supply

Figure 2.18 illustrates an equilibrium position E.
Suppose that technology improves. This means that, in theory, the same amount of inputs can now produce more output. In graphic terms an improvement in technology shifts our supply

curve to the right. Equilibrium is no longer at E. A new equilibrium is reached at E^1. The diagram indicates a decrease in equilibrium price and an increase in equilibrium quantity. What is the adjustment process?

FIGURE 2.18: A CHANGE IN THE CONDITIONS OF SUPPLY



At the old equilibrium price of €7.50, the equilibrium quantity is 2,000,000 kilos. However, due to the technological improvement the quantity supplied increases at that particular price (and at all other price levels). The new level of quantity supplied is 3,000,000 kilos. Quantity demanded is still at the old level of 2,000,000 kilos. At the old equilibrium price there exists excess supply. This is shown by the segment marked |EB| in Figure 2.18. The actual amount of excess supply is 3,000,000 – 2,000,000 = 1,000,000 kilos.

Price adjusts in order to restore equilibrium. Suppliers respond to excess supply by reducing prices. As price falls from €7.50, the quantity demanded rises and the quantity supplied falls. Price continues to be pushed down until all the excess supply is eliminated. At €5.50 the market clears.

E^1 represents the new equilibrium. Equilibrium price is €5.50 and the equilibrium quantity is 2,375,000 kilos. Due to the improvement in technology, the equilibrium price falls and the equilibrium quantity rises. Any factor that results in a rightward shift of the supply curve leads to a decrease in the equilibrium price and an increase in equilibrium quantity. Similarly, any factor that causes a leftward shift of the supply curve results in an increase in equilibrium price and a decrease in equilibrium quantity.

A change in the conditions of demand and supply

In the market for beef, the conditions of demand and supply are constantly changing. Consider the following scenario. Suppose there is decrease in the price of lamb, a substitute product for beef. The demand function for beef shows that the quantity of beef demanded is a function of the price of a related product, *ceteris paribus*. This variable is changing while all of the other variables are remaining constant.

$$Qd = f(\overline{P}, \text{Related goods}, \overline{Y}, \overline{T}, \overline{O})$$

A decrease in the price of the substitute product shifts the demand curve for beef to the left.

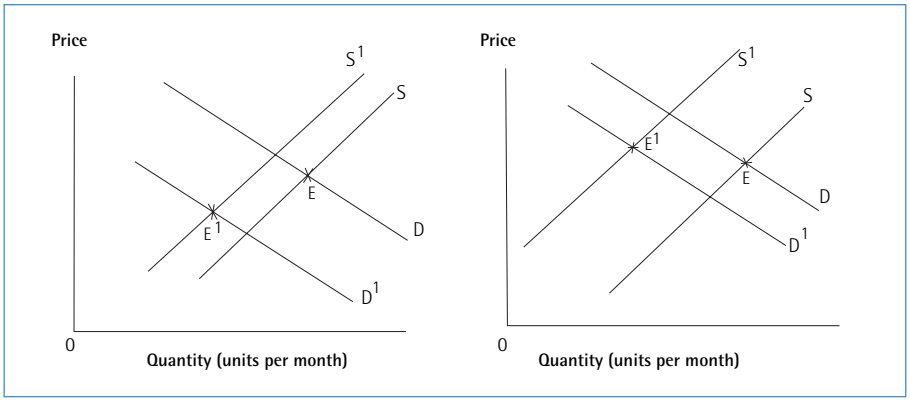
At the same time, an outbreak of tuberculosis requires that a significant percentage of the national herd be destroyed. This extraordinary event is shown by a change in 'other factors'.

$$Qs = f(\overline{P}, \overline{T}, \overline{I}, \overline{G}, \overline{Tx}, \overline{Sy}, O)$$

This calamity leads to a leftward shift of the supply curve for beef.

What can we deduce about the new equilibrium? We can say, unambiguously, that the equilibrium quantity will decrease. The shift of either curve to the left will lead to that result. But can we be as certain about price? Consider Figure 2.19.

FIGURE 2.19: ALTERNATIVE SCENARIOS FOR DEMAND AND SUPPLY CURVE SHIFTS IN THE MARKET FOR BEEF



The left panel of Figure 2.19 is drawn to show a demand curve shift which is far greater than the supply curve shift. As a result, equilibrium price falls. The right panel of Figure 2.19 is drawn to show a relatively small demand curve shift and a relatively large supply curve shift. In this case, equilibrium price has risen. We cannot predict the direction of change of the equilibrium price unless we have more information about the magnitude of the changes in both demand and supply.

This simple example exposes one of the limitations of this type of analysis. We can confidently predict the direction of change of the market equilibrium, if – and only if – one change occurs.

2.4 PRICE CONTROLS

In a market economy, price is determined by demand and supply. In a planned economy, this is not the case. It is government, through a particular department or pricing authority, that decides not only which products to produce, but also what prices to charge.

Involvement by the state in the market is not restricted to planned economies. Authorities in the European Union and the United States have regularly intervened in certain markets (e.g. agricultural markets) with a variety of mechanisms designed to maintain domestic production levels and to supplement income. More generally, tax incentives and grants are frequently used by the Irish government to promote certain kinds of activity (such as training and research and development) or to attract certain types of industry (such as multinational manufacturing subsidiaries). Many types of intervention are quite complex and at times it is difficult to disentangle their likely effects on the market for a particular product. Indeed, all real-world economies are mixed economies containing many elements of a market economy and many elements of a planned economy.

One of the easiest and most transparent forms of market intervention is price controls.

Definition

Price controls are government regulations which limit the ability of the market to determine price.

In the presence of price controls, the price level will generally not equate market demand with market supply. An adjustment towards market equilibrium will not result because prices are fixed.

Two common types of price control are price ceilings and price floors.

Price ceilings

Definition

A price ceiling is a maximum price on a product legislated by the government.

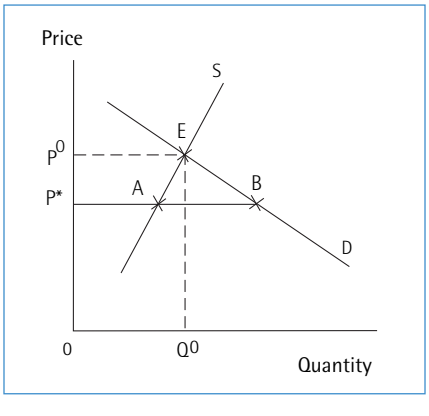
When implemented, the supplier cannot charge above this 'maximum' price. Its basic purpose is to help consumers. It is usually imposed in times of scarcity. Without the imposition of a price ceiling, scarce supply would usually result in a high equilibrium price. The government may regard this high price level as undesirable, particularly in a market for basic products such as food, fuel and accommodation.

In order to make these products more affordable, the government sets a price below this high equilibrium price. It does so by imposing a price ceiling, which is legislated by the authorities at a price below the market clearing level. We know from the previous section that any price level below the equilibrium results in excess demand. However, prices will not adjust upwards in order for the market to clear. Prices are fixed at this level. It is illegal for suppliers to increase price in order to eliminate excess demand. This excess demand, or shortage, can become a permanent feature of the market.

Price controls are particularly common during periods of crisis like wars or natural disasters. During the Emergency (World War II), price controls were placed on many products, including tea.

Figure 2.20 shows the market for tea. In the absence of price controls, the price of tea would have been unaffordable to many Irish households. This price is represented by P^0. The government intervened and legislated that the price of tea could not exceed 3 shillings and sixpence per pound weight. This was approximately one sixth of a pound before decimalisation, or about €0.22. This is represented by P^* in Figure 2.20.

FIGURE 2.20: IMPOSITION OF A PRICE CEILING



However, because of the lower price, quantity demanded increases whereas quantity supplied decreases. The net result is excess demand at this new price level. The shortage caused by the price ceiling is indicated on the diagram as the distance between point A and point B.

To mitigate the problems caused by the scarcity of tea, the government opted for a system of rationing. Rationing means that the government restricts the amount of a commodity that consumers are allowed to buy. During the Emergency, every man, woman and child was entitled to purchase 1.5 ounces of tea per week from their grocer.

A system of price controls and rationing often leads to the emergence of a 'black market'. In this instance, the black market refers to illegal activities of buyers and sellers who trade for prices

above the legislated price ceiling. The 'black market' price of tea during the Emergency was 'a pound for a pound'. This price was approximately six times higher than the price ceiling imposed by the government. At today's prices (2011), a pound of tea on the black market would cost over €30!

To summarise, although there may be reasons to impose price controls in conditions of scarcity of essential commodities, there are a number of negative side effects. Organising the price control and a system of rationing is expensive, particularly if there are large numbers of consumers and suppliers. Shortages eventually lead to black market activities. If the controls are to be taken seriously, the government must police the market and prosecute offenders. All of these costs, both explicit and implicit, must be added together and matched against the benefits that consumers and society will receive. Unless the need is very compelling, the opportunity cost may be too high. For this reason, governments in developed countries rarely impose price controls.

Price floors

Definition

A price floor is a minimum price legislated by government on a product.

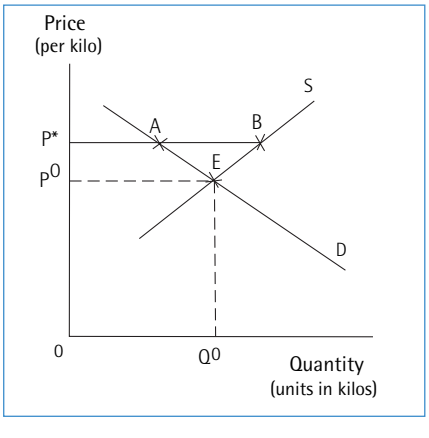
When a price floor is implemented, the seller is not legally permitted to sell the product below this price. The basic purpose of a price floor is to help producers (although a ban on below-cost selling of alcohol may represent an exception). In order for the supplier to attain a price higher than the market price, the government can impose a price floor above the market level. Any price level above the market price results in excess supply. However, since prices are fixed they cannot adjust downwards in order for the market to clear. The resulting excess supply or surplus can become a permanent feature of the market. The surplus is generally purchased by a government agency or exported.

A relatively recent example of a price floor was the intervention price within the Common Agricultural Policy (CAP). This price floor was imposed by the EU in some agricultural markets. In theory, if price fell below a particular price, EU agencies 'intervened' and bought the surplus stocks of agricultural products.

Figure 2.21 illustrates the beef market and the imposition of intervention prices.

With no price controls the market price would be P^0. However, because of CAP, suppliers (farmers) were guaranteed fixed prices which were above the market price. This was operated by setting a price floor at P^*. This minimum price resulted in excess supply represented by the distance between points A and B. The surplus, however, was not eliminated through a downward adjustment of prices. The suppliers knew that the surplus would be purchased by EU intervention agencies and put into storage. It was the imposition of price floors that explained the existence of the infamous 'wine lakes' and 'butter mountains', as well as the beef surplus. Up to €3.7 billion worth of food stocks were, at one time, in intervention.[4]

FIGURE 2.21: CAP AND INTERVENTION PRICES



In the example above, we can see that the benefits received by farmers imposed a cost on other sectors of society. First, the consumers were paying P*, which was higher than the market equilibrium price. Second, the intervention bureaucracy was expensive to operate. Various EU and national government agencies were involved in the inspection of produce and the payment of subsidies. Also, any surplus had to be stored or exported. The higher price of food was absorbed by EU consumers. The cost of administering the programme was paid for by EU taxpayers. When we look at it this way, we can see that a price floor is really a method of income redistribution from one section of society (consumers and taxpayers) to another (producers).

SUMMARY

1. Demand is a specific term used by economists to explain consumers' wants, supported by the ability and desire to pay, for a product. The demand curve illustrates the negative relationship between price and quantity demanded. It is drawn on the assumption that all other factors are held constant. There is an important distinction between a change in quantity demanded (a movement along the demand curve) and a change in demand (a shift of the demand curve).
2. Supply is a specific term used by economists to explain the amount of a product supplied to the market. The implicit assumption is that the motivating force behind production is profit. There is a positive relationship between price and quantity supplied and this is represented by an upward sloping supply curve. All other factors are assumed to be held constant. There is a distinction between a movement along the supply curve (change in quantity supplied) and a shift of the supply curve (change in supply).
3. Consumers and producers interact in the market and, in doing so, determine a market-clearing price. This market price, in graphic terms, occurs at the intersection of the demand curve and the supply curve. Adjustment to equilibrium is an automatic process in the market system. Any excess demand results in a price rise whereas any excess supply leads to a price fall.
4. Central to the market economy is the price mechanism. Prices play many key roles: they allocate resources, provide incentives, signal changes and reward economic agents.
5. Demand and supply analysis is a very useful tool in the study of economics. Changes in demand and supply conditions and intervention by the state affect the market price and can be analysed using basic demand and supply diagrams.
6. Even in market economies, some prices are legislated by government in the form of price controls. Price ceilings (maximum) and price floors (minimum) are two types of price control. Some elements of price controls can be found in market economies, e.g. rent controls, various alcohol price controls and, albeit in a slightly different context, minimum wage regulations.

KEY TERMS

Market
Demand
Quantity demanded
Demand schedule
Ceteris paribus
Principle of demand
Demand curve
Veblen good
Giffen good
Substitutes
Complements
Normal good
Inferior good
Supply
Factors of production
Quantity supplied
Supply schedule
Price
Equilibrium
Price mechanism
Surplus
Shortage
Price controls
Price ceilings
Price floors

REVIEW QUESTIONS

1. Explain the principle of demand. Describe possible exceptions to the downward sloping demand curve. In particular, consider the case of housing. Is there an upward sloping demand curve for housing in Ireland? Explain your answer.
2. Explain why the supply curve has a positive slope. Describe a possible exception.
3. What does the concept 'equilibrium' mean? How do markets which exhibit excess demand and excess supply 'clear' or return to equilibrium?
4. Explain the following economic terms:
   (a) substitute
   (b) complement
   (c) normal good
   (d) inferior good
   (e) Veblen good
   (f) Giffen good.
5. (a) Explain what effect an improvement in preferences or tastes would have on the equilibrium price and quantity of a product.
   (b) Explain what effect a decrease in the price of inputs would have on the equilibrium price and quantity of a product.

6 How does the price mechanism within a market economy differ from that which would operate in a planned economy? In what way does a price ceiling or a price floor interfere with the price mechanism? Why might they be imposed?

WORKING PROBLEMS

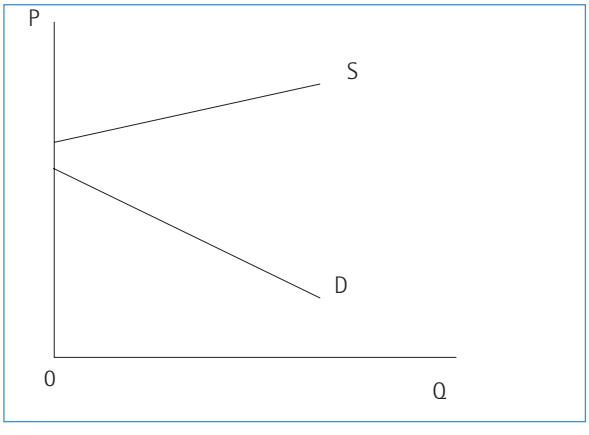
1. Consider the following equations:

$$Qd = -2P + 40$$
$$Qs = 6P - 20$$

   (a) Find the equilibrium using simultaneous equations.
   (b) On a diagram, sketch the demand curve and the supply curve.
   (c) Suppose P = 20. Calculate the shortage or surplus.
   (d) Suppose P = 8. Calculate the shortage or surplus.

2. Consider the market for opera shown in Figure 2.22.

FIGURE 2.22: MARKET FOR OPERA



   (a) If the government does not intervene in this market, will opera be supplied to the market?
   (b) Will a form of price control be effective in this situation?
   (c) Will a subsidy to suppliers be effective in this situation?
   (d) Why might a government intervene in this type of market?

MULTI-CHOICE QUESTIONS

1. Which of the following 'events' will cause a rightward shift in the demand curve for wine (assume that wine is a normal good)?
   (a) an increase in the price of beer;
   (b) a decrease in income;
   (c) an increase in the price of cheese (assume that cheese and wine are complements);
   (d) none of the above.

2. Which of the following 'events' will cause the supply curve for wine to shift to the right?
   (a) a frost kills half of the grape crop;
   (b) there is an improvement in technology;
   (c) there is an increase in the wage paid to labour;
   (d) a study is produced which confirms that drinking wine improves your health;
   (e) none of the above.

3. The price of coffee will tend to fall if:
   (a) there is a surplus at the current price;
   (b) the current price is above equilibrium;
   (c) the quantity supplied exceeds the quantity demanded at the current price;
   (d) all of the above;
   (e) none of the above.

4. A technological improvement lowers the cost of producing coffee. At the same time, a study is published that states that drinking coffee causes heart disease. In response to these 'events', the new equilibrium quantity of coffee will:
   (a) rise;
   (b) fall;
   (c) remain the same;
   (d) rise or fall, depending on the relative shifts of the demand and supply curves.

5. Suppose the market for milk is described by the following equations:

$$Qd = 150 - P$$
$$Qs = -50 + P$$

   Q = quantity (litres of milk per day)
   P = price (cents)

   Further, suppose the government implements a price floor at P = 120. What can we predict will happen in this market?

   (a) there will be shortage of 70 litres;
   (b) the market will clear;
   (c) there will be a surplus of 70 litres;
   (d) there will be a surplus of 40 litres;
   (e) it is impossible to say with the information given.

6. Which of the following statements accurately describes a price ceiling?
   (a) it is generally designed to help producers;
   (b) it is generally designed to help consumers;
   (c) a surplus may be a permanent feature of this market;
   (d) a shortage may be a permanent feature of this market;
   (e) both statements (b) and (d) accurately describe a price ceiling.

TRUE OR FALSE (SUPPORT YOUR ANSWER)

1. The demand curve for a Giffen good slopes downwards from left to right.
2. Maximimising revenue is the motivating force behind production and supply.
3. An increase in the costs of production reduces supply and, in turn, forces up the market price.
4. Excess demand in a market economy would force prices down towards the equilibrium level.
5. A price floor is a form of price control generally designed to help the consumer.
6. A price ceiling is set below market equilibrium.

CASE STUDY

Extract from *The Irish Times*
U2 tickets go on sale
by Daniel Attwood

Some 160,000 tickets for U2's Croke Park concerts this summer went on sale at 8 a.m. in Dublin this morning. Unprecedented demand to see the band perform to a home crowd is expected to ensure they are quickly sold out. According to Justin Green, spokesman for promoter, MCD, demand for the tickets will be unparalleled. 'The reaction to this tour has been unprecedented, we have never seen anything like this before.' The tickets for the Irish leg of the Vertigo world tour are priced at €59.50, €70, and €80. The promoters are hoping to arrange a third concert.

The Vertigo tour has sold out at each venue throughout the world as soon as tickets became available. In Britain, 260,000 tickets were sold within hours of them becoming available. In Brussels, 53,000 tickets were sold in less than four hours. In the US, 370,000 tickets have been sold for the gigs there.

However, sales have been marred by a controversy surrounding the pre-selling of some tickets that were offered to subscribers to the band's website. Even though they only became officially available at 8 a.m. today, pre-sold tickets were already being offered last night for both the June 24th and 25th dates in Croke Park. One British website was offering seated tickets for €335 each. The band has asked fans to report resellers. 'Some of these touts have posed as genuine U2 fans, taken out a subscription and bought tickets in the pre-sale only to re-advertise them for huge sums,' said U2's website.

Source: *The Irish Times,* 4 February 2005.

Questions

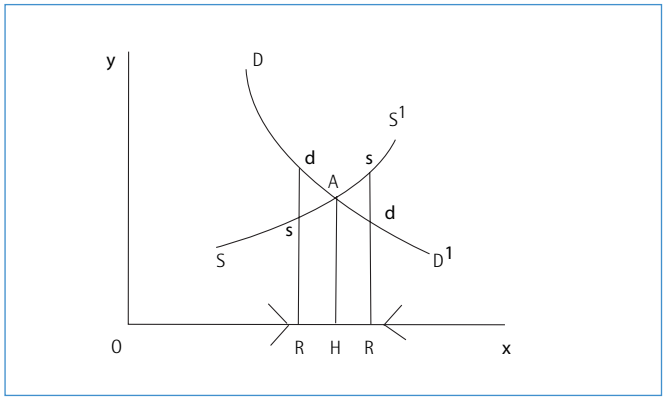
1. From an economics perspective, were official U2 tickets under-priced or over-priced? Explain your answer.
2. Why might promoters of popular events (e.g. pop concerts or sporting events) deliberately under-price tickets?
3. If it is expected that tickets for popular events (e.g. pop concerts or sporting events) will be under-priced, what actions might be expected of and by (a) genuine fans; and (b) ticket touts? What reasonable actions might be expected of the promoters of these events? What reasonable actions might be expected of government?

APPENDIX 2.1: THE HISTORY OF DEMAND AND SUPPLY ANALYSIS

Most textbooks today explain the price mechanism with the aid of demand and supply analysis. Changes in the market price are explained by changes in the conditions of demand and/or supply. This analysis is simplified further by the use of the two-dimensional demand/supply diagram. However, this was not always the case.

At certain times throughout history different theories of price and value have been espoused. Some economists focused primarily on the demand side of the market and the concept of utility. These include W. Stanley Jevons (1835–82) and Leon Walras (1834–1910) of the neoclassical school of economic thought. In contrast, the classical school, led by David Ricardo (1772–1823) and John Stuart Mill (1806–73), concentrated on the supply side and the costs of production. The economist primarily responsible for bringing consumers and producers together, for studying the interaction of demand and supply and for ultimately pushing this analysis to the forefront of economic thinking was the Professor of Political Economy at the University of Cambridge, Alfred Marshall. The familiar demand and supply diagram appeared in Marshall's book *Principles of Economics* in 1890. The actual drawing is reproduced below in Figure 2.23.

FIGURE 2.23: ALFRED MARSHALL'S ORIGINAL DEMAND AND SUPPLY DIAGRAM



Source: Alfred Marshall, *Principles of Economics*, 8th edition.

CHAPTER 11

The Keynesian Revolution

'The General Theory of Employment is the Economics of Depression.'[1]

John R. Hicks (1904–89)

'Whenever I ask England's six leading economists a question, I get seven answers – two from Mr Keynes.'[2]

Winston Churchill

CHAPTER OBJECTIVES

Upon completing this chapter, the student should understand:

- the pre-Keynesian economic doctrine;
- the economic turbulence caused by the Great Depression;
- the contribution of Keynes to modern macroeconomics.

OUTLINE

INTRODUCTION

This chapter deals with the background to Keynesian economics. We begin with a description of the classical doctrine of economics. This is followed by a discussion on Keynes and his life, his ideas and his contribution to macroeconomics. The last section deals with the Great Depression of the 1930s and the emergence of the economics of Keynes.

11.1 THE CLASSICAL DOCTRINE OF ECONOMICS

Disagreement among economists is not new. In the seventeenth century, prior to the emergence of the classical doctrine, economics was not considered to be a distinct academic discipline. Even then, two groups, the mercantilists and the physiocrats, held radically different views about the way that the economy operates. Economic disagreements to this day, particularly about the appropriate role of government, date back to the mercantilist/physiocrat debate. These two groups helped to lay the groundwork for the discussion of economic issues.

The actual word 'mercantilism' had different meanings but was generally understood to mean 'the economics of nationalism'. According to followers of mercantilism the key to national

economic prosperity was the accumulation of gold and silver. All policies were aimed towards building a positive balance of trade. Economic thinking was dominated by this policy concern.

Mercantilism was particularly strong in France. Jean Baptiste Colbert (1619–83) served as the Minister for Finance during the reign of Louis XIV. Under his guidance, every aspect of French production was state controlled. Manufactured products were promoted at the expense of agricultural products. All imports and exports were closely monitored.

Many of the writers of the day were merchant businessmen. Critics of mercantilism were quick to point out that the businessmen themselves were often the main beneficiaries of the policies which they advocated. At the time, many felt that the excessive regulations by government led to production inefficiencies. It is often said that the burden of taxation, unevenly spread, ultimately led to the French Revolution.

Not surprisingly, the main reaction against mercantilism also came from the French. While not advocating the overthrow of the monarchy, the physiocrats argued for a radical departure from the policy of state regulation. Physiocracy is derived from the French word 'Physiocrate' which means the 'rule of nature'. The physiocrats, and later the classical economists, believed that there was natural order in the economic system which was analogous to the laws of nature. The massive state intervention of the mercantilists was at best ineffective, and at worst served as a deterrent to economic growth.

François Quesnay was a prominent physiocrat. He attempted to explain and identify the general laws which govern economic behaviour. Quesnay and the physiocrats believed that the agricultural sector was the only productive sector of the economy. The export duties placed on grain by the mercantilists were both unnecessary and served as a disincentive to production. In this sense, the rule of government violated natural law. It is from the physiocrats that we inherit the ideological basis for *laissez-faire* which generally refers to an economic system which is characterised by free trade and low levels of state intervention.

Adam Smith (1723–90) is considered to be the father of economics and the founder of the classical school. His book, *An Enquiry into the Nature and Causes of the Wealth of Nations* was at one level a reaction against mercantilism. His thinking was obviously influenced by his acquaintance with François Quesnay. Like Quesnay, Smith attempted to understand the general principles which underlay economic growth.

For Smith, the basis of wealth was the division of labour. Production expands significantly as labour becomes more specialised. It is within this context that Smith adopted the free-trade doctrine of the physiocrats. A larger market expands the opportunities for specialised labour.

Smith also advanced the physiocrats' argument concerning 'deregulation'. He attempted to explain the economic forces which cause individuals, motivated by self-interest, to achieve objectives which are socially beneficial. The 'invisible hand' is often interpreted as the forces of competition. Consumers, acting independently of each other, nevertheless communicate their needs to producers. Producers, who are striving to make a living, attempt to satisfy consumer needs. This is the basis of the perfectly competitive market structure.

Smith observed that the mercantilist system promoted collusive agreements between merchants and politicians, often at the expense of the ordinary citizen. He argued that unregulated competition would ensure that goods were produced more efficiently and distributed more evenly among the population. Competition, in short, was a system that militated against a concentration of wealth and in favour of a more equitable distribution of resources.

Smith was one of a group of economists who came to be known as the classical school. Others include David Ricardo (1772–1823), Thomas Malthus (1766–1834) and John Stuart Mill (1806–73). They dominated economic thought in the hundred years following the publication

of *The Wealth of Nations*. They were academics, with the exception of David Ricardo, who was a stockbroker by profession. This raised the tenor of the economic debate since they could no longer be accused of advocating particular policies which advanced their self-interest.

Although they ultimately became known as economists, their writings span many of the classical subjects including history, politics, physics, philosophy and jurisprudence. Political economy was originally taught under the chair of moral philosophy by Smith at the University of Glasgow. Needless to say, Smith's economic perspective was influenced by his study of philosophy.

The classical economists focused on the issues of growth, value and distribution. Unlike their successors, the classical economists never saw growth as an automatic process. Discussions focused not only on attempting to understand the conditions which promoted economic growth, but also on the type of policies which would foster these conditions. In this sense, *laissez-faire* should not be construed as the lack of government policy, but as a positive initiative to support competition.

The end of the nineteenth century was a period of transition. It was during this period that economics was firmly established as a distinct academic discipline. Many within the discipline attempted to align it with the natural sciences rather than with what were considered to be the less rigorous social sciences. A deductive methodology was adopted. Models were developed, based on restrictive assumptions, which are logical within their own framework. This approach may be traced back to Ricardo, but it is very different from the descriptive, historic approach which was more common to the other classical economists.

The 'Marginalists' were a group of economists who included W. Stanley Jevons (1835–82), Carl Menger (1840–1921) and Leon Walras (1834–1910). The work of these economists represented the transition between the classical and neoclassical schools. One of the unresolved issues of the classical school was the theory of value. This was partly because the classical economists concentrated on the supply side. They assumed that goods had some utility, otherwise nobody would want them. However, the value of goods was determined by the amount of labour which it took to produce them.

The contribution of the marginalists was to develop the downward sloping demand curve which was based on diminishing marginal utility. Goods had utility, as suggested by the classicals, but that marginal utility diminished as more of the good was consumed. Only falling prices could entice an individual to consume more of the same good.

This idea was later applied by neoclassical economists to the supply side. The upward sloping supply curve is based on the idea of diminishing marginal productivity which causes marginal costs to increase when more is produced. Part of the marginal cost curve is the supply curve for the perfectly competitive firm. The two curves combine to form a model of price determination. When price is set in the competitive market, based solely on the forces of demand and supply, it means that resources are efficiently diverted to the uses which achieve the highest possible utility for the consumer. The 'market' is the neoclassical model which conceptualises Adam Smith's 'invisible hand'.

In the decades which preceded the Great Depression, the neoclassical economists developed general equilibrium and partial equilibrium models which were mathematically difficult and aimed at a narrow range of consumption and production problems. They followed the thinking of the physiocrats and the classical economists, recommending a circumscribed range of government activity. Their emphasis on individual choice meant that they saw government as limiting the range of individual actions. Government spending meant that less money was available for private investment. It had to be paid for by taxation which limited the disposable

income of consumers. Specific policy recommendations of the neoclassicals will be contrasted with Keynesian alternatives in Section 11.3.

11.2 THE LIFE AND WORKS OF JOHN MAYNARD KEYNES

Keynes is to economics what Freud is to psychoanalysis, Einstein is to physics and Darwin is to biology.[3] Mark Blaug in his work *John Maynard Keynes: Life, Ideas, Legacy* referred to the three great revolutions in modern economics: Adam Smith's support for unregulated markets, the 'marginal revolution' and finally the emergence of a new orthodoxy – Keynesian economics.

John Maynard Keynes was born in Cambridge, England in 1883. His parents were middle-class intellectuals. His father John Neville was a well-respected philosopher and economist who worked with Alfred Marshall in Cambridge. Keynes, with the help of scholarships, was educated at Eton and then King's College, Cambridge where he studied classics and mathematics, winning many college prizes in the process. At the time his other academic interests included philosophy and literature but, notably, not economics.

He graduated in 1905 at the age of 22 and opted for a career in the civil service. In order to prepare himself for the entry examinations he attended economics lectures in Cambridge. His lecturer was Alfred Marshall who taught Keynes the basic tenets of neoclassical economics. Little did he know that this son of a former colleague would question the very essence of what he and his contemporaries represented.

After briefly studying economics Keynes disappointed Marshall and others by joining the civil service. On completing his exams, it is said that he remarked, 'I evidently knew more about Economics than my examiners.'[4] This was not the last time that Keynes expressed self-belief, verging on arrogance.

His two-year experience in the India Office was the inspiration behind his first book on economics, *Indian Currency and Finance*. While working for the civil service, Keynes made significant progress with his thesis on probability. On the basis of this work, Keynes was offered a Fellowship at King's in 1909. He began teaching economics and within two years had become the editor of *The Economic Journal*, the most respected economics journal in the UK at the time. His *Treatise on Probability*, published in a revised form in 1921, was well received by his peers and particularly by philosophers.

Keynes' talents were also recognised outside academic circles. During World War I he had re-entered the civil service and by 1919 he had become the senior British Treasury representative at the Versailles Peace Conference. However, he became very disillusioned with the Allied treatment of the Germans and when the figure of £24bn in reparations was demanded, he resigned. On returning to England he wrote *The Economic Consequences of the Peace*, for which he received international acclaim. In the book Keynes was highly critical of the harsh economic terms agreed by the Allies and he predicted serious consequences for the future including the possibility of 'vengeance' in the form of a 'final civil war . . . before which the horrors of the late German war will fade into nothing . . .'

Keynes spent the next few years teaching, writing and speculating in financial markets. This latest interest made Keynes a millionaire although he was to lose heavily during the Wall Street crash of 1929. By 1936 he had recovered his losses and was worth approximately half a million pounds.

In 1923 *A Tract on Monetary Reform* was published. This marked a change in Keynes' view on economics and, particularly, on the role of government. Prior to its publication Keynes was regarded as a supporter of the classical doctrine of economic liberalism. He had advocated the

reliance on market forces in preference to active government intervention. He was also a strong supporter of international free trade, which he saw as a necessary condition for economic prosperity.

In this publication Keynes advocated the active use of monetary policy in order to determine the price level. This was to be done within the context of a managed monetary system which was to replace the Gold Standard. This support for managing the economy, both in a positive and active fashion, was a shift away from the *laissez-faire* policies of the nineteenth century. However, it was not until 1936, with the publication of *The General Theory*, that the economics profession acknowledged the beginning of a revolution.

A Tract on Monetary Reform did make a significant impact but for a very different reason. In it Keynes argued against returning to the Gold Standard at the pre-war fixed exchange rate. He believed that price stability was more important than exchange rate stability with exchange rate policy ideally being subordinate to the needs of the domestic economy. In advocating this policy, Keynes argued against the conventional wisdom advocated by the economic and financial establishment of the day. The Treasury, bankers and business people, for various reasons, supported the reinstitution of the Gold Standard. Unlike Keynes, they applauded the decision by the Chancellor of the Exchequer, Winston Churchill, to rejoin in 1925 at the pre-war exchange rate.

Keynes wrote a number of pamphlets prior to 1936 which indicated his growing mistrust of the market system and his belief in tackling unemployment with the aid of government policies. By this time he was involved with the Liberal Party and had the job of advising its leader, Lloyd George. It was widely known that Keynes supported public works programmes in order to provide employment. As usual Keynes presented his argument in a graphical and emotive way: 'If the Treasury were to fill old bottles with bank-notes, bury them at suitable depths in disused coal mines which are then filled up to the surface with town rubbish, and leave to private enterprise . . . to dig the notes up again . . . there need be no more unemployment . . .'[5]

Some of Keynes' early work was criticised within the economics profession because it was not grounded in theory. Whereas the *Tract* was written for a general audience, the *Treatise on Money* (1930) was pitched at a more professional level. Nonetheless, it was severely criticised. Friedrich von Hayek (1899–1992) and D. H. Robertson (1890–1963), two contemporaries of Keynes, wrote less than favourable reviews of the book.

Yet many elements of this book re-appeared in *The General Theory*, which Keynes started shortly after the publication of the *Treatise* and took four years to complete. Valuable contributions were made by his Cambridge followers, including Richard Kahn (1905–89), Joan Robinson (1903–83), Piero Sraffa (1898–1983), Roy Harrod (1900–78) and James Meade (1907–95). His letter to George Bernard Shaw in 1935, in anticipation of the book's publication, is another example of Keynes' self-belief. He wrote '. . . I believe myself to be writing a book on economic theory which will largely revolutionise – not, I suppose, at once but in the course of the next ten years – the way the world thinks about economic problems.'[6]

The General Theory of Employment, Interest and Money of 1936 is generally agreed to be a very difficult book to read and understand. As the title suggests it is concerned almost exclusively with theory; this differentiates it from the *Treatise*. To this day, over seventy-five years later, economists and commentators argue over the precise meaning of many elements in the book. Essentially it is a book on unemployment, with the causes and solutions analysed in very obscure language. Terms such as the consumption function, the marginal propensity to consume and the multiplier confused many a reader. Yet most students of economics today are familiar with these and other Keynesian concepts. This illustrates the influence that *The General Theory* and more particularly Keynes has had on economics.

The pattern of his life was disturbed yet again by World War II. In 1939, he re-entered the Treasury as an adviser to the Chancellor of the Exchequer. *How to Pay for the War*, which was published in 1940, dealt not with the problems of deficiencies in demand, as *The General Theory* had, but with the problems arising out of excess demand. His influence was evident in both the British budget of 1941 and the UK White Paper on *Employment Policy* of 1944. The latter is of historical importance as it marks the first time in modern economic history that there was a government commitment to securing 'a high and stable level of employment'.[7]

In the same year Keynes was the head of the British delegation at the Bretton Woods Conference. Just prior to that, he put forward a plan, known as the Keynes Plan, which aimed to restore stability to the international economy and, in particular, to international trade which had been decimated by the break-up of the Gold Standard and the outbreak of World War II. The establishment once again rejected his ideas and opted instead for the less radical approach proposed by the American delegation. This led to the establishment of the International Monetary Fund (IMF) and the World Bank.

On Easter Sunday, April 1946, at the age of 62, he died at his Sussex farmhouse in Tilton. After such a fulfilling life his only regret was the wish that he had drunk more champagne.

11.3 THE KEYNESIAN REVOLUTION

Though educated by neoclassical economists, Keynes diverged from them both theoretically and in terms of his policy prescriptions. The catalyst for this change was the Great Depression.

Thursday, 24 October 1929 will always be remembered as Black Thursday, the day that the stock market on Wall Street crashed.[8] Panic and confusion reigned. It was reported that eleven speculators committed suicide during the crash. Wall Street did not recover in the subsequent months or years. By November 1929, the average price of fifty leading stocks had fallen to 50% of their September levels. In July 1932, the Dow Jones index of industrial companies was 90% below its value of September 1929.[9]

The Great Depression followed the Wall Street crash in both the USA and the UK. After a prosperous decade in the 1920s, aggregate economic activity in the USA reached a peak in August 1929. Real GNP fell by nearly 30% between the 1929 peak and the 1933 trough. The unemployment rate rose from about 3% or 1.5 million people to close to 25% or 12 million people. Investment expenditure fell by 75% during this period while consumer expenditure dropped by 20%. The UK suffered a similar fate. Unemployment reached over 22% in the winter of 1932 which meant that three million people were out of work.

Economists, politicians and journalists could not agree on the cause of the crash or on the preferred policy response.[10] The classical school of economics advanced policies based on the belief in the ultimate stability of the market and its ability to return to full employment. Keynes argued against this non-interventionist approach and proposed radical changes in economic policy. He suggested an urgent need for active and extensive government intervention. To understand the differences between the policy recommendations, we must first consider some of the theoretical distinctions which separate the classical and Keynesian schools.

Often, when we discuss the upheaval in the study of economics which we attribute to Keynes, we call it the 'Keynesian revolution'. To understand why Keynes was revolutionary, we will look at how his point of view differed from the classical position. We will begin with the theoretical differences and then discuss how these translated to differing policy recommendations.

Classical economists built on the foundation laid by the physiocrats. Their belief in the stability of the market led them to advocate minimum government intervention. Keynes, however, followed

the mercantilists. He not only adopted some of their ideas, he advocated a much more prominent and active role for government. Keynes believed that the market was inherently unstable. Government policy could counter instability in the market.

Keynes began his theoretical attack by looking at the classical model of the labour market. For classical economists, this was the source of unemployment. Labour was demanded by firms and supplied by households. At the equilibrium wage rate, all labour that wanted to work could work: there was no involuntary unemployment. When confronted with the high unemployment which existed during the Great Depression, classical economists argued in favour of a cut in the wage rate to alleviate the excess supply of labour. Keynes had the advantage of learning from the US experience. In 1932–33, the wage rate fell but this did not lead to increased employment as classical theory predicts.

This led Keynes to look for a different explanation for unemployment. He thought that the cause of unemployment was a deficiency in the demand for goods. He argued that a cut in the wage rate would reduce consumer expenditure and lead to a deficiency in demand. This would create uncertainty among investors who would be less likely to undertake investment expenditure. As the demand for consumer and capital goods fell, so would the demand for labour. In short, the decrease of the wage rate actually exacerbated the problem of unemployment.

Moreover, there was little agreement between the classical school and Keynes on the flexibility of wages. Wage flexibility was an intrinsic part of the classical doctrine. In contrast, Keynes argued that wages may not respond quickly to changing market conditions. Institutional arrangements like labour contracts and unions keep wages rigid. In fact, he disputed the desirability of flexible wages. Since consumption is one source of demand, falling wages led to a decrease in consumer expenditure. Inflexible wages helped to maintain the level of demand in an economy.

Keynes continued his theoretical attack with a discussion of Say's Law which states that 'Supply brings forth its own demand.' This is an idea which is often depicted through the circular flow. Households provide the factors of production which are used by firms to produce goods. The households are paid income by the firms which they use to purchase the goods which the firms produced. To take this one step further, households can either consume or save their income. However, in the classical model, based on Say's Law, savings will always re-enter the circular flow in the form of investment. In other words, savings, a leakage from the circular flow, always equals investment, an injection into the circular flow. The classical economists advocated thrift. A high savings rate released labour and capital from producing consumer goods to producing investment goods. This increased the productive capacity of the economy.

Keynes disagreed with the classical analysis of savings and investment. He argued that savings and investment were very different activities, carried out by different people and influenced by different factors. There was nothing automatic about the process. Savings might sit as idle balances if investors were not inclined to use them. A high rate of savings reduced consumer expenditure which led to a reduction of national income. In this case, savings, the leakage from the circular flow, is greater than investment, the injection. The result is a slowdown of economic activity.

For classical economists, investment depends on the interest rate. The interest rate is determined in the market for loanable funds. The source of the supply of loanable funds is savings. Investors demand loanable funds for investment. The interest rate, which can be thought of as the price of borrowed funds, adjusts to bring the demand and supply into equilibrium.

Keynes believed that interest rates were determined in the money market. Money supply was determined by the monetary authorities. Money demand depended on income and the households' preference for holding money rather than interest-bearing assets. The interest rate was determined by the interaction of the demand for and supply of money.

Keynes did not deny that interest rates influenced firms' investment decisions. However, he argued that investment decisions depended mainly on their expectations for future profits. Even at very low rates of interest, firms would not invest if they did not feel that their revenues would cover the cost of borrowing money. From Keynes' perspective, investment was not simply a mathematical decision based on anticipated costs and revenues. The revenue prediction depended on the investors' belief of future business conditions. In his own words, 'Thus if the animal spirits are dimmed and the spontaneous optimism falters, leaving us to depend on nothing but a mathematical expectation, enterprise will fade and die; – though fears of loss may have a basis no more reasonable than hopes of profit had before.'[11]

Differences in theory naturally led to differing policy recommendations. The policy recommendations of the British Committee on National Expenditure which was set up in 1931 to address the problems of the Great Depression offered policy prescriptions which were neoclassical. The preoccupation over the balanced budget led the Committee, under the chairmanship of Sir George May, to recommend cuts in government expenditure and increases in taxation. They were concerned that government spending would 'crowd out' private investment.

Keynes argued against this non-interventionist approach. Unemployment, according to Keynes, resulted from a failure of demand. The policy recommendations of the Committee would aggravate this situation in two ways. Increased taxation decreases disposable income. With less income, households will spend less and consumer expenditure falls. A decrease in government expenditure directly decreases the demand in the economy.

According to Keynes, government spending was not a diversion of funds from the private sector. The public sector compensated for deficient demand which originated in the private sector. Keynes advocated fiscal policy measures, primarily government spending on public works projects, in order to generate employment. He said, 'I expect to see the State . . . taking an even greater responsibility for directly organising investment.'[12] As a consequence of this higher expenditure, the neoclassical rule of balancing the budget each year was abandoned. Adam Smith's advice that 'The only good budget is a balanced budget' became redundant. Keynes' ideas were adopted by Lloyd George, leader of the Liberal Party, who proposed an increase in the amount spent on public works programmes.

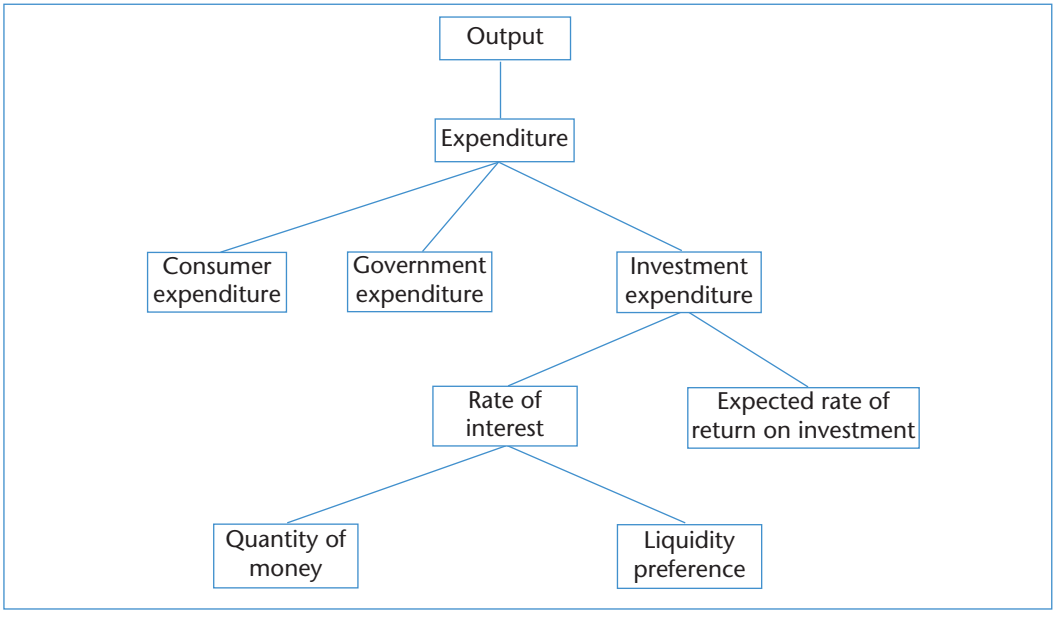
In addition, Keynes advocated using monetary policy to stimulate demand. This would translate into low interest rates which would induce new investment expenditure. However, he was sceptical of relying solely on monetary policy because, as was mentioned earlier, reduced interest rates alone might not be enough to entice investment. The use of both fiscal and monetary policy to stimulate demand and increase employment, is in sharp contrast to the *laissez-faire* policies advocated by neoclassical economists.

Figure 11.1 illustrates the relationship between the economic variables which were mentioned in *The General Theory*.

Output depends on total expenditure, which is comprised of consumer, government and investment expenditure. Consumer expenditure is explained by the consumption function which is described in the next chapter. Investment expenditure depends on the rate of interest and the expected rate of return on new investment. Finally, the rate of interest is determined by the quantity of money and what Keynes called the liquidity preference, i.e. the demand for money.

The Keynesian model which is outlined in the next chapter and the policy recommendations which follow are ultimately short-term in duration. Keynes' dismissive nature of the long run explains the absence of any long-term analysis. Such a view is epitomised in his famous line '*In the long run* we are all dead.'[13]

FIGURE 11.1: THE RELATIONSHIP BETWEEN THE VARIABLES IN THE KEYNESIAN MODEL



SUMMARY

1. The pre-Keynesian or classical school of economics believed that markets were inherently stable and would automatically tend towards full employment. Unemployment arose out of imperfections in the market system which over time would disappear. Hence, government intervention was unnecessary and, in some cases, counterproductive.
2. Keynes' early grounding in economics was of a neoclassical origin. One of his first teachers in economics at Cambridge was Alfred Marshall. On returning to Cambridge, Keynes began to question the economic orthodoxy of the time. This was evident in many of his great works and in particular *The General Theory*. Outside England, he is probably best remembered for his attack on the Versailles Treaty and, later, for his contribution to the setting up of the international organisations after World War II.
3. The Keynesian revolution emerged out of the Great Depression of the 1930s and challenged the orthodox classical economic doctrine of the time. For Keynes, an economy could be at an equilibrium which is below the full-employment level. Insufficient demand was the primary cause of low output and high unemployment. There was a role for government in ensuring sufficient demand.

KEY TERMS

Mercantilists
Physiocrats
Classical economics
Laissez-faire
Invisible hand
Marginalists

Keynesian revolution
Say's Law

REVIEW QUESTIONS

1. Briefly outline the main differences between the classical and the Keynesian schools of economic thought.
2. Assess J. M. Keynes' contribution to modern macroeconomics.
3. Why did the Keynesian revolution occur in the 1930s? What were the different explanations given to explain the Great Depression?