

1.2.4 Supply

- The sellers or producers in a market are said to supply goods and services
- Supply refers to the quantity of a good or service that firms are willing to sell at a given price and over a given period of time

1.2.4.1 An upward-sloping supply curve

- A supply curve is the quantity of a good or service that firms are willing to sell to a market over a range of different price levels in a given period of time
- The supply curve slopes upwards from bottom left to top right for two main reasons:
 - As firms increase output, they face short-term increases in production costs, and they pass these higher costs on to the consumer in the form of higher prices
 - As prices rise, it encourages firms to supply more of a good because there are now greater profits to be made by supplying the good
- The market supply curve is the horizontal summation of individual firms' supply curves for a particular good or service

1.2.4.2 Movement along a supply curve

- There is only a movement along the supply curve when there is a change in its price
- A rise in prices causes an extension in supply, and a fall in price causes a contraction in supply

1.2.4.3 Shifts in the supply curve

- An increase in supply refers to the whole supply curve shifting outwards to the right at every price level
- A decrease in supply refers to the opposite; the whole supply curve shifts inwards to the left at every price level
- There are various factors that can shift the supply curve of a good:
 - Improvements in technology
 - A reduction in labour costs
 - A reduction in capital costs
 - A reduction in transport costs
 - Discovery of new natural resources
 - An increase in the number of firms in the industry
 - A decrease in the influence of producer cartels
 - Good weather improving the supply of certain goods
 - A reduction in indirect taxation
 - An increase in government subsidies

1.2.5 Price elasticity of supply

- Price elasticity of supply is the responsiveness of the supply of a good to a change in its price
- The formula is $PEs = \frac{\% \Delta \text{ in quantity supplied (Q) of a good}}{\% \Delta \text{ in price (P) of a good}}$
- In most cases a positive answer is obtained, indicating that the two variables of price and quantity move in the same direction – there is a positive gradient
- If PEs is greater than 1, demand for the good is relatively price elastic – the percentage change in supply is greater than the percentage change in price of the good
- If PEs is less than 1, demand for the good is relatively price inelastic – the percentage change in supply is less than the percentage change in the price of the good
- If PEs is equal to 1, demand for the good has unitary elasticity – the percentage change in supply is equal to the percentage change in the price of the good

- If PE is equal to zero, demand for the good is perfectly inelastic – a change in price has no effect on the quantity supplied; the supply curve is vertical
- If PE is infinite, demand for the good is perfectly elastic – the supply curve is horizontal

1.2.5.1 *Determinants of price elasticity of supply*

- There are a number of determinants of price elasticity of supply (PEs):
 - Level of spare capacity – a high level of spare capacity in a firm means that it can raise production quickly, so supply tends to be elastic; a firm or industry operating at full capacity is unable to raise output quickly and so its supply tends to be inelastic
 - State of the economy – in a recession there are many unemployed resources and so there is a high level of spare capacity; firms find it relatively easy to raise supply if needed
 - Level of stocks of finished goods in a firm – a high level of stock means that the firm can increase supply quickly, so supply is elastic
 - Perishability of the product – some goods cannot be stockpiled, such as flowers or fresh fruit, and so these goods have inelastic supply
 - Ease of entry to an industry – if there are high barriers to entry in an industry then it will be difficult for new firms to enter, even with the attraction of supernormal profits
 - Time period under consideration – this is perhaps the most important determinant of elasticity of supply; the short-run is the period of time in which a firm is able to increase supply with its existing capacity, where at least one factor of production is fixed, and so supply is inelastic here, but in the long-run where all factors of production are variable supply is elastic
- For many agricultural products, supply is inelastic in the short-run because the output from the summer and autumn harvests depend on the amount of seed planted at the start of the year
- It takes an even longer period of time to raise the supply of products from livestock, such as milk and beef, because these depend on the nurturing of animals over several years
- The supply of minerals may also be inelastic in the short-run due to the length of time required to explore and discover new deposits and then extract them

1.2.6 *Price determination*

- Price is determined through the interaction of demand and supply in a competitive market
- An equilibrium price and quantity occurs where there is a balance in the market – it is where the demand curve and the supply curve intersect
- At this point, there is no pressure on price or quantity to rise or fall, and so price and quantity will remain steady until there is a shift in demand or supply that causes the equilibrium to move

1.2.6.1 *Excess supply and excess demand*

- In a free market, price cannot remain above or below the equilibrium position for long
- For example, if the price is set above the equilibrium – say at £100 – then there will be an excess supply of around 40 units, where supply exceeds demand
- In order to sell the surplus units, producers tend to reduce price which causes an extension in demand and encourages consumers to buy more
- Demand extends and supply contracts until the equilibrium price is reached
- The inverse is true for excess demand – consumers tend to bid up the price in order to obtain the good, which contracts demand and incentivises producers to supply more, so supply extends
- This price mechanism, automatically adjusting supply and demand through signalling to consumers and producers in order to maintain an equilibrium price and quantity, was known by Adam Smith as the ‘invisible hand’ of the market

1.2.11.2 The importance of habitual behaviour

- Consumers are creatures of habit and prefer what they know and have, rather than risking something new where there is more uncertainty
- For example, switching bank accounts to getting lower charges or better interest rates, or switching energy suppliers to get lower gas and electricity prices may be avoided because consumers fear the hassle of switching, or they worry about the uncertainty of a new bank or energy supplier
- Habitual behaviour is also referred to as consumer inertia
- Furthermore, consumers are also unrealistic about their future behaviour – for example, many overweight adults continue their habit of eating too much, and yet they expect to change this habit and lose weight in future
- They underestimate the power of consumer inertia, overvaluing the utility from eating more today and undervaluing the utility from being thinner and avoiding health problems in future

1.2.11.3 Consumer weakness at computation

- Many consumers have difficulties in calculating the best buys
- When consumers are faced with different-sized packs of the same product, they often cannot calculate quickly which pack is the cheapest per unit
- Imperfect market knowledge underlies the problem of weak consumer computation
- Supermarkets will always know exactly which pack is the most expensive per unit, and can display this pack more prominent or advertise in a way that influences behaviour, and there is little that consumers, with their poor computational skills, can do to avoid this
- It is impossible for consumers to have full market knowledge upon which to base their decisions

1.3 MARKET FAILURE

1.3.1 Types of market failure

- Market failure occurs when the price mechanism causes an inefficient allocation of resources and so leads to a net welfare loss
- Consequently, resources are not allocated to their best or optimum use
- There are various types of market failure:
 - Externalities
 - Under-provision of public goods
 - Information gaps
- Other forms of market failure exist, but the only ones explored in detail on the Edexcel spec are those above

1.3.2 Externalities

- Externalities are those costs or benefits which are external to an exchange; they are third-party effects which are ignored by the price mechanism
- They are also known as *indirect costs* and *benefits*, or as *spillovers from production or consumption* of a good or service
- In effect, external costs are *negative externalities* and external benefits are *positive externalities*

1.3.2.1 Costs

1.3.2.1.1 External costs

- External costs may occur in the production and the consumption of a good or service
- An example of an external cost in production is a chemical firm polluting a river with its waste, which causes an external cost to the fishing, water supply, and tourism industries that all relied upon the river

- An example of an external cost in consumption is a person smoking tobacco, polluting the air for others, causing passive smoking, where non-smokers may suffer the harm of smoking through no fault of their own

1.3.2.1.2 Private costs

- In a free market, producers are only concerned with the private costs of production
- These are costs internal to the firm, which it pays for directly, i.e. electricity and gas costs, insurance, packaging and transport costs
- Private costs may also refer to the market price that a consumer pays for a good or service, but this is separate to the idea of private costs in connection with externalities

1.3.2.1.3 Social costs

- By adding private costs to external costs, we obtain social costs
- This means that external costs are the difference between private costs and social costs
- The marginal private cost and marginal social cost curves often diverge, indicating that external costs increase disproportionately with output
- However, it is possible that external costs per unit of output remain constant, in which case the marginal private cost and marginal social cost curves are drawn parallel to each other

1.3.2.2 Benefits

1.3.2.2.1 External benefits

- External benefits may occur in the production and consumption of a good or service
- An example of an external benefit in production is the recycling of waste materials such as newspapers, glass and tins; it has the benefit of reducing the amount of waste disposal for landfill sites as well as re-using materials for production and helping to promote sustainable economic growth
- An external benefit in consumption is the vaccination of an individual against various diseases, which reduces the possibility of other people catching a disease who come into contact with the vaccinated individual

1.3.2.2.2 Private benefits

- In a free market, consumers are only concerned with the private benefits or utility from consuming a good or service
- Economists assume this can be measured by the price that consumers are willing to pay for a good or service
- Private benefits may also refer to the revenue that a firm obtains from selling a good or service

1.3.2.2.3 Social benefits

- By adding private benefits to external benefits, we obtain social benefits
- This means external benefits are the difference between private benefits and social benefits
- The marginal private benefit and marginal social benefit curves often diverge indicating that external benefits increase disproportionately with output consumed
- However, it is possible that external benefit per unit consumed will remain constant, in which case the *MPB* and *MSB* curves are drawn parallel with each other

1.3.2.3 Examples of external costs and benefits

	<i>External costs</i>	<i>External benefits</i>
<i>Production</i>	A waste disposal firm dumping toxic waste at sea, which destroys fish life Burning coal in power stations to create electricity, adding to global warming	A paper and glass recycling plant, which reduced the waste for landfill sites

- Even where a firm does not meet the limit of their permits, the ETS means that for every unit of pollution, there is an opportunity cost incurred because the permit used to cover that unit of pollution could have been traded, bringing revenue into the firm
 - As a result, regardless of a firm's actual level of pollution (whether they exceed their pollution limit or not), the ETS internalises the externality
 - Over time, the European Commission plans to reduce the number of permits, which allows net pollution to decrease over time
- Most of the *tradeable pollution permits* have been given for free to industry and allocated on the basis of the amount of pollution
- However, national governments are able to retain up to 10% of carbon permits and offer them for sale, depending on the level of scarcity
- The ETS gives an incentive to firms to invest in clean technology and so reduce emission in the long term
- There is also a reserve of carbon permits to enable new firms to enter those industries within the Emissions Trading Scheme (ETS)
- The ETS allows firms to invest in scheme that reduce carbon emissions outside the European Union, for example in India or China, and these savings can be offset against their own emissions in the EU

1.4.1.5.1 Advantages of trade pollution permits

- A market is created for buying and selling carbon permits, just like other goods and services; in effect, the price mechanism is used to internalise the external costs associated with carbon emissions
- Pollution permits can be reduced over time as part of a coordinated plan, e.g. in 2008 the European Commission cut permit allocations by 5%
- National governments can raise funds by selling their reserve pollution permits to industry; the revenue could then be used to clean up the environment or compensate victims
- Firms have an incentive to invest in clean technology
- Production costs will increase for firms that exceed their pollution permits, since they have to purchase additional permits and this provides a source of revenue for cleaner firms that can afford to sell excess permits
- The ETS may act as a foundation for a global-wide scheme; it has attracted interest from developed countries outside the EU, and a parallel scheme has been set up in the north-eastern USA and will soon be introduced in the state of California
- Firms are able to bank their excess pollution permits for use in future years

1.4.1.5.2 Disadvantages of trade pollution permits

- An information gap might cause the European Commission to issue too many carbon permits, so that there is little incentive for firms to reduce pollution; this occurred during the first phase of the ETS (2005-07) and led to a collapse in the price of carbon permits
- An information gap might cause the European Commission to issue too few carbon permits, so that the production costs for EU firms increase rapidly, reducing their international competitiveness; some firms may even relocate outside of the EU to reduce production costs
- Disputes have arisen over the allocation of carbon permits to firms; some companies believe they should receive larger allowances and have taken legal proceedings against the European Commission
- Firms may pass the costs of purchasing pollution permits on to their customers, leading to higher prices of, for example, electricity, steel, glass and paper, especially if demand is price inelastic