CONTENTS

SCARCITY AND THE ECONOMIC PROBLEM

SCARCITY

There are only a limited amount of resources on the planet, e.g.:

- gold.
- fish.
- trees.
- oil.

Economists describe these resources as being scarce and call them economic goods. Not all resources are scarce, these are called free goods, e.g.:

- air.
- seawater.

INFINITE WANTS

Humans have a minimum level of needs which are necessary for survival, food, shelter, heat and clothing. Despite this people would rather enjoy a higher standard of living, this is because we all have an unlimited number of wants, e.g.:

- cars.
- houses.
- holidays

THE ECONOMIC PROBLEM

The fact that resources are scarce and our wants are infinite gives rise to the basic economic problem. How do we decide to allocate the limited resources? Economic agents (individuals, firms, governments etc.) have to make choices regarding what to do with their limited resources.

OPPORTUNITY COST

Due to the existence of the economic problem economic agents are forced to make choices regarding how resources are to be allocated.

You have £40, do you spend it on a t-shirt or a night out? Does the government spend £100 million on healthcare or weapons?

A rational economic agent will choose whatever gives them the greatest amount of satisfaction (economists call this utility).

The utility you lose from not being able to have your next best alternative (the second choice) is called the opportunity cost. If you spend £40 on a night out the opportunity cost will be the t-shirt. If the government spends £100 million on weapons the opportunity cost will be healthcare. If a school decides to spend £1,000 on a new computer the opportunity cost will be 20 tables.

POSITIVE AND NORMATIVE ECONOMICS

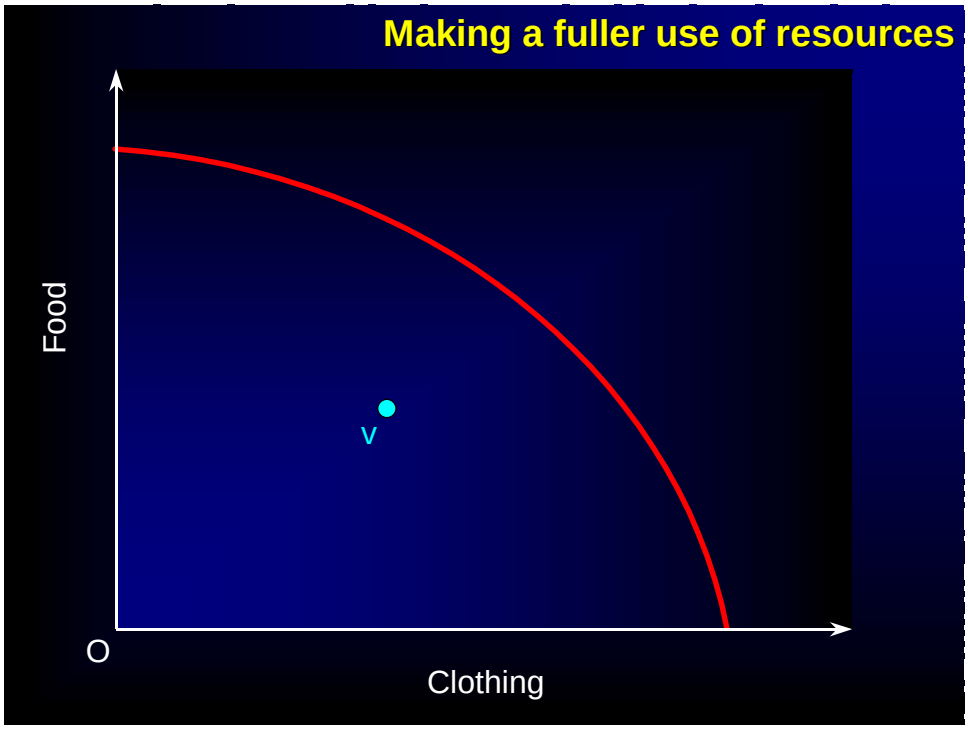
Positive economics deals with scientific or objective explanations and statements about the economy. For example it is possible for me to state that in the case of normal goods an increase in the price will lead to a decrease in the quantity demanded.

Normative economics attempt to describe the economy through value judgements. For example "the rich should be taxed at a far higher rate than the poor" contains value judgement about the role of the government, therefore it is a normative statement.

Positive and normative statements can be made about anything.

PRODUCTION POSSIBILITY CURVES

The PPF illustrates the concepts of choice and opportunity cost. If we assume that a country only produces food and clothing. If that country wishes to produce more food, then it would have to sacrifice the production of some food. Therefore we can say the opportunity cost of producing more food is clothing.

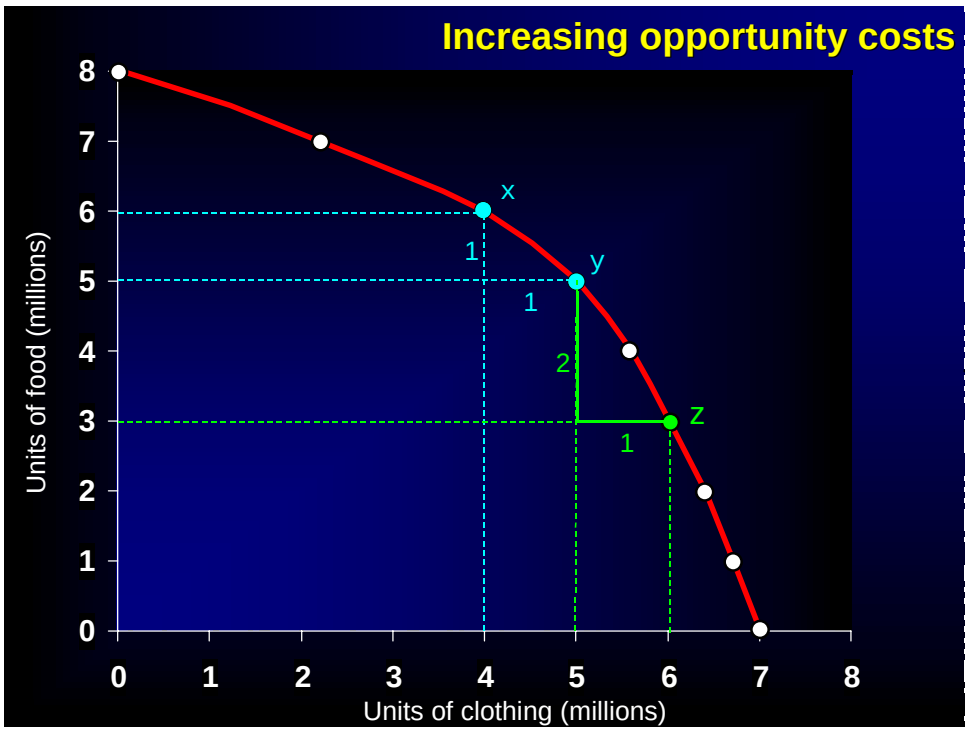


If the economy is producing at point V is can be seen that it is not producing efficiently, as it could increase production of clothing and food with the resources it already has.

We can also demonstrate the concept of increasing opportunity costs. In other words that as a country produces more and more of one good it has to

sacrifice increasing amounts of the other. This occurs because different factors of production have different properties, people have different skills, land differs in different parts of the country etc.. Therefore as a nation concentrates more on the production of one good, it has to start using resources that are less and less suitable. The production of more and more clothing involves a growing marginal cost - ever increasing amounts of food have to be sacrificed for each additional unit of clothing produced.

It is because of increasing opportunity costs that the PPF is bowed outwards, rather than being a straight line. In the diagram below we can see that as production increases from x to y to z, so the amount of food sacrificed rises for each additional unit of clothing produced. The opportunity cost of the fifth million units of clothing is 1 million units of food. The opportunity cost of the sixth million units of clothing is 2 million units of food.



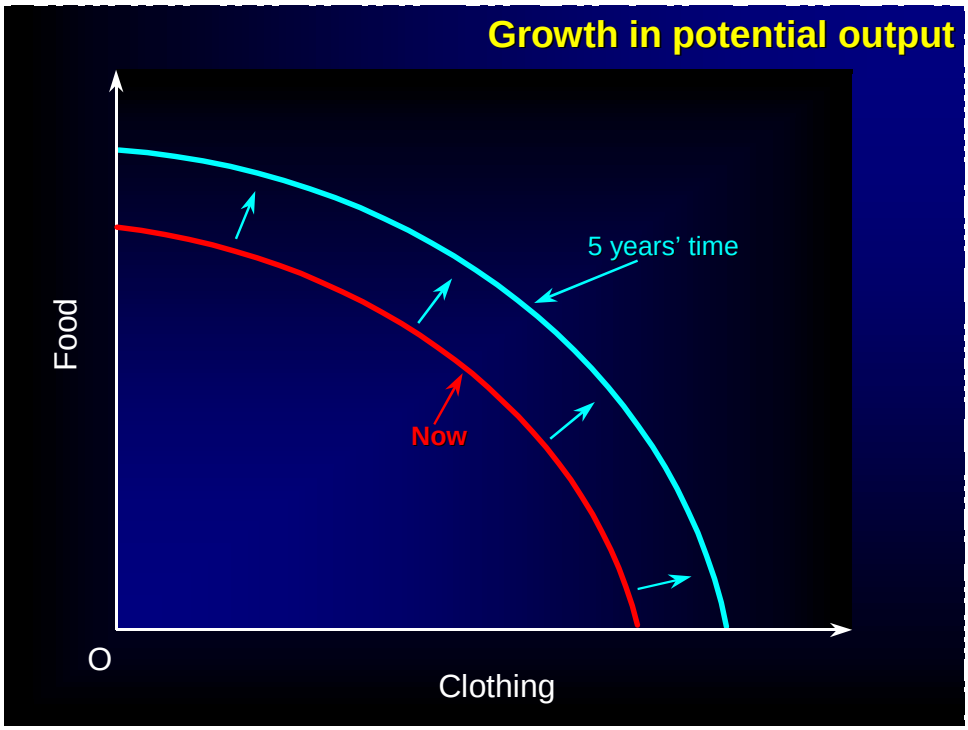
Also remember the example of the nation going to war and having to produce guns after only producing food.

SHIFTS OF THE PPF

As you know, a nation is unable to produce outside of the PPF. A nation is able to shift its PPF to the right (so that it can produce a greater amount of goods) in one of two ways:

- Increasing the number of resources available for production, e.g., increase in the number of workers or factories.
- Increasing the quality of resources available for production, e.g., education and training makes workers more productive, technological progress allows machines to produce more with the same amount of resources.

A shift of the PPF can be shown below:



ECONOMIC RESOURCES

The are four economic resources:

- **Capital**
  This refers to all of the tools, buildings , machines et cetera used in the production of goods and the money that firm have and use.
- **Enterprise**
  This is carried out by entrepreneurs who:
  - Think of ideas.
  - Organise the other three factors of production.
  - Take risks with their own money and the financial capital of others.
- **Land**
  Not only the land, but all of the natural resources as well, e.g., gold, oil, fish, wheat. There are two types of land:
  - Non-renewable resources, e.g., oil, gas and copper.
  - Renewable resources, e.g., fish, forests and corn.
- **Labour**
  This is the workforce of the economy. All workers possess different qualities.

SPECIALISATION

Specialisation is occurs when an economic agent chooses to concentrate on producing a particular good or service and then trade with others in order to survive.

Nations can specialise, e.g.:

- Saudi Arabia – oil.
- South Africa – mining.
- Columbia – coffee.

Regional specialisation can also occur, e.g.:

- London – finance.
- Torquay – tourism.
- Cheddar - cheese

Firms specialise in certain goods or services, e.g.:

- NatWest – banking.
- Ford – cars.
- Woolworths – retailing.

Specialisation by individuals is called the division of Labour. Adam Smith described the effects of the division of labour on pin workers in 1776. He stated that one worker might be able to make 20 pins a day, but if division of labour occurred and 10 workers each specialised in a different task he estimated they could make 48,000 pins.

This increase in labour productivity occurs for a number of reasons:

- Specialisation allows workers to gain skills in a narrow range of tasks. This means workers are far more productive then if they were a jack of all trades.
- It makes it cost effective to provide workers with specialist tools, e.g., it wouldn't make sense to give every farm worker a tractor, but it's possible to provide a group of workers a tractor they can share.
- Time is saved as workers don't constantly have to change tasks, e.g. moving from one workstation to another.
- Workers are able to specialise in tasks they are best suited to.

The division of labour does have limitations. Jobs that are very narrow can become tedious and boring. Workers will do everything possible to avoid work, e.g. calling in sick, long break, frequent visits to the toilet. This will result in a drop in productivity as output per worker falls.

The size of the market might limit the degree of specialisation. A chemist or post office might open in a small village, but finds that he has to sell other products in order to survive.

Over specialisation has disadvantages. African countries are often dependant on only one crop. If the price falls or crop fails, it can be a disaster for the economy and workforce.

The north of England has suffered greatly due it's dependence on heavy manufacturing. Shipyard, steel and textile workers paid a heavy price for specialisation when demand for their skills fell.

ABSOLUTE AND COMPARATIVE ADVANTAGE

We know that specialisation occurs at all levels in the global economy (individual division of labour, firms, regions and countries).

If we assume there are only two counties in the world, England and France, each with the same quantity of resources, and they produce only two goods, bread and jam.

England and France devote half of their resources to the production of each of the goods.

We can see from the table below that with a year's worth of labour in England can produce more bread and jam than in France. England therefore has an absolute advantage in the production of bread and jam.

	Bread (units)	Jam (units)
England	30	15
France	5	10
World Total	35	25

England is six times as efficient in bread production, but only 50% more efficient in jam production.

If France wishes to produce an extra unit of jam it has to give up half a unit of bread, however if England wishes to produce an extra unit of jam it must give up two units of bread. A country's comparative advantage lies in the good that it can produce relatively cheaply, i.e. at a lower opportunity cost than its trading partner.

The opportunity cost of 1 unit of Jam for England is 2 units of bread. The opportunity cost of 1 unit of Jam for France is ½ a unit of bread.

England (which has an absolute advantage in both commodities) therefore has a comparative advantage in bread production, whereas France has a comparative advantage in jam production.

If each country specialises completely in the good that they have a comparative advantage in, the production totals will be:

	Bread (units)	Jam (units)
England	60	0
France	0	20
World Total	60	20

Compared to the earlier situation without specialisation and trade, there has been a gain of 25 units of bread, but a fall of 5 units of jam. We cannot say for sure whether or not there has been a welfare gain as the amount of jam has fallen and we do not know what value consumers place on jam.

In order to demonstrate a welfare gain, a situation must be devised where at least as much of one good and more of another results from specialisation and trade. We obtain this result, by allowing England to devote one sixth of its resources to jam production, giving production totals that are shown below:

	Bread (units)	Jam (units)
England	50	5
France	0	20
World Total	50	25

There are a number of assumptions that we have to make when looking at the above example of comparative advantage:

- There are no transport costs.
- Costs are constant, therefore there are no economies of scale.
- There are only two economies producing goods.
- Goods are homogeneous in different countries.
- Factors of production are completely mobile.
- There are no tariffs or other trade barriers.
- There is perfect knowledge.

We can find analogies in terms of individuals specialising in different tasks. Some lawyers are better typists than their secretaries, but the secretaries do all of the typing. The lawyer has an absolute advantage in both practising law and typing, but the secretary has a comparative advantage in typing. This is because the opportunity cost of the lawyer doing an hours typing is far higher than that of the secretary, therefore it makes sense for the secretary to type and allow the lawyer to practice law.

ECONOMIES OF SCALE

PRODUCTION IN THE SHORTRUN

If we assume that a firm only uses capital (which is fixed) and labour (which is variable), what will happen to output as we employ more and more workers? If a factory is designed for 1000 people its unlikely to have a high output if there is only one worker. As workers are added it is likely that the marginal output will increase as specialization occurs. There will come a point when output per worker will fall, e.g., if there are 5000 workers in a factory designed for 1000 they will get in each other's way. If the extra worker adds less to total output than the worker before him, we say diminishing marginal returns is occurring.

PRODUCTION IN THE LONGRUN

The law of diminishing marginal returns assumes the firm is operating in the shortrun (as capital is fixed). As we know in the longrun firms are able to vary all of their factors of production, what will happen to output as inputs are increased in the longrun?
Firms are able to grow in one of two ways:

- Internal growth: this occurs when a firm expands its own sales and output. To do this firms must employ more factors of production (CELL).
- External growth: this occurs via mergers and takeovers

As firms grow we have found that their average cost of production per unit can fall, we call this economies of scale.

Internal economies of scale occur because of the increase in output by the firm:

- Technical economies - large firms are able to buy equipment that wouldn't be economical for small firms to purchase, as it would lie idle for a majority of the time.
  e.g., Tesco are able to afford electrical point of sale (EPOS) equipment that wouldn't be economical for a corner shop o buy.

- Managerial economies - Larger firms have greater scope for the specialisation of labour, employing specialist workers to perform a relatively narrow task.
  e.g., large schools can employ specialist biology, chemistry and physics teachers, while a small school has to employ a general science teacher.

- Increasing dimensions - doubling the height and width of a building or ship etc. will lead the volume to increase by around threefold. This means the bigger the building or ship the lower the average cost will be.

- Marketing economies - as a firm grows the average cost of advertising per unit will fall, leading to lower average costs.
  e.g., small firms are unable to afford large scale advertising campaigns, while their larger competitors are able to finance television and radio campaigns.

- Purchasing economies - buying in bulk means that you will normally receive a discount from the supplier.
  e.g., these are similar to when you go into a supermarket and are able to buy individual items cheaper in a multipack.

- Financial economies - larger firms are deemed to be more credit worthy, therefore they have a better chance of being lent money and they are given a lower rate of interest on loans
  e.g., Sainsbury's are more likely to be able to pay back a loan than a small cornershop so a bank will charge them a lower rate of interest to reflect this. If the bank refuse Sainsbury's the loan its more than likely they will take their business elsewhere, whilst the cornershop will have fewer banks willing to take on their risky business.

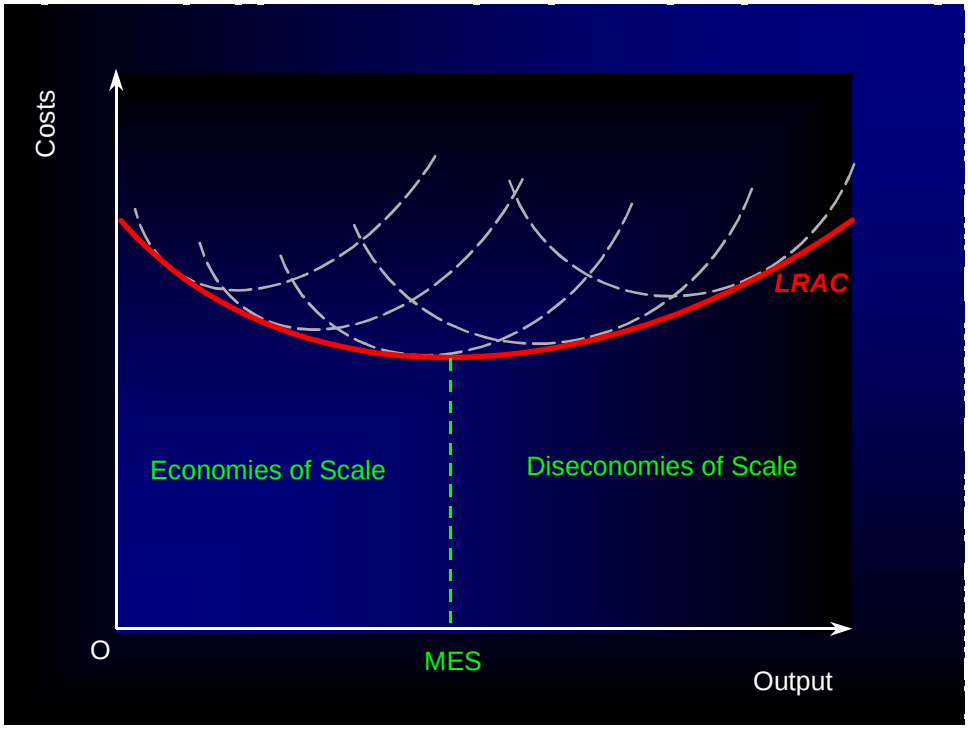
External economies of scale arise due to factors that the firm is unable to control:

- Growth of industry - if many firms are located in close proximity, better roads will be built that will reduce costs. Other firms will train workers that can be poached, thereby reducing expenditure.
- Lowering taxation - a decrease in national insurance contributions for example would lower a firm's costs.
- Technology - the introduction of a more efficient technology would lower the costs for the firm.

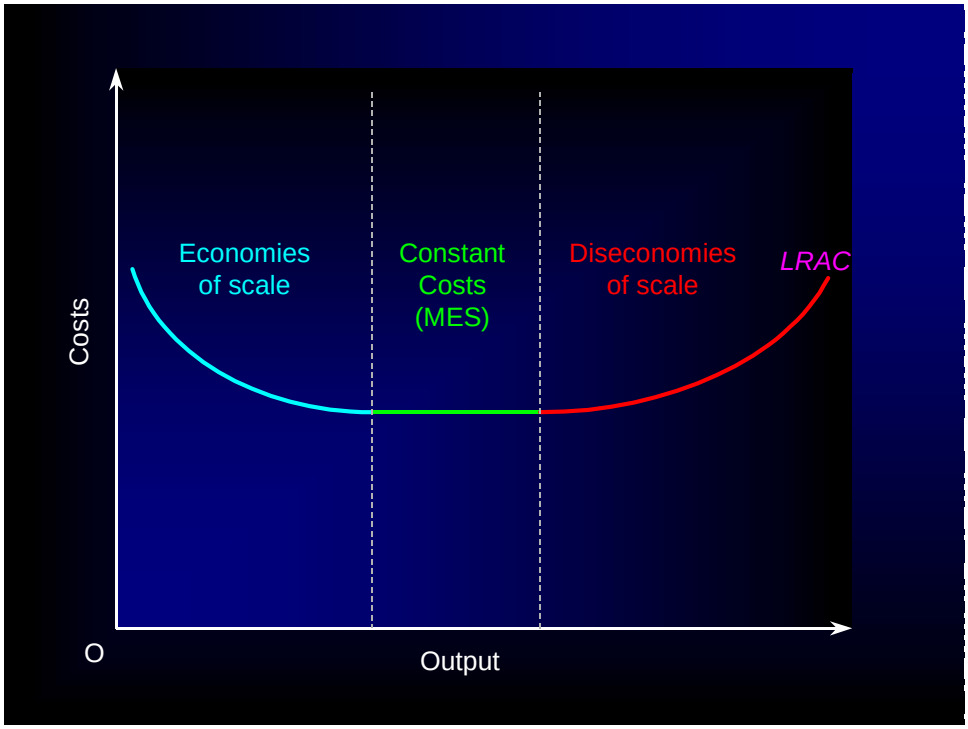
Some firms become too large and they reach a point where the average cost per unit begins to increase, which is called diseconomies of scale and occurs because of:

- X-inefficiency - managing a large organisation with many workers spread over a large area can be very difficult, due to problems in control, co-ordination, motivation, communication and co-operation.

The point where costs of production are at their lowest is called the minimum efficient scale (MES), this is shown on the diagram. Also shown is the relationship between the SRAC and LRAC. The LRAC is known as an envelope for all of the SRAC.



It's possible for the MES to occur over a range of outputs for the firm, this is shown on the diagram overleaf.

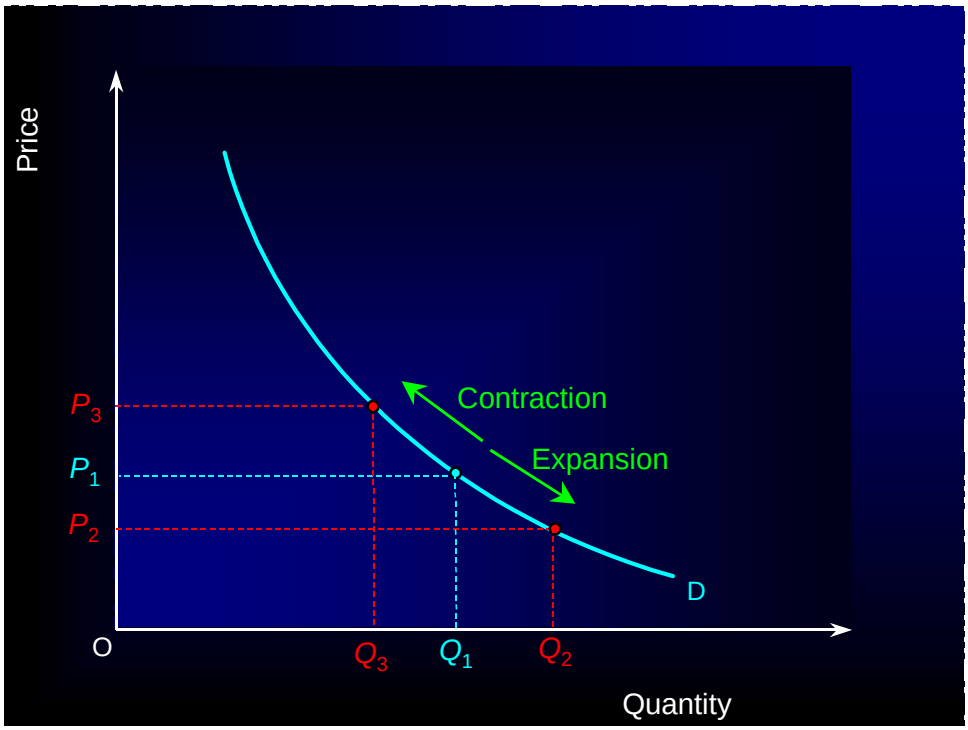


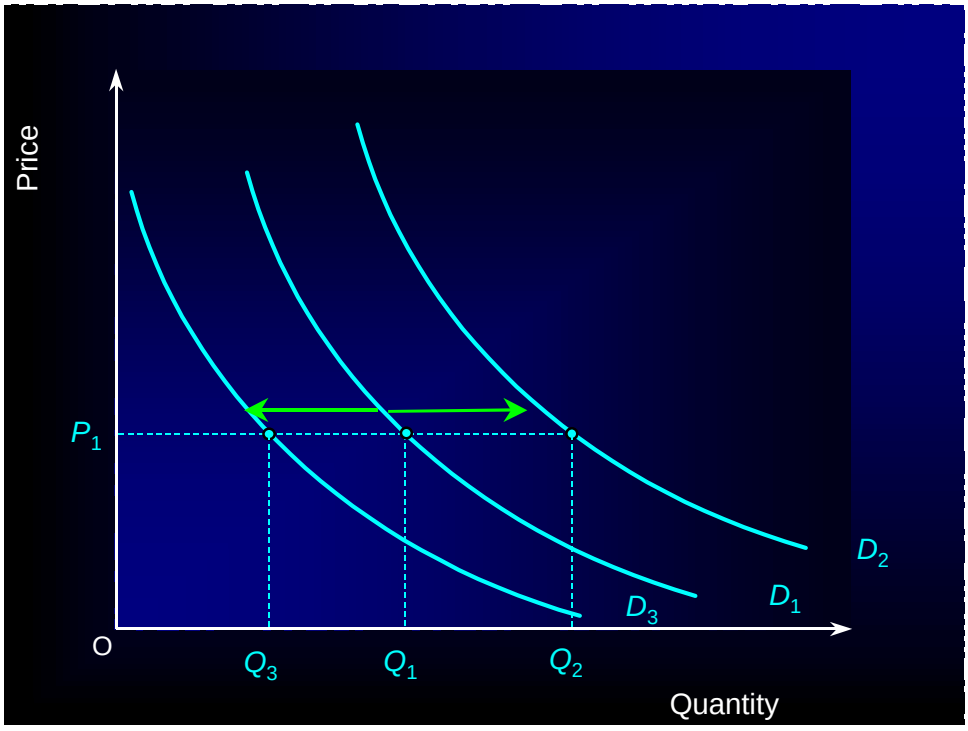
DEMAND

Our wants become a demand when we have the money to back up our desires. We call this effective demand, i.e., how much consumers will be prepared to buy at a particular price.

Assuming ceteris paribus, as price increases demand will fall and as prices decreases demand will rise. This leads to a downward sloping demand curve.

A change in price will lead to a movement along the demand curve. An increase in price will lead to demand contracting and a decrease in price will cause demand to expand





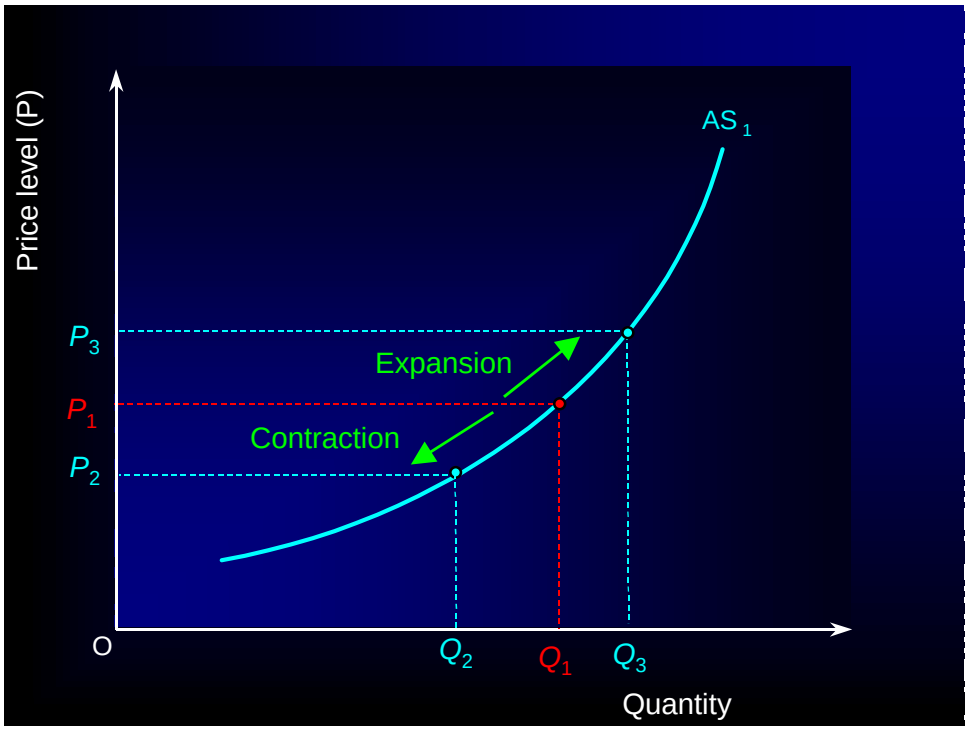
A number of factors will cause the demand curve to shift, either to the right (increase in demand) or left (decrease in demand):

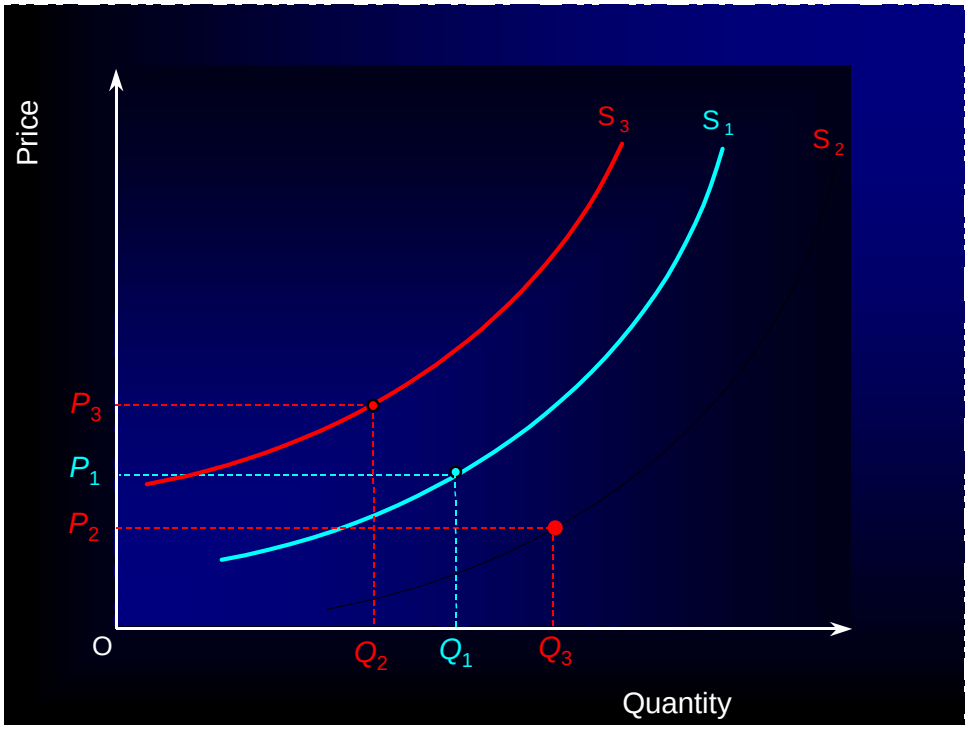
- Income - when income rises demand for a normal good will also rise.
- The price of other goods - if the price of a substitute good falls then demand will fall (e.g., Coca-Cola and Pepsi). If the price of a complement good falls then demand will rise (e.g., computers and computer games).
- Population - an increase in population is likely to lead to an increase in demand.

- Changes in fashion - as goods go out of fashion demand for them will fall.
- Changes in legislation - e.g., demand for gun in the UK decreased after it became illegal to own one.
- Advertising - this aims to influence consumer choice.
- The time of the year - e.g., demand for holidays in Spain will be lower in the winter and demand for gas will be higher during the winter.

SUPPLY

If the price of a good increases, ceteris paribus then firms are likely to be more willing to supply larger amounts. This leads to an upwards sloping supply curve. A change in price will lead to a movement along the supply curve, whilst a change in any other factor will lead to a shift in the supply curve.





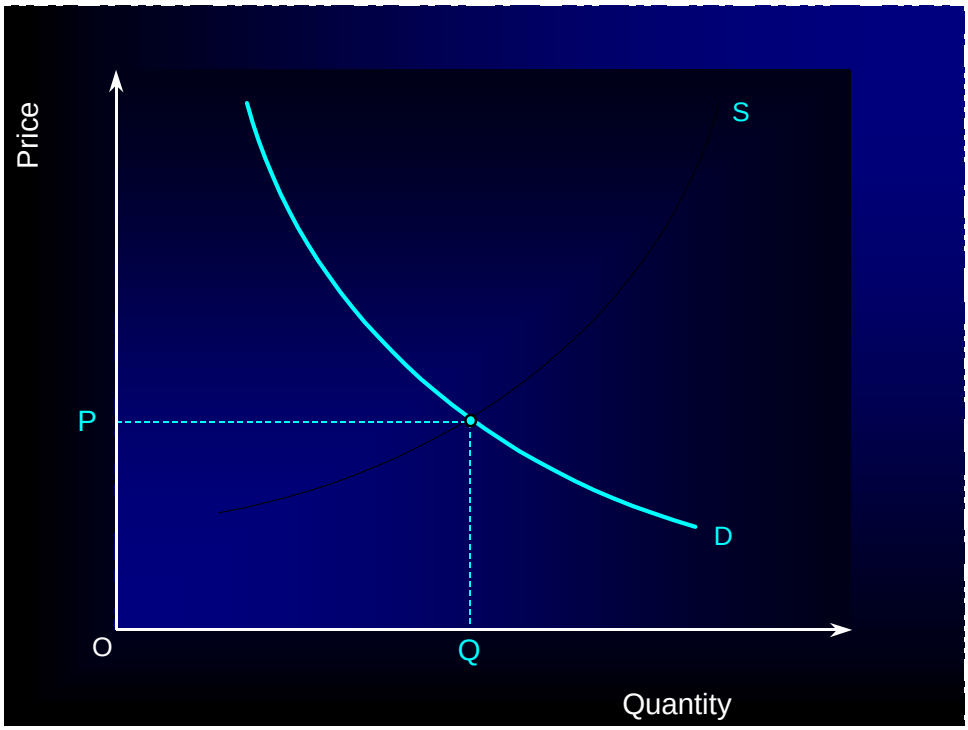
We are able to identify two main reasons for the supply curve being upwards sloping:

- Incentives for increasing production - if the price of particular good rises then producers will find it more financially rewarding to devote resources to that good and away from others.
- Theory of increasing costs - due to the increasing opportunity costs of production as less and less well suited resources are switched to it, a higher price must be available in the market place to make it economically viable to use these resources.

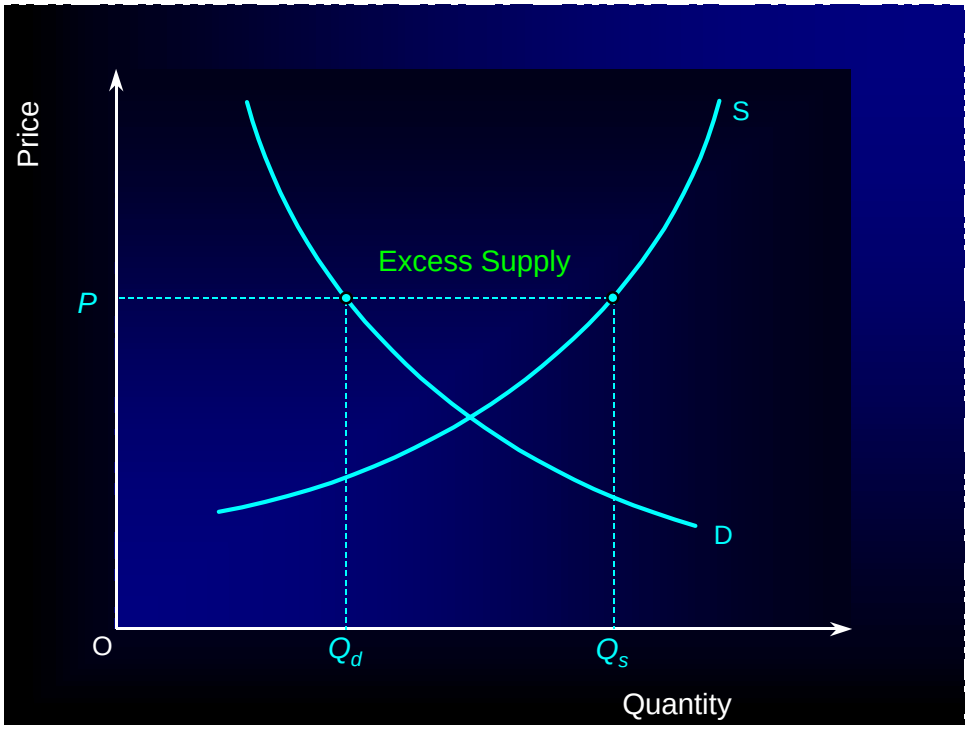
EQUILIBRIUM

We can see on the diagram overleaf there is only one price where planned demand equals planned supply, this is known as the equilibrium price. This price is also known as the market clearing price, because all of the goods supplied to the market are bought (or cleared), but no buyer is left frustrated by his wish to buy.

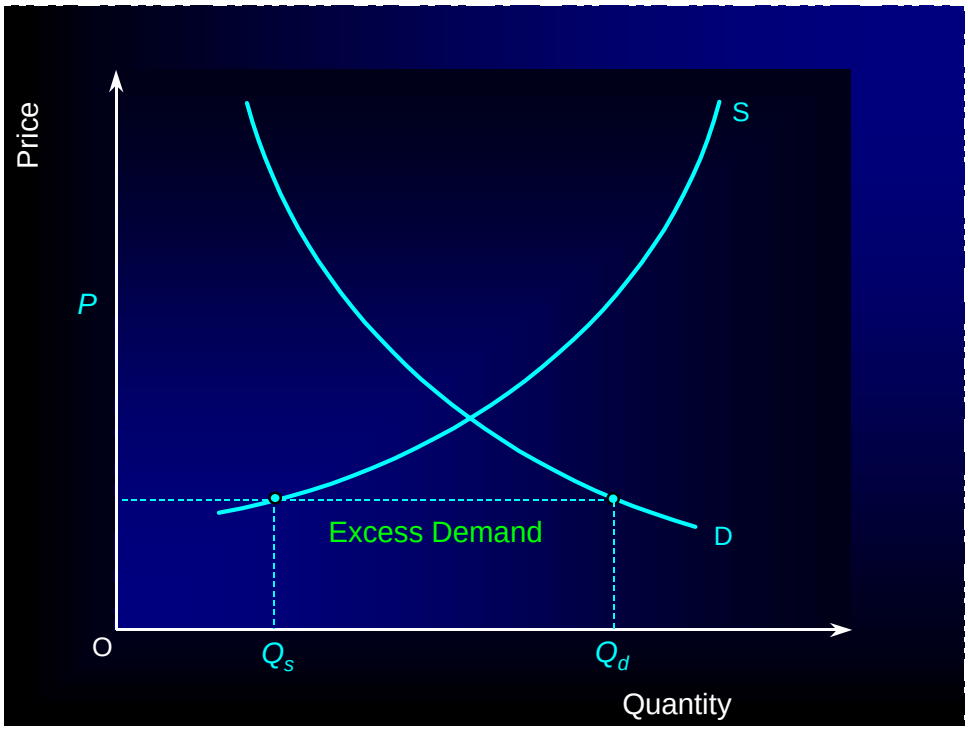
We can state that equilibrium occurs when demand equals supply. This can be shown on the graph where the demand curve crosses the supply curve



In the diagram below the price is above the equilibrium price. At this price firms are willing to supply more than consumers demand, giving rise to excess supply. When a shop holds a sale it implies there has been excess supply in the past, firms tried to sell the goods at a higher price in the past and failed.

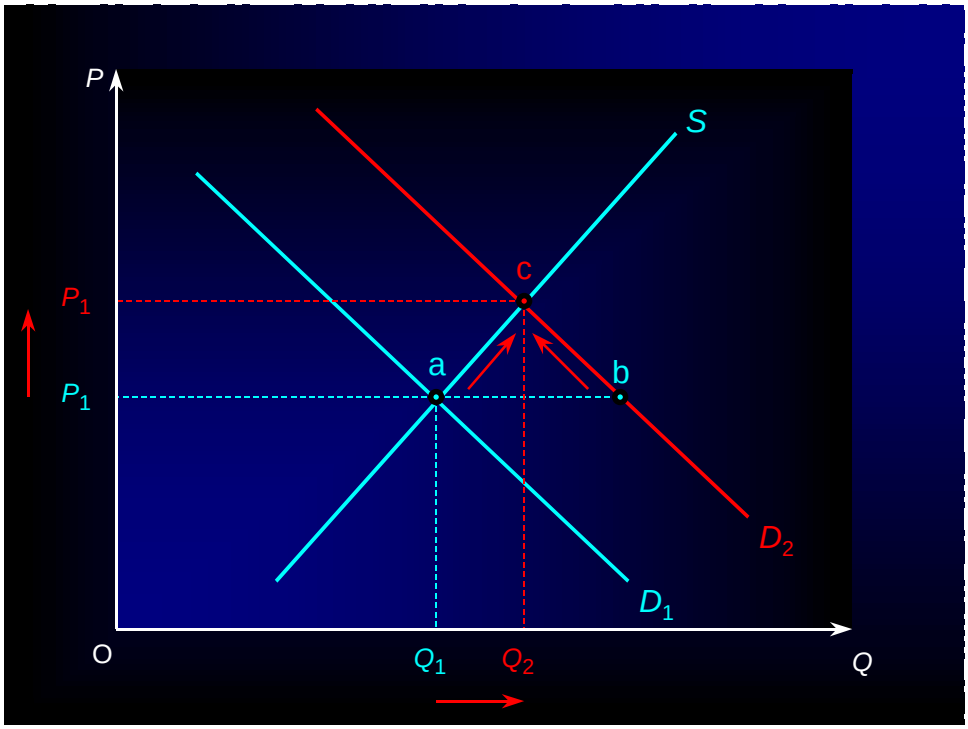


In the diagram overleaf the price is below the equilibrium price. A this price consumers demand more than firms are willing to supply, leading to excess demand. This can occur in the sports car market where there is often a waiting list than can run into years.



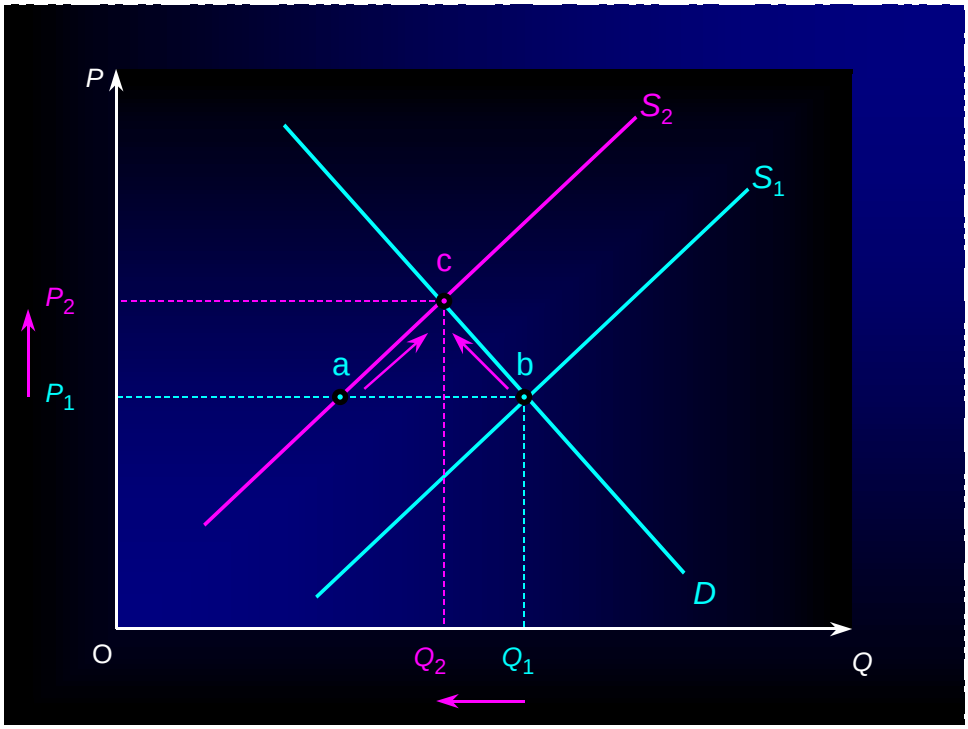
SHIFTS IN EQUILIBRIUM

Shifts in demand and supply will cause the equilibrium position to change. In the diagram below demand has increased and shifted to the right. This will lead to an excess demand of a-b, suppliers will realise that they can charge higher prices. Price will keep rising until equilibrium is reached at P_2 Q_2 at point c. The opposite would occur for a shift in demand to the left.

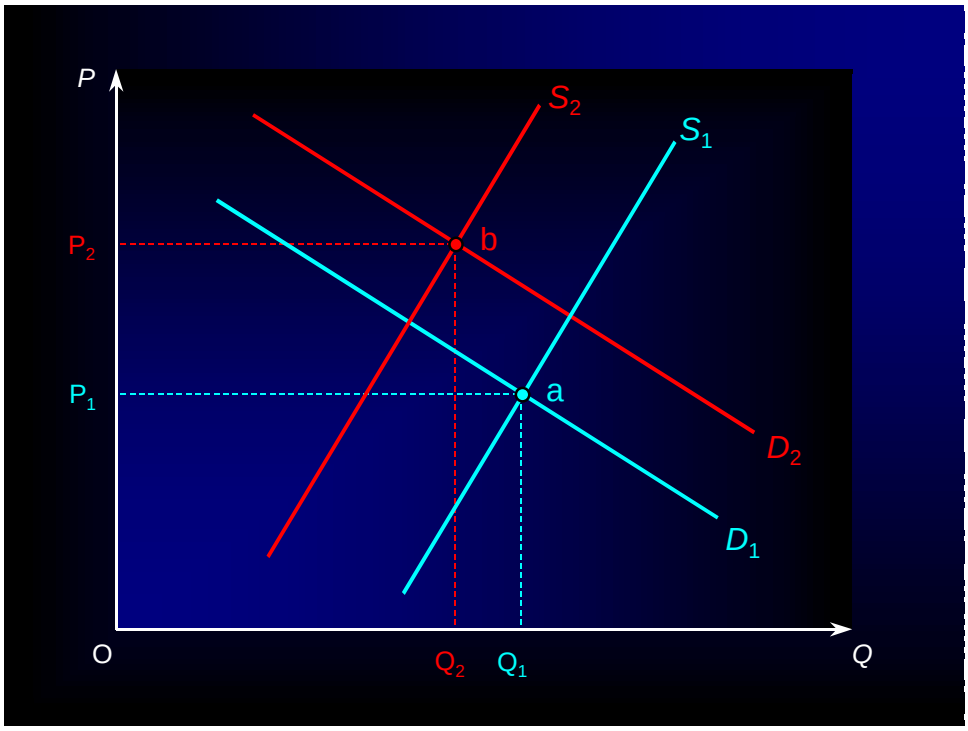


In the diagram below supply has decreased and shifted to the left. This will lead to an excess demand of a-b, the resulting surplus will allow firms to raise

their prices. Price will keep rising until equilibrium is reached at P_2 Q_2 at point c. The opposite would occur for a shift in supply to the right.



If demand and supply both shift the resulting equilibrium will depend upon the size of their relative shifts. It is possible to derive a number of different outcomes.



ENTRY AND EXIT OF FIRMS

Firms entering the market will shift the supply curve to the right, thereby lowering the equilibrium price and increasing the equilibrium quantity. Firms leaving the market will shift the supply curve to the left, causing the equilibrium price to rise and the equilibrium quantity to fall.

SHORTRUN AND LONGRUN

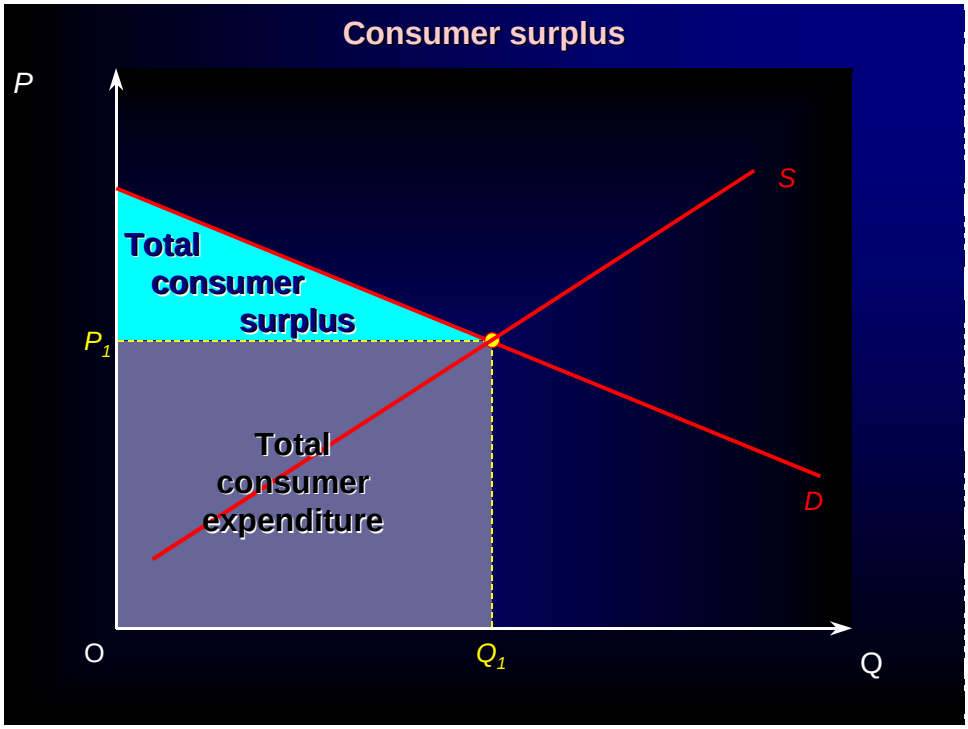
In the shortrun producers are faced with a problem if they wish to increase their output. They can increase the number of hours their employees work and buy more raw materials, in other words labour and land (raw materials) are variable in the shortrun. The amount of factory space and machinery (capital) are fixed as they can't simply be added. In the shortrun land and labour are variable and capital is fixed.

In the longrun all economic resources are variable as land, labour and capital can all be changed. The only variable that is fixed is the level of technology, but this can be introduced in the very long run, e.g., new IT or production techniques are introduced.

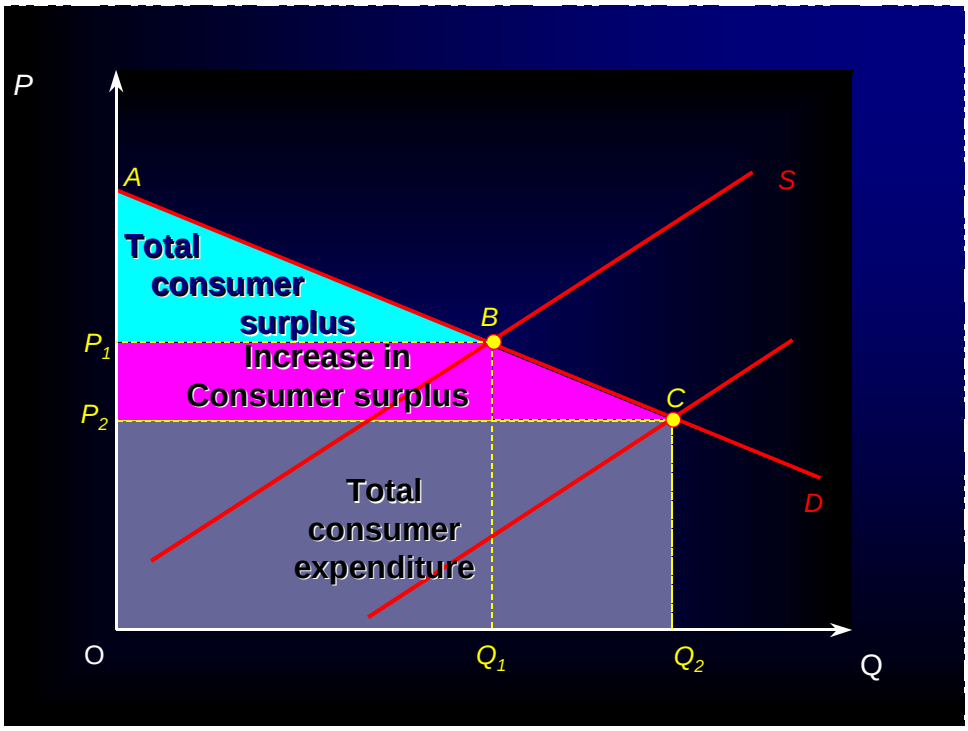
There is no standard measure for these time periods as they vary greatly from industry to industry, e.g., a market trader can increase its capital (the market stall) a lot quicker than ICI (a new chemical plant).

CONSUMER SURPLUS

Consumer surplus measures the welfare that consumers derive from their consumption of goods and services, or the benefits they derive from the exchange of goods. Consumer surplus is the difference between what consumers are willing to pay for a good or service (indicated by the position of the demand curve) and what they actually pay (the market price). The level of consumer surplus is shown by the area under the demand curve and above the ruling market price



Consider the demand for public transport shown in the diagram. The initial fare is price P_1 for all passengers and at this price, Q_1 journeys are demanded by local users. At price $P_1$the level of consumer surplus is shown by the area AP_1B. If the bus company cuts price to P_2 the demand for bus journeys expands to Q_2 and the new level of consumer surplus rises to AP_2C. This means that the level of consumer welfare has increased by the area P_1P_2CB.



Consumer surplus = total willingness to pay for a good or service - the total amount consumers actually do pay.

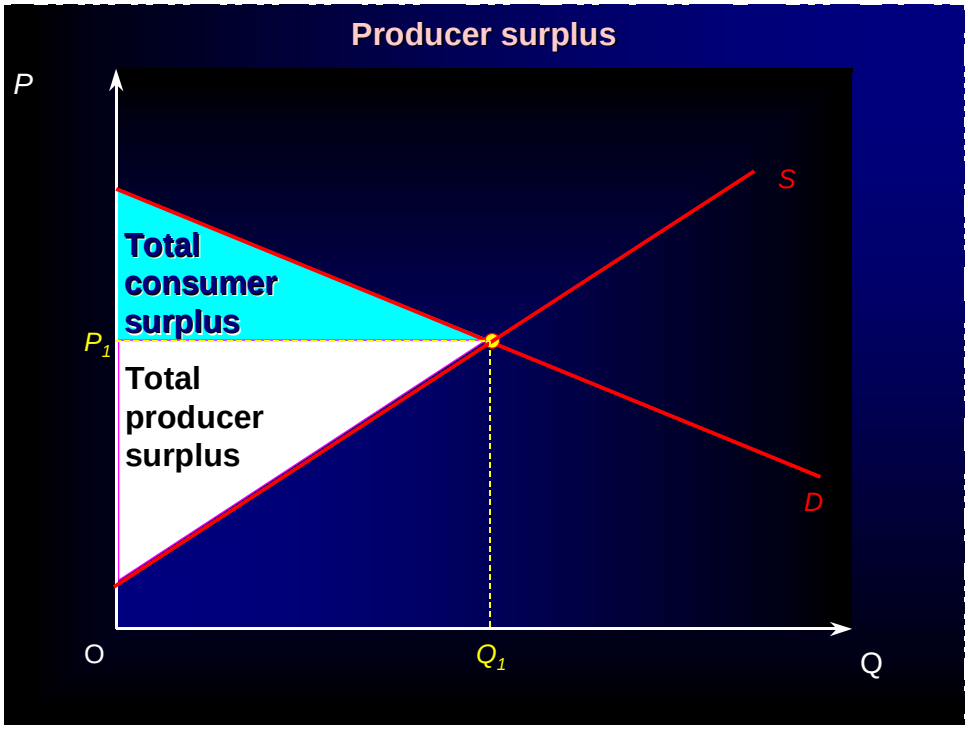
If a zero fare is charged, consumers will demand bus journeys up to the point where the demand curve cuts the x-axis. When demand for a product is perfectly elastic, the level of consumer surplus is zero since the price that people pay matches the price they are willing to pay. There must be perfect substitutes in the market for this to be the case. When demand is perfectly inelastic the amount of consumer surplus is infinite. Demand is invariant to a price change.

DYNAMIC PRICING AND CONSUMER SURPLUS

Dynamic pricing is becoming more common place with the diffusion of information technology in the economy. Dynamic pricing is when the price the firm charges to customers is sensitive to very short run changes in demand. For example, Coca Cola is experimenting in raising the price of cans from vending machines when the average temperature increases. Hotel bookings systems can change room rates on offer in response to fluctuations in occupancy rates. Changes in price to reflect certain market conditions can take advantage of variations in consumers' willingness to pay for certain items.

PRODUCER SURPLUS

Producer surplus is used as a measure of producer welfare. It is defined as being the difference between what producers are willing and able to supply a good for (indicated by the position of the supply curve) and the price they actually receive.



The level of producer surplus is shown by the area above the supply curve and below the market price.

PRICE ELASTICITY OF DEMAND

The quantity demanded of a good is affected by changes in the price of the good, changes in prices of other goods, changes in income and changes in other relevant factors. Elasticity is a measure of just how much the quantity demanded will be affected by a change in price, income, price of other goods etc..

If the price of steak increases by 1% and the quantity demanded then falls by 20% we can see there has been a very large drop in the amount demanded in comparison to the change in price. The price elasticity of demand for steak is said to be high.

If the quantity of steak demanded was to only fall by 0.01%, we can see this is a fairly insignificant fall in quantity in response to the 1% increase in price. In this case the price elasticity of demand for steak is low.

It can be calculated using the following formula:

$$\frac{\text{percentage change in quantity demanded}}{\text{percentage change in price}}$$

(To help you remember quantity is on top of price think of the football team QPR).The table below shows a number of calculations of price elasticity of demand.

% change in price	% change in quantity	elasticity
10	20	2
50	25	0.5
7	28	4
9	3	0.33

Elasticity figure are actually negative, but economists forget this point in the name of simplicity.

ELASTIC AND INELASTIC DEMAND

Different values of price elasticity are given special names:

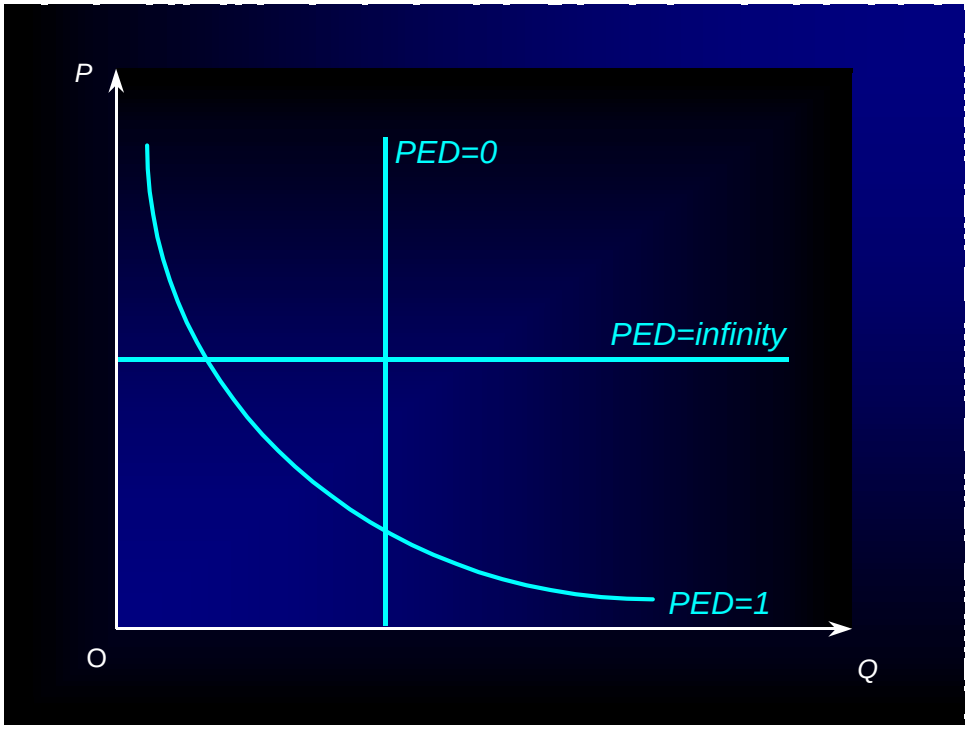
- Demand is price elastic, if the value of elasticity is greater than one. If demand for a good is price elastic then a percentage change in price will lead to an even larger percentage change in the quantity demanded. For example if a 10% rise in the price of CDs leads to a

20% fall in the demand, then price elasticity is 20% / 10% or 2 and the demand for CDs is therefore elastic.

- Demand is price inelastic, if the value of elasticity is less than one. If the demand for a good is inelastic then a percentage change in the price will bring about a smaller percentage change in the quantity demanded. For example if a 10% rise in price by rail company resulted in a 1% fall in train journeys made then price elasticity would be 1% / 10% or 0.1 and the demand for rail journeys is therefore inelastic.

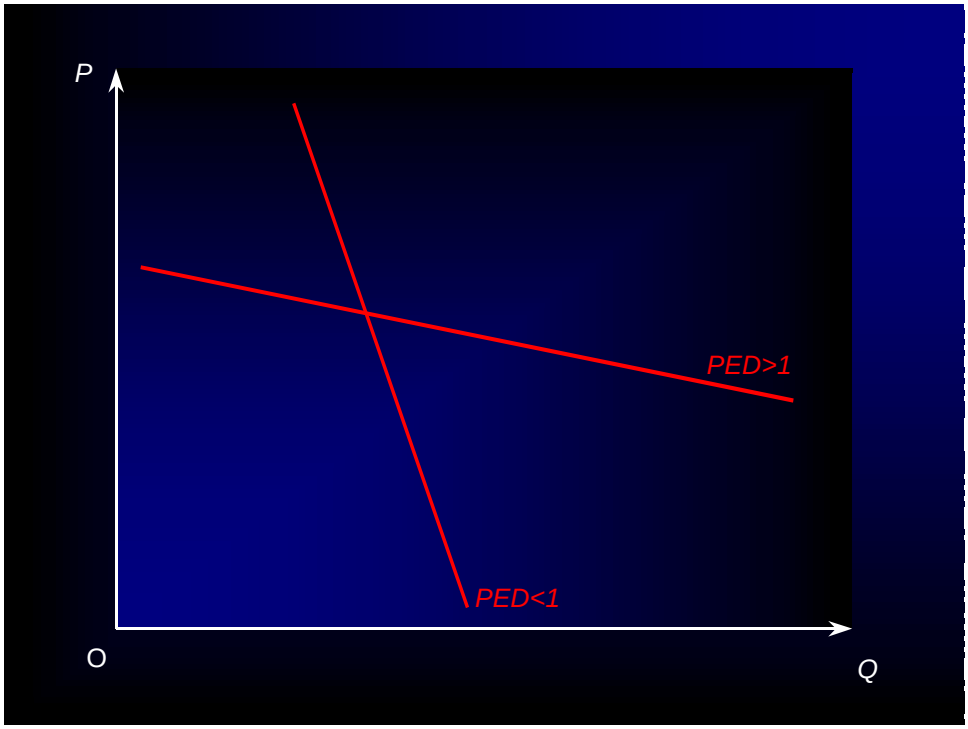
SPECIAL CASES OF ELASTICITY

- Demand is infinitely inelastic if the value of elasticity is zero (zero divided by any number). Any change in price would have no effect on the quantity demanded.
- Demand has unitary elasticity if the value of elasticity is exactly 1. This means that a percentage change in the price of a good will lead to an exact and opposite change in the quantity demanded. For example a good would have unitary elasticity if a 10% increase led to a 10% fall in the quantity demanded.
- Demand is infinitely elastic if the value of elasticity is infinity (any number divided by zero). A fall in price would lead to an infinite increase in quantity demanded (i.e. increasing from zero), whilst an increase in price would lead to the quantity demanded falling to zero.



The case of unitary elasticity is the curve (known as a rectangular hyperbola). The perfectly inelastic curve looks like an I and the perfectly elastic curve looks like an E (without the top!).

Knowing these special cases it makes it easier to spot whether a demand curve is relatively elastic or inelastic. The demand curve on the left is relatively elastic (as it looks more like the E) and the demand in the centre is relatively inelastic (as it looks more like an I).



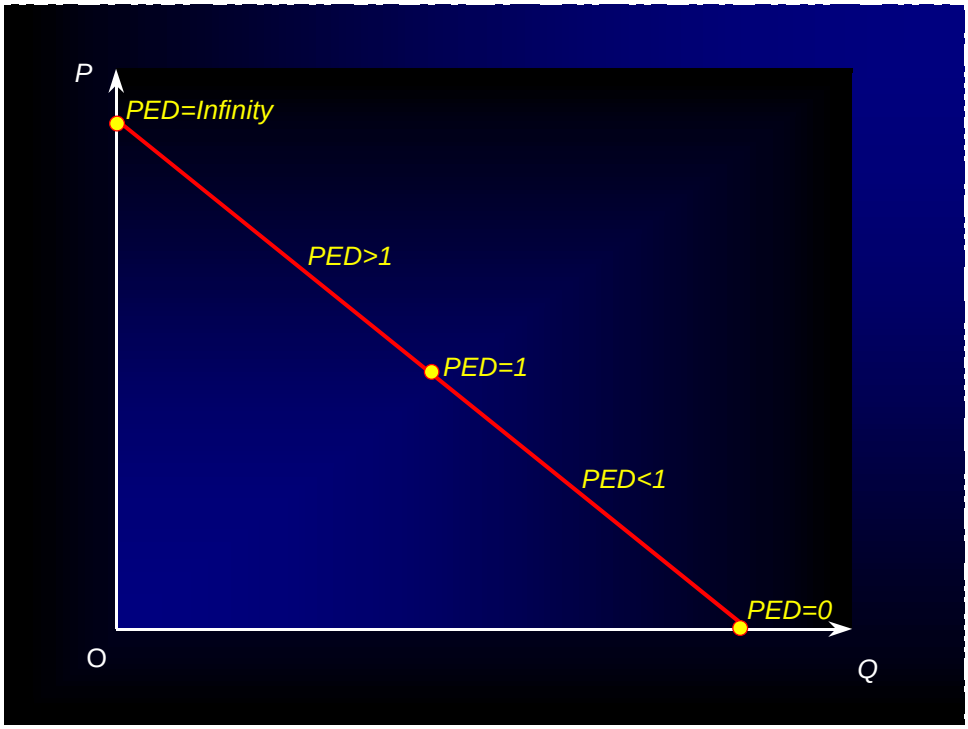
CHANGES IN ELASTICITY ALONG THE DEMAND CURVE

We mentioned earlier that a good is infinitely elastic if a fall in price leads to an infinite rise in quantity. This must occur if quantity was previously zero and rises to in response to a fall in price - this can be seen at the top of the demand curve.

The opposite occurs at the bottom of the demand curve leading to an elasticity of zero.

Also shown on the diagram is the point where elasticity is unitary (equal to one), this by definition occurs exactly halfway along the demand curve.

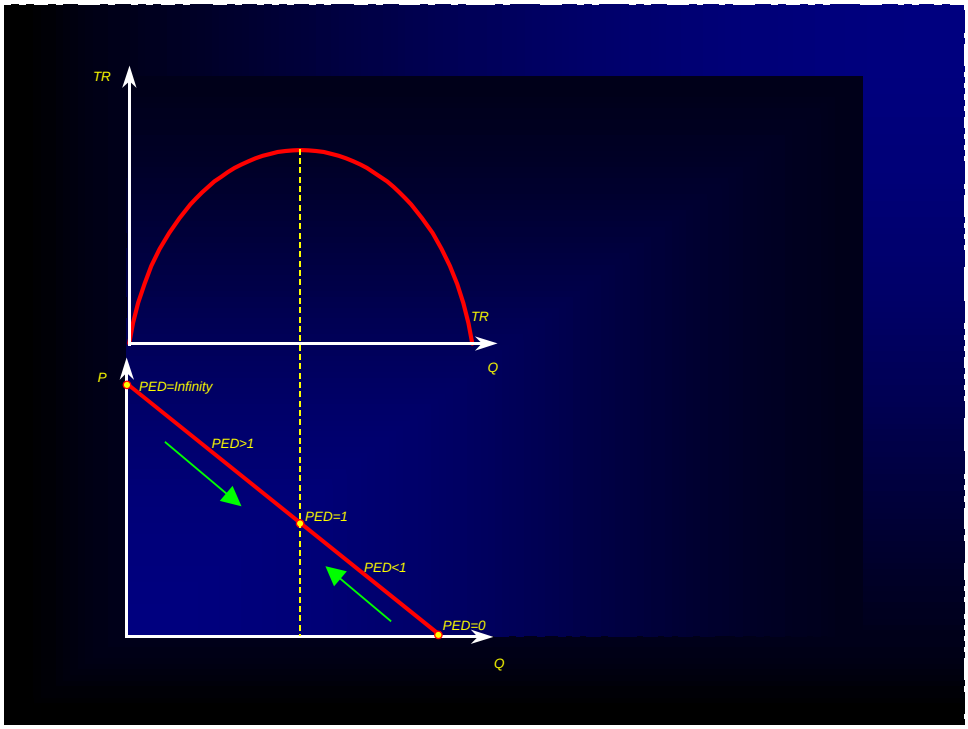
If elasticity is infinite where the demand curve crosses the price axis, but is equal to zero when it crosses the quantity axis, then elasticity must change as you move along the demand curve. Demand is price inelastic if it has a value less than 1 and elastic if greater than 1, these regions are shown above.



IMPORTANCE OF ELASTICITY FOR A BUSINESS

- If the business is producing on the price elastic section of the demand curve, a small percentage change in price leads to a large percentage change in quantity demanded. Lowering the price will have the effect of increasing total revenue and raising the price will decrease total revenue, e.g., if the price of Mars Bars increased by 25% ceteris paribus, we would expect their sales to fall dramatically as consumers shift to other chocolate bars. This would have the effect of reducing their total revenue.
- If the business is producing on the unitary price elasticity section of the demand curve, small changes in price do not change total revenue as a percentage change in price will be exactly offset by an inverse change in quantity.
- If the business is producing on the price inelastic section of the demand curve, a small percentage change in price leads to a small percentage change in quantity demanded. This will have the effect of decreasing total revenue when the price is increased and increasing total revenue when the price falls. For example if a firm invented a miracle cure for the common cold and decided upon a price of 50p a pack. The firm sold 10 million packs in the first year of sales. Next year they decide to raise prices by 25% and sales fall to 9 million (10% fall), the level of sales have dropped, but the total revenue has increased.

It is important to note that the revenue maximising level of production occurs when elasticity is unitary, but this isn't necessarily the level where profit is maximised. We don't know the firm's costs at different levels of output. Furthermore elasticities are notoriously difficult to calculate and errors in the elasticity figures could lead to incorrect pricing decisions.



FACTORS AFFECTING THE PRICE ELASTICITY OF DEMAND

Two factors are usually highlighted by economists:

- The availability of substitutes. If a product has many substitutes then its price elasticity is likely to be high. An increase in price will lead to consumers shifting demand to one of its many substitutes (e.g., chocolate bars). However if the good has few substitutes, consumers will find it harder to replace that good, so its price elasticity is likely to be low (e.g. salt).The more widely a product is defined the fewer substitutes it is likely to have. Spaghetti has many substitutes, but food has none.
- Time. The longer the period of time, the more price elastic is the demand for the product. For example if the price of leaded petrol was to increase by 50% my demand for it would not change in the shirt run. However as time goes on I would change my car to one that used unleaded petrol, therefore in the longrun elasticity becomes greater.

CROSS ELASTICITY OF DEMAND

The quantity demanded of a particular good varies according to the price of other goods. Cross elasticity of demand measures the responsiveness of the quantity demanded of one good to changes in the price of another.

The formula for measuring cross elasticity of demand for good X is:

$$\frac{\%\text{ change in quantity demanded of good X}}{\%\text{ change in price of another good Y}}$$

Two goods which are substitutes will have a positive cross elasticity. An increase in the price of one good (e.g. mars bars) will lead to an increase in the quantity demanded of a substitute (e.g. snickers).

Two goods which are complements will have a negative cross elasticity. An increase in the price of one good (e.g. computers) will lead to a fall in demand of a complement (e.g. computer games).

The cross elasticity of two goods which have no relationship to each other would be 0 (e.g. jelly and pot plants).

INCOME ELASTICITY OF DEMAND

The demand for a good will change if consumers' incomes change, income elasticity of demand measures that change. If the demand for housing were to increase by 20% in response to a 5% increase in income, the income elasticity of demand would be positive and relatively high.

If the demand for corned beef fell by 8% in response to the 5% increase in income, then income elasticity of demand would be negative and relatively small.

If the demand for food remained unchanged in response to an increase in income, then the income elasticity of demand would be zero.

It is important to note that the distinction between income elasticity of demand and price elasticity of demand here. Whether income elasticity has a positive or negative sign is of vital importance. A positive income elasticity of demand means that an increase in income will lead to an increase in demand for the good in question. Conversely a negative income elasticity of demand means that an increase in income will lead to a fall in demand for the good in question.

The formula for measuring income elasticity of demand is:

$$\frac{\text{percentage change in quantity demanded}}{\text{percentage change in income}}$$

(Not quite QPR, but Q is still on the top!)

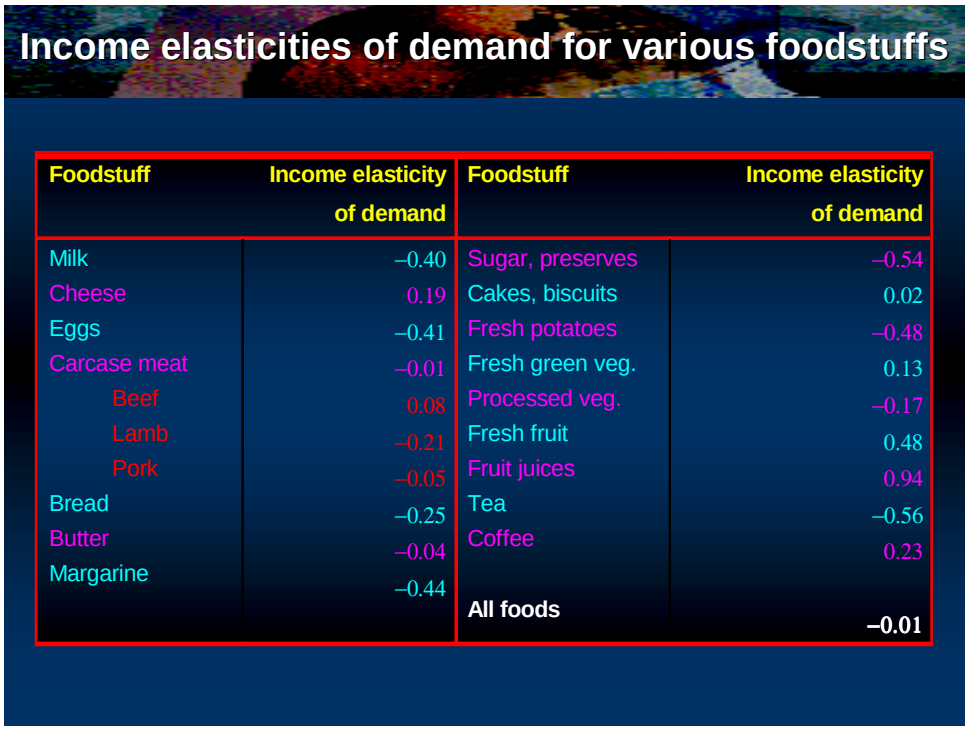
Some simple calculations are shown below.

% change in income	% change in quantity	elasticity
10	5	0.5
12	4	0.3
3	15	5
7	21	3

VALUES OF INCOME ELASTICITY

- Income elastic demand - a good or service has an income elastic demand if income elasticity is greater than 1. A 1% change in income causes a greater than 1% change in quantity demanded. These are called luxury goods, e.g. foreign holidays.
- Income inelastic demand - the value of income elasticity is between 0 and 1. A 1% change in incomes causes a less than 1% change in quantity demanded. As the quantity demanded doesn't change a great deal in response to income we can assume the good is a necessity, e.g., food and clothes.
- Negative income elasticity - in this case a change in income will bring about an opposite change in quantity demanded. If income goes up the quantity demanded will go down. The good is described as inferior, e.g., happy shopper bread.

Different income elasticities of demand are shown in the table below:



Foodstuff	Income elasticity of demand	Foodstuff	Income elasticity of demand
Milk	–0.40	Sugar, preserves	–0.54
Cheese	0.19	Cakes, biscuits	0.02
Eggs	–0.41	Fresh potatoes	–0.48
Carcase meat	–0.01	Fresh green veg.	0.13
Beef	0.08	Processed veg.	–0.17
Lamb	–0.21	Fresh fruit	0.48
Pork	–0.05	Fruit juices	0.94
Bread	–0.25	Tea	–0.56
Butter	–0.04	Coffee	0.23
Margarine	–0.44	All foods	–0.01

ELASTICITY OF SUPPLY

Elasticity of supply measures the change in the amount that a firm supplies in response to a change in price. It is measured as follows

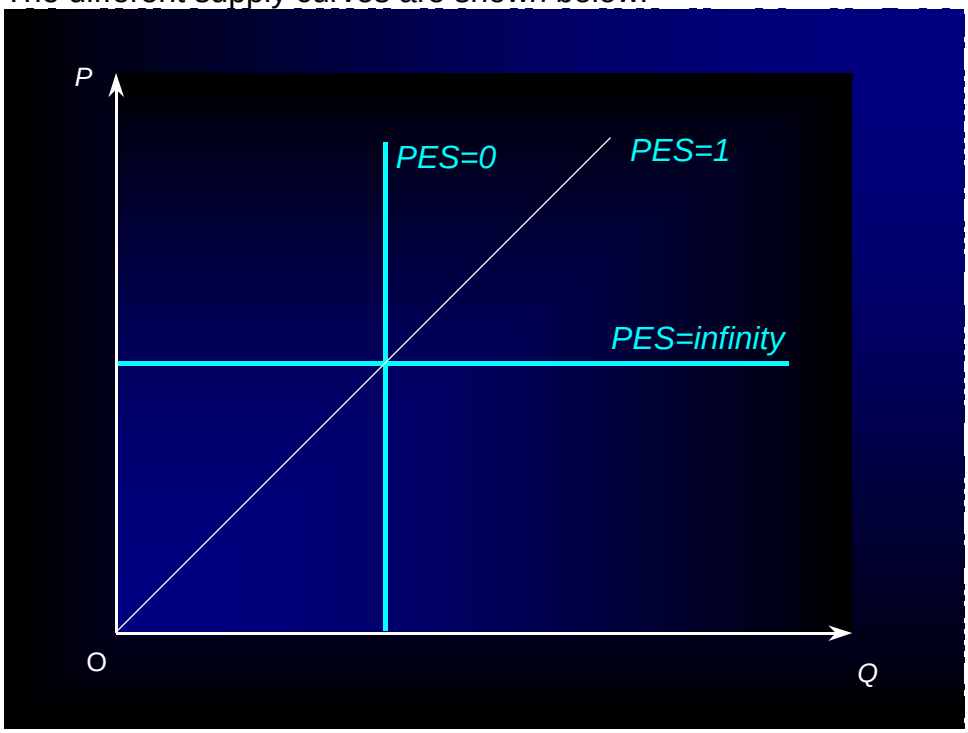
$$\frac{\text{percentage change in quantity supplied}}{\text{percentage change in price}}$$

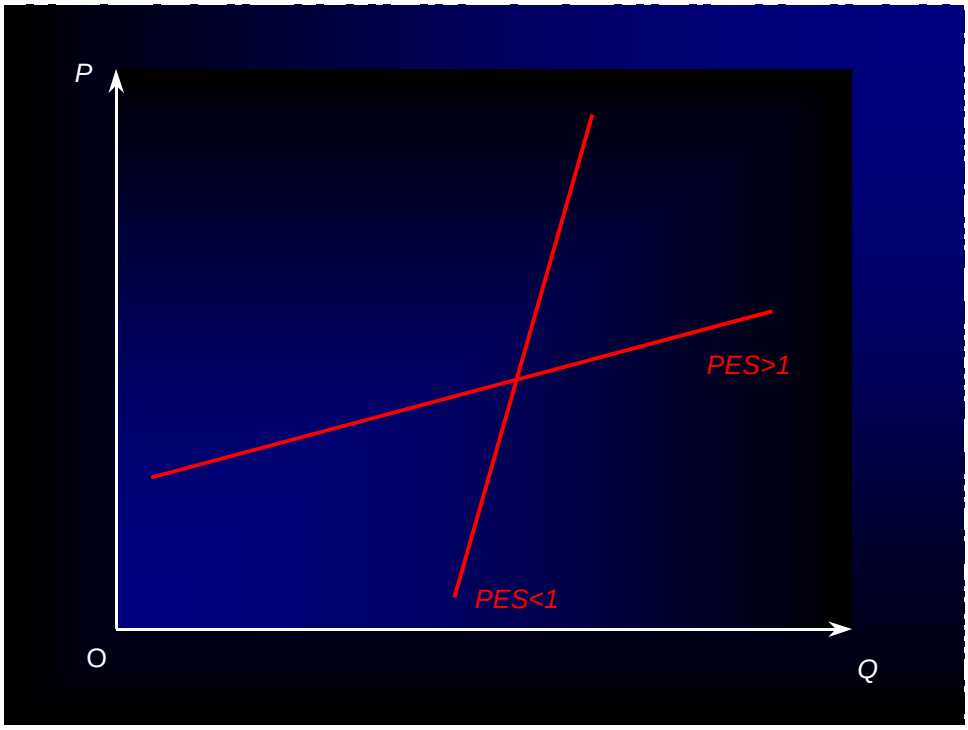
Again the Q is on top, remember QPR.

VALUES OF PRICE ELASTICITY OF SUPPLY

- Elasticity is greater than one - the good is elastic and is highly responsive to changes in price. A percentage change in price leads to a larger percentage change in the quantity supplied. A straight line supply curve will intersect the price axis.
- Elasticity is equal to one - the good has unitary elasticity, a percentage change in price will lead to an equal percentage change in the quantity supplied. Any straight line supply curve that intersects the origin will have unitary elasticity.
- Elasticity is less than one - the good is inelastic and not very responsive to changes in price. A percentage change in price leads to a smaller percentage change in quantity. . A straight line supply curve will intersect the quantity axis.
- Elasticity is equal to zero - the good is perfectly inelastic and a change in price lead to no change in the quantity supplied.
- Elasticity is equal to infinity - the good is perfectly elastic and any decrease in price will cause the quantity supplied to fall to zero.

The different supply curves are shown below:





LABOUR MARKETS

THE DEMAND FOR LABOUR

The demand for labour is the firm's willingness to employ labour at each given wage rate. As the wage rate rises the demand for labour will fall and vice versa.

The reasons for this are:

- As wages increase firms will look to substitute labour for something cheaper i.e. capital (machinery).
- As wages increase, this puts up costs of production, which will in turn put up the price of the product, as prices rise demand falls, therefore with less of the product demand there will be less need for labour.

THE SUPPLY OF LABOUR

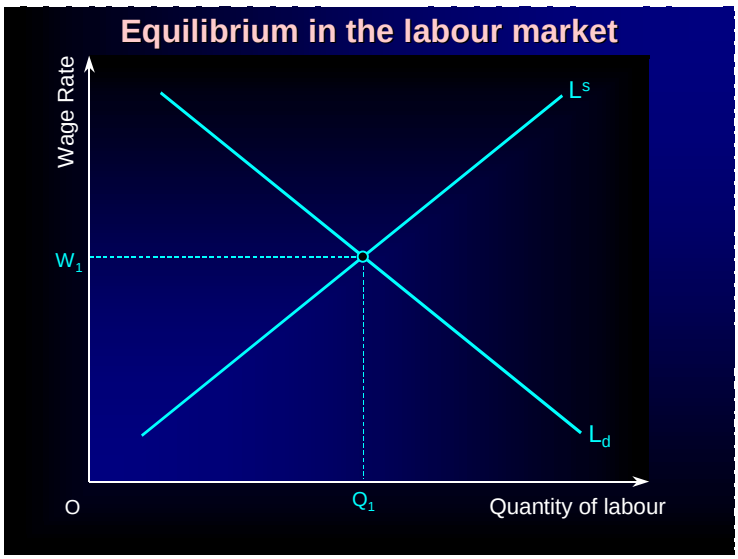
The supply of labour is the employees willingness to work at each given wage rate. As the wage rate rises more labour will be supplied and vice versa.

The reasons for this are:

- Higher wages attract worker from other industries.
- Higher wages attract people who are currently unemployed.
- In the long term higher wages encourage people to train to work in that occupation.

EQUILIBRIUM

This is established where demand for labour equals supply of labour. As shown in the following diagram:

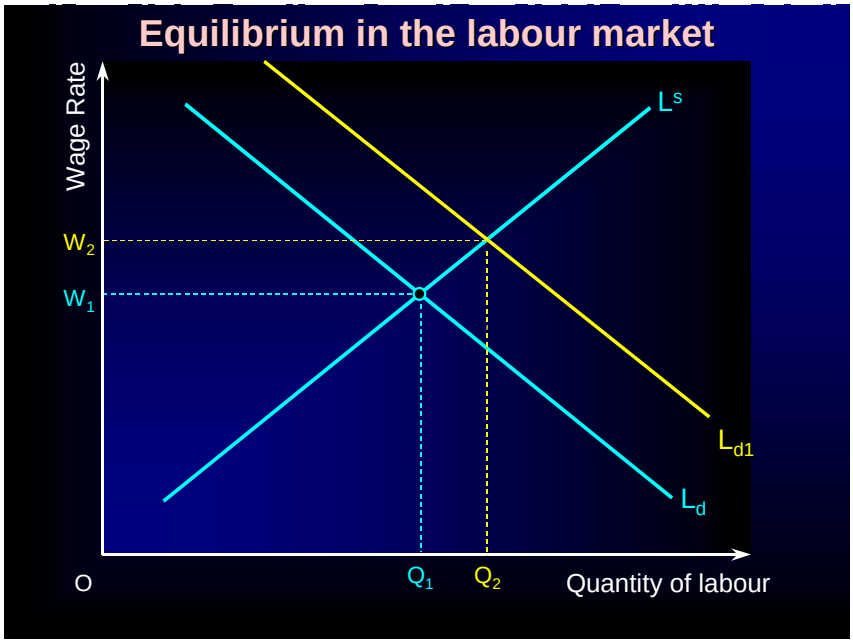


SHIFTS IN DEMAND AND SUPPLY

The demand for labour can shift to the right because:

- Demand for the product has increased.
- Labour productiveness has increased (through better training, education and technology).
- Price of capital increases making it relatively cheaper to employ labour.

The diagram below shows the effects:

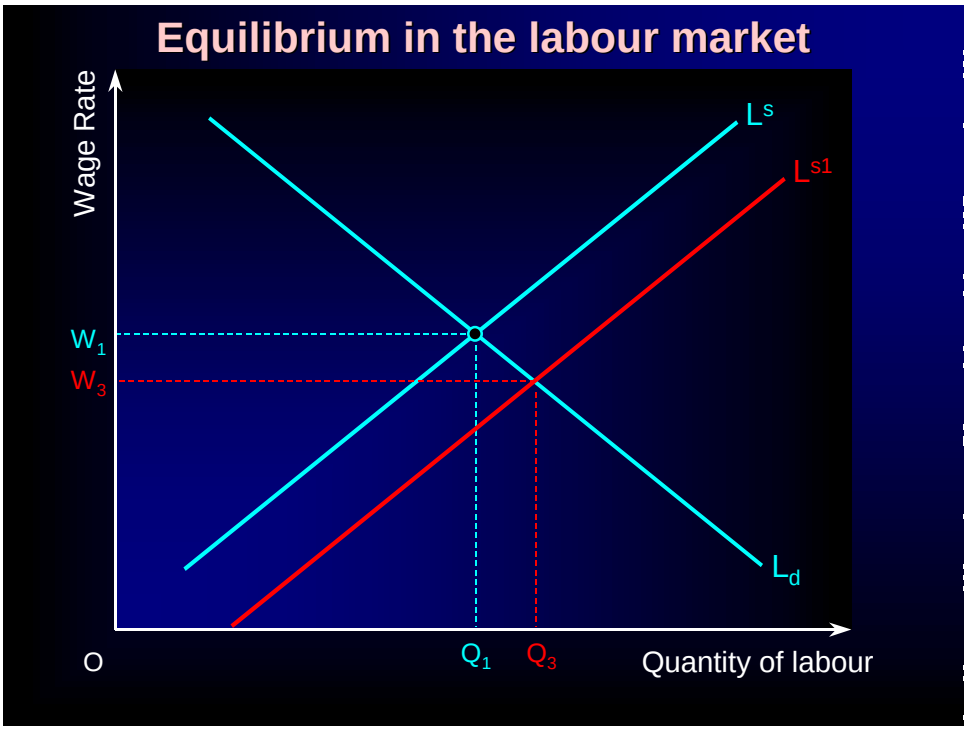


An increase in the demand for labour also increases both wages and the quantity of labour employed.

The supply of labour can shift to the right because:

- Increase in population.
- Working conditions have improved (or deteriorated in an alternative industry).
- Increase in training and education (long term).

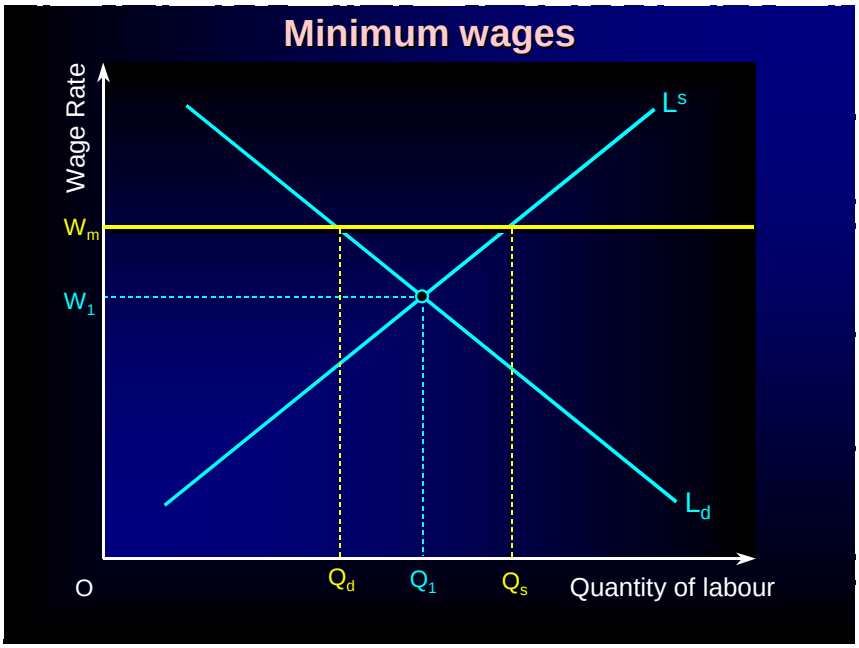
The effects are shown below:



An increase in the supply of labour causes wages to fall and a rise in the quantity of labour employed.

EFFECTS OF A MINIMUM WAGE

A minimum wage is very similar to a minimum price. The idea of a minimum wage is to guarantee a reasonable wage to workers in low paid industries. The diagram below shows the effects of a minimum wage:



The minimum wage is set at W_m above the equilibrium wage W_1. The workers in the industry have indeed benefited from higher wages, but there are a few negative effects:

The minimum wage has cause a surplus (excess supply of workers), as far as the labour market is concerned this has created unemployment in the industry equal to $Q_s - Q_d$.

$Q_1 - Q_d$ have now lost their jobs (these people were originally working before the minimum wage was introduced).

THE HOUSING MARKET

THE DEMAND FOR HOUSES

An increase in the demand for houses can be caused by:

- Income – rapidly increasing incomes tend to cause significant increases in the demand for houses.
- Desire for home ownership – there is a certain status associated with home ownership.
- Cost of mortgages – if the cost of mortgages are low then demand for houses will increase. This can be caused by low interest rates, good fixed rates, discounted interest rates etc.
- Availability of mortgages – at certain times financial institutions may make it easier to obtain a mortgage. Examples include allowing people to borrow more, cash back schemes and 100% mortgages.
- Price expectations – a big influence on demand is if people believe that houses prices will continue to rise. People thus believe that if the buy now they can sell at a profit later.

THE SUPPLY OF HOUSES

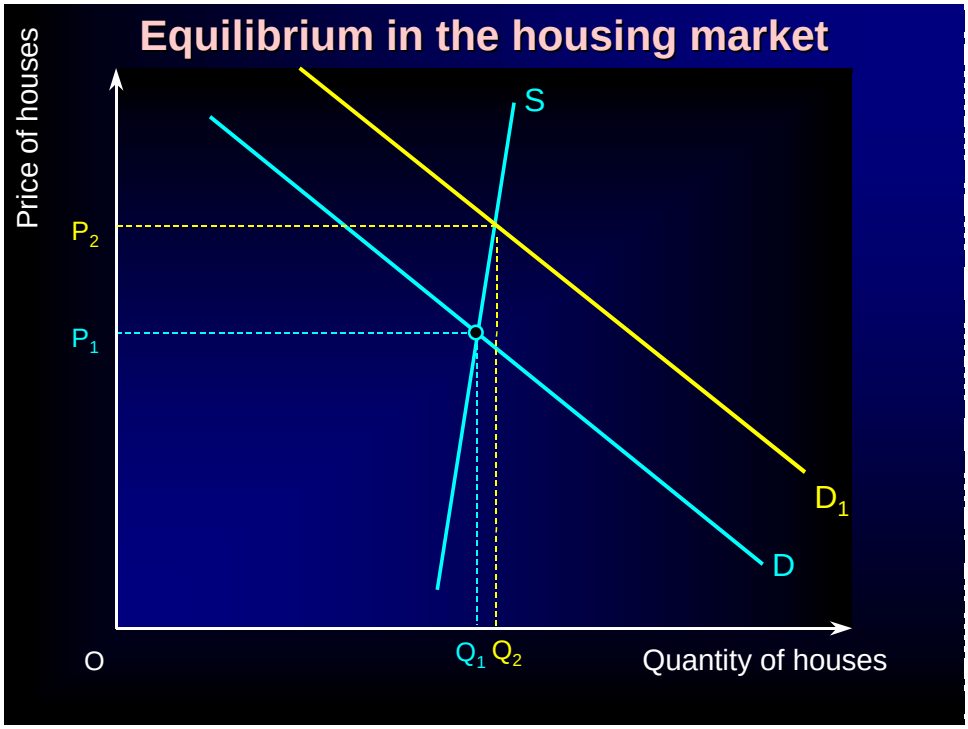
In the short term the supply of houses is relatively inelastic since it is very difficult to bring new houses on to the market. In the longer term supply can be influenced by:

- Costs of production – building costs such as price of land a wages can shift supply to the left.
- Government regulation – new government regulations can severely restrict the number of house being constructed.
- Council house sales – in the 1980's the government encouraged people to purchase their council houses.

EFFECTS ON EQUILIBRIUM

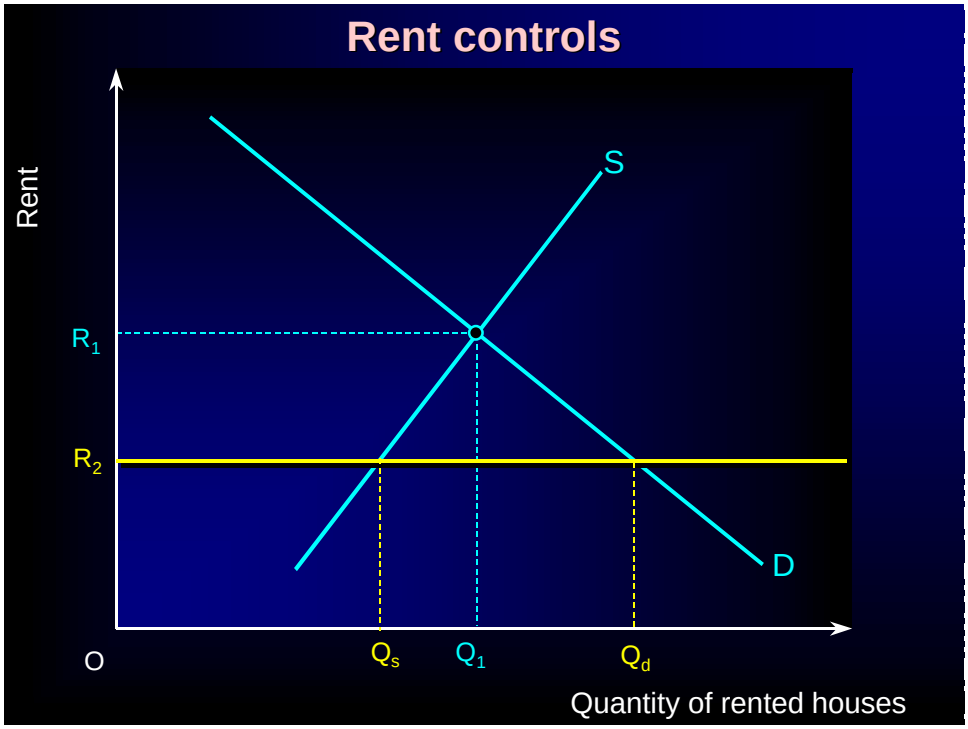
The diagram below shows the effect of an increase in demand on the price of houses with an inelastic supply curve:

Any increase in demand means only a small short term increase in supply but a relatively large increase in price.



RENT CONTROLS

The reason for the government to have rent controls is to provide cheap rented accommodation for the very poor. The effect can be seen on the following diagram:



The rent control is an example of a maximum price, which brings down the cost of renting a house (R_2). There are however a few problems as a result: The quantity of rented accommodation available falls to Q_s.

There is now a shortage of rental accommodation equal to $Q_d - Q_s$.

In the longer term landlords may opt not to rent out their accommodation and sell it instead, because their profits have fallen due to the lower rents now available. This will bring about a further fall in the availability of rented accommodation and therefore an even bigger shortage.

EXCHANGE RATES

An exchange rate is the rate at which one currency exchanges for another on the foreign exchange market. An example is £1:$1.50.

THE DEMAND FOR STERLING (£S)

Sterling is demanded for several reasons:

- To purchase UK exports – foreigners need sterling in order to buy our exports (although this is usually done through a third party such as the original importer). As exchange rates rise so does the price of UK exports and therefore there should be a fall in exports meaning a fall in the demand for sterling.
- Foreign investment in the UK – Nissan may want to build a new factory in the UK they need to spend pounds to do this. Foreign investors may wish to put money in UK banks, perhaps attracted by high rates of interest.
- Speculation – Traders on the foreign exchange markets buy and sell sterling for profit. A high exchange rate usually means demand for sterling is low as traders realise that the next movement is likely to be a fall in the exchange value. This is the most important cause of short term exchange rate changes.

As the exchange rate rises the demand for sterling falls and vice versa.

THE SUPPLY OF STERLING (£S)

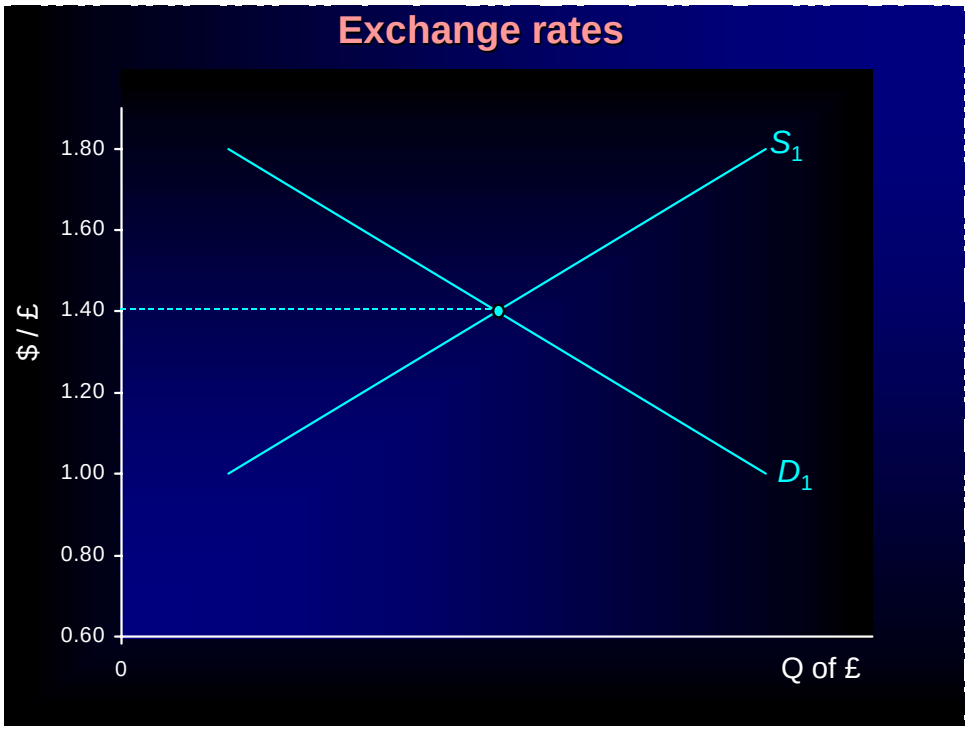
Sterling is supplied for similar reasons:

- To purchase foreign imports – UK importers need to supply sterling in order to buy foreign currency so that they can buy their imported goods. As the exchange rate rises, the price of imports falls, there should be an associated increase in imports, which leads to an increase in the supply of sterling to pay for them.
- UK investment abroad
- Speculation.

As the exchange rate rises the supply of sterling will also rise and vice versa.

EQUILIBRIUM

The equilibrium exchange rate is shown below:



The equilibrium is set where D = S at £1:$1.40.

CHANGES IN THE EXCHANGE RATE

A fall in the exchange rate is known as a depreciation. A rise in the exchange rate is known as an appreciation.

Causes of depreciation include:

- High UK inflation – UK will sell less exports because they are now too expensive (causing a fall in the demand for sterling). The UK will buy more imports because they are now cheaper than UK goods (causing an increase in the supply of sterling).
- A fall in UK interest rates – The UK will attract less foreign investment (causing a fall in the demand for sterling). UK residents will now invest money in foreign banks which now have more attractive rates than domestic banks (causing an increase in the supply of sterling).
- Speculation – Traders lose confidence in the pound expecting it to fall in value, this w ill mean they will sell sterling (causing an increase in the supply of sterling) and they will not wish to buy sterling (causing a fall in the demand for sterling).
- UK goods become less competitive – If foreigners no longer wish to but UK products due to quality issues, changes in tastes etc. then the demand for sterling will fall.

GOVERNMENT PRICE CONTROLS

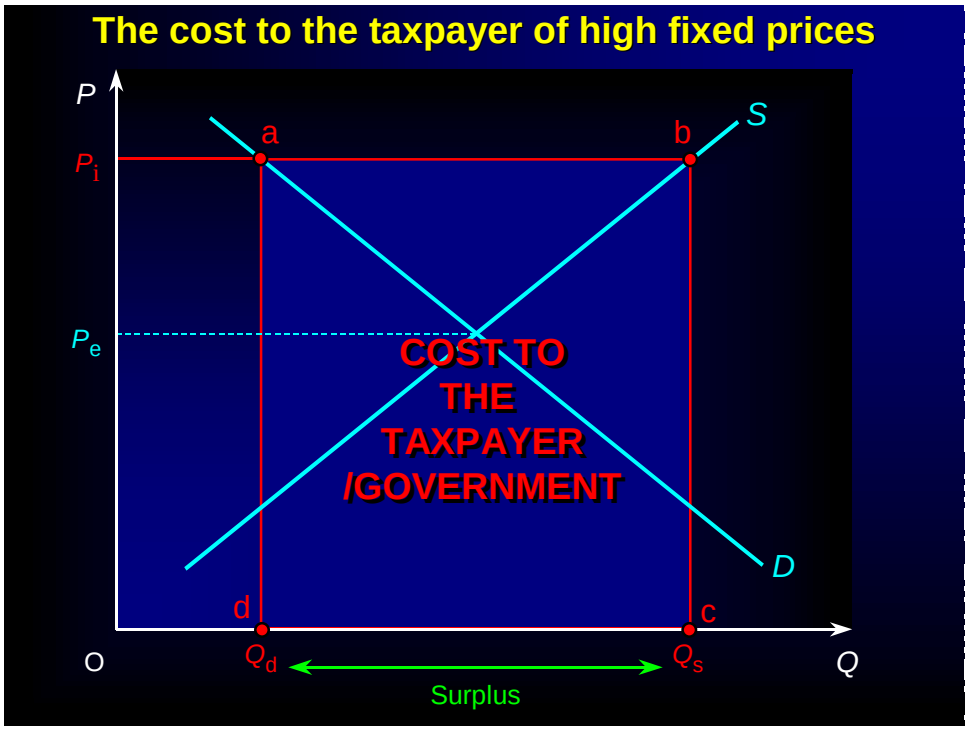
MINIMUM PRICES

A minimum price is a price floor set by the government where the price is not allowed to fall below this set level (although it is allowed to rise above it).

Reasons for setting a price floor:

- To protect the earnings of producers – in certain industries prices are subject to great fluctuations. Minimum prices will guarantee producers income in periods when prices would otherwise have been very low. Examples include certain agricultural products.
- To create a surplus – in periods of glut surpluses can be stored in preparation for possible future shortages.
- To guarantee a certain level of earnings – workers can be given a minimum wage so that their earnings don't fall below a certain (unacceptable) level.

The diagram below shows the effects of a minimum price:



The minimum price has created a surplus (excess supply) of $Q_s - Q_d$. There are three ways in which the government can deal with this surplus:

The government purchases all the surplus to store it, destroy it or sell it in other markets. If the government seeks to do this then it has to buy up the excess ($Q_s - Q_d$) at the current minimum price. This means the cost to the government and therefore taxpayer is the shaded area $Q_d abQ_s$.

The government could artificially lower supply to Q_d by issuing quotas which limit production.

Demand could be raised by advertising, finding alternative uses or by taxing substitutes.

MAXIMUM PRICES

A maximum price is a price ceiling set by the government where the price is not allowed to rise above this set level (although it is allowed to fall below).

The reason for setting a maximum price is so that the prices of necessities don't rise too much in times of shortage. Such a situation is common in times of war and/or famine.

The maximum price has caused a shortage (excess demand) equal to $Q_d - Q_s$. The government can deal with this in two ways:

- First come first serve – this is the situation in a lot of eastern European countries and means that huge queues are common.
- Rationing – Purchases are limited by the number of coupons or vouchers issued. Such as was seen during WWII.
- Encouraging more homegrown production – as seen in WWII.
- Drawing on stores from previous surpluses.

Problems with maximum prices include:

- Black markets – Selling of rationed goods illegally at very high prices to consumers who feel that they are not able to purchase enough legally.
- Reduces the supply of already scarce products.

AGRICULTURAL PRODUCTS

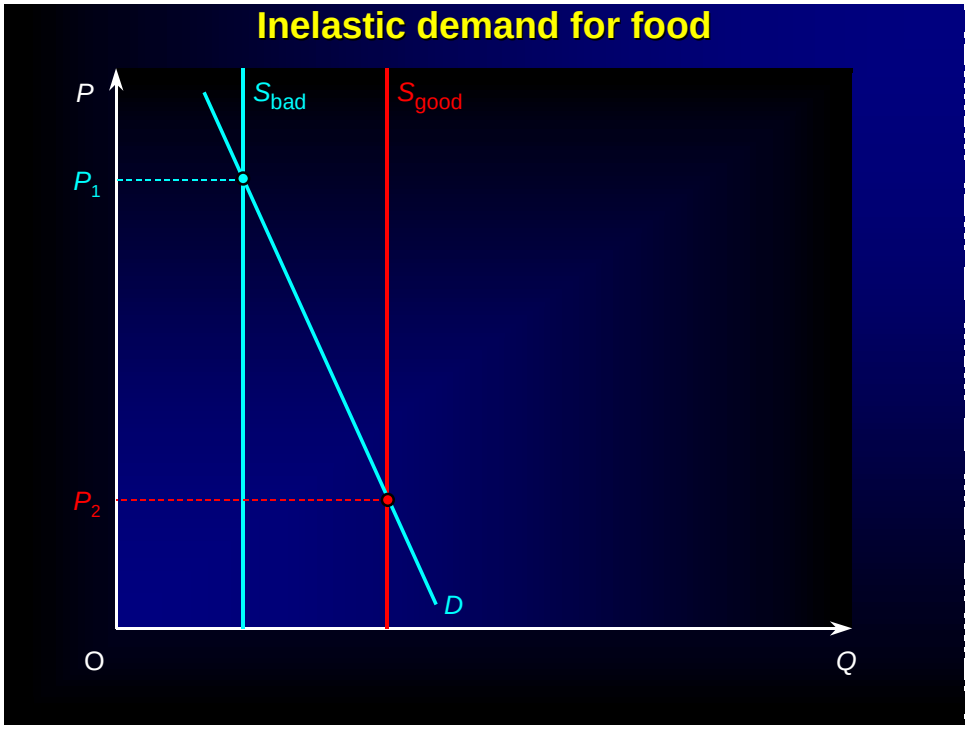
It is in these markets where prices are set most often by the forces of supply and demand. However it also in these markets where there is the most government intervention. The reasons for this include:

- Agricultural prices are subject to considerable fluctuations – this can cause low incomes for farmers, or high prices for consumers and/or uncertainty which discourages investment.
- Low incomes of farmers.
- Protection of traditional rural ways.
- Competition from abroad – farm may go out of business if the government doesn't intervene due to cheap imports.

The reasons for large price fluctuations are:

- Inelastic supply – it is difficult to expand production of foodstuffs in the short run.
- Supply fluctuations – harvest are unpredictable affected as they are by weather, disease and pests. Therefore some years can se bumper harvests other can see poor harvests.
- Inelastic demand – foodstuffs tend to be inelastic in demand because:
  - Many are considered basic necessities;
  - There are no close substitutes;
  - They account for a relatively small proportion of people's incomes.

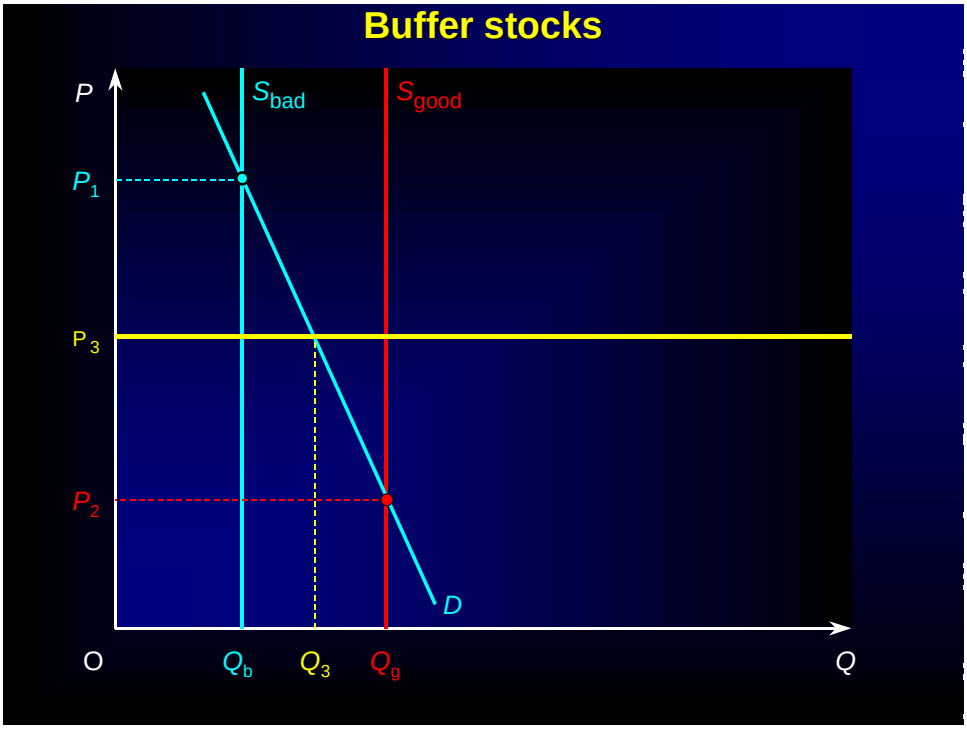
The effects of this are shown on the following diagram:



In the short term supply of foodstuffs is virtually perfectly inelastic as all harvest crops are always brought to market. Since demand is relatively inelastic the price in a good year is significantly lower than price in a bad year. This huge potential for fluctuation in price means the potential for high consumer prices one year and low farmer's incomes the next year. The government can intervene to help the situation in the following ways:

(A) BUFFER STOCKS

This is a way of stabilising prices by fixing at a price where long run demand and supply meet. A suitable price will be P_3 in the following diagram:



When there is a good harvest (S_{good}) the government buys the surplus (Q_g – Q_3) and stores it to use if there is a bad harvest (S_{bad}) releasing Q_3 – Q_b. Such solutions are only useful for non-perishable s like grain, wine, milk powder or food which can be frozen.

(B) SUBSIDIES

This solution has been highlighted earlier. The advantages of subsidies are a guaranteed income to the farmer and lower prices to the consumer. The disadvantage of subsidies is the cost to the taxpayer/government.

(C) MINIMUM PRICES

This solution has again been highlighted earlier. In the European Union (EU) the Common Agricultural Policy (CAP) is an example of minimum prices the reasons for its existence include:

- Assured food supplies.
- Guaranteed incomes for farmers.
- Growth in agricultural productivity.
- Stable prices.

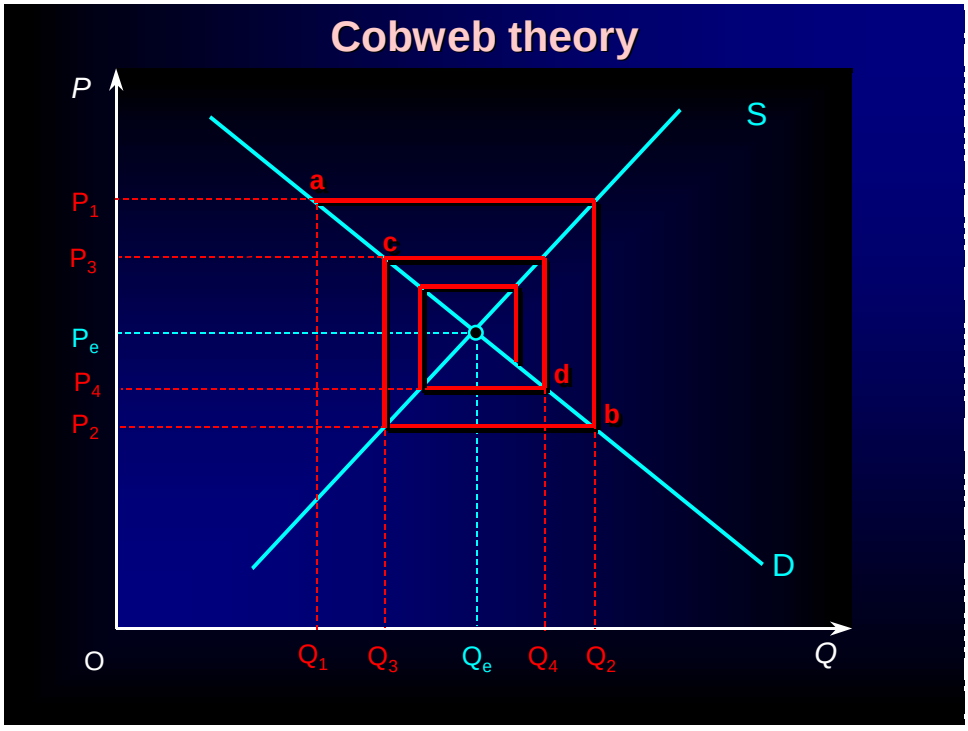
- Reasonable prices for consumers.

Problems with the policy include:

- Surpluses leading to large wine lakes, butter mountains etc. Although for some agricultural products the introduction of quotas has reduced surpluses e.g. sugar and milk.
- Costs to the taxpayer of purchasing these surpluses.
- Tend to result in high prices to the consumer rather than reasonable prices. The McSharry reforms of 1992 went a little way towards achieving this.
- Harms the environment because farmers are over-producing.
- Surpluses are often 'dumped' on third world markets, this can damage the domestic agricultural industry in these places.

(D) COBWEB THEORY

These markets are also often dynamic in nature. In the sense that supply decisions are often the result of prices in the previous periods.



The diagram shows the long run equilibrium of P_e and Q_e. Assume that in year 1 a bad crop results in supply only being at Q_1. This shortage will put up prices to P_1 (position a). Since farmers knew they could get P_1 for the crop in year 1 they will therefore plant Q_2 of the crop for year 2 (this will get them P_1 on their supply curve). However in year 2 there is a surplus and they realise that to sell all of Q_2 they will have to drop the price to P_2. Based on this they will plant Q_3 of the crop for year 3. However in year 3 there is now a shortage putting up prices to P_3. This time they will pant Q_4 of the crop. However this time there is a surplus pushing down prices to P_4. This situation will continue

until eventually the farmers get it right and reach the long run equilibrium of P_e.

INDIRECT TAXES

An indirect tax is a tax on the expenditure on goods. These are taxes paid by the seller of the good, who usually asks the consumer to pay some or all of it.

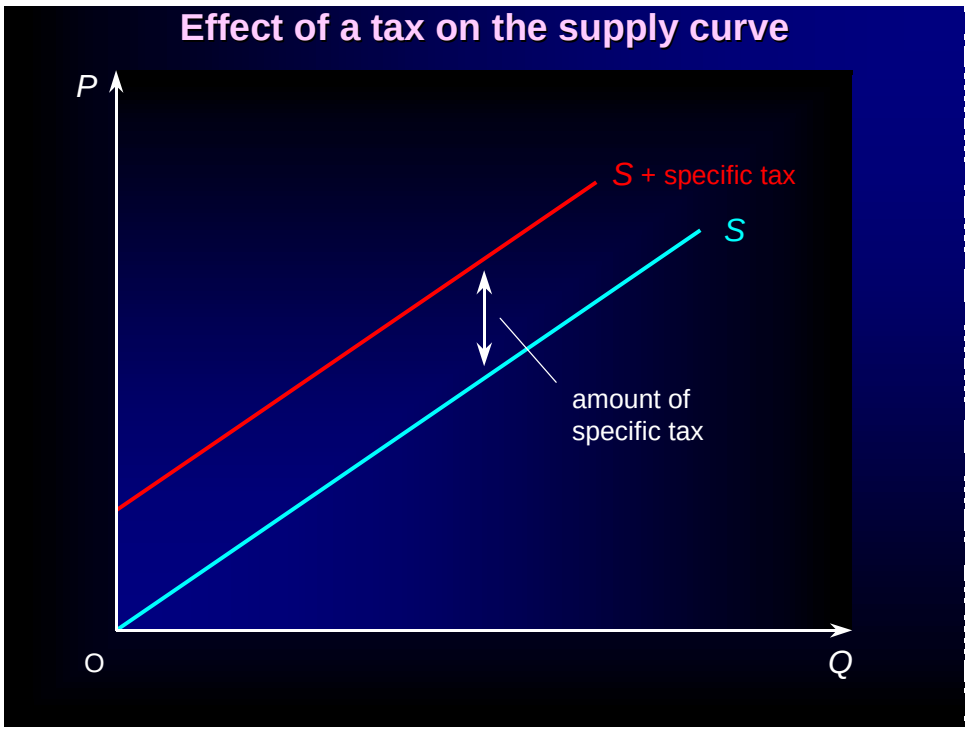
Specific taxes are indirect taxes where a fixed sum is paid per unit sold. Examples of such taxes in the UK are excise duties on tobacco, alcoholic drinks and petrol.

Ad valorem taxes are indirect taxes where a certain percentage is added on to the price of each unit sold. A UK example is Value Added Tax (VAT) currently standing at 17.5%.

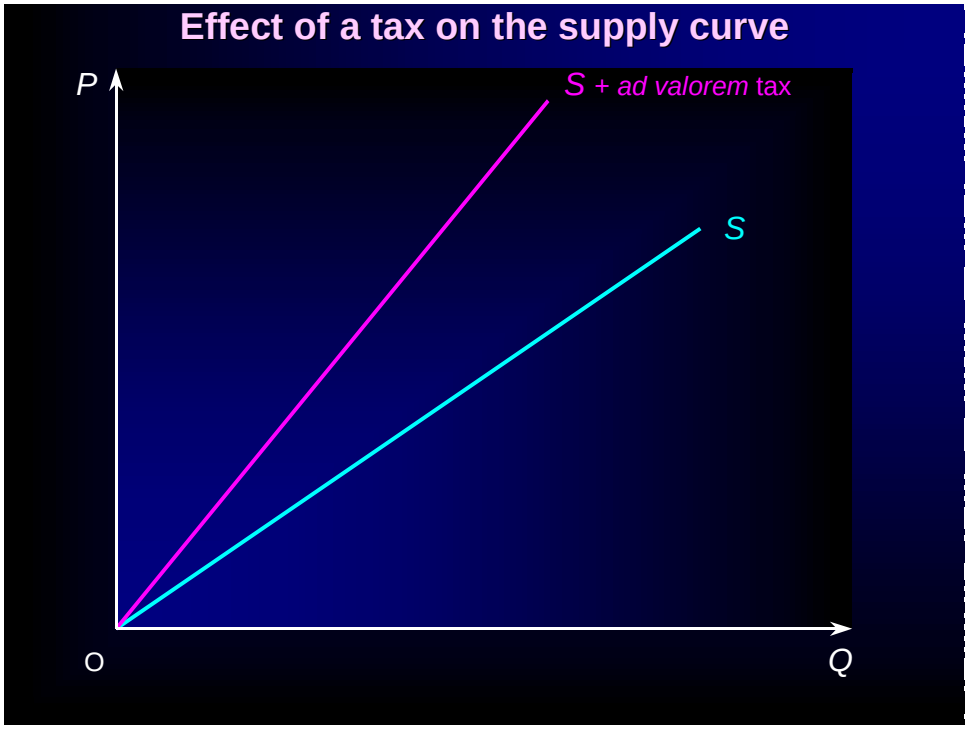
A subsidy is a grant given by the government which is usually a fixed sum granted per unit sold.

EFFECT ON SUPPLY CURVES OF THE DIFFERENT INDIRECT TAXES

As seen in the section on supply, taxes have the effect of raising costs of production a thereby shifting the supply curve to the left. For a specific tax this will mean that the shift will be a parallel one because the amount of tax is the same at all prices, the vertical distance between the supply curves will give the amount of specific tax. For an ad valorem tax the curve will swing to the left, because the amount of tax per unit increases as prices get higher, thereby widening the gap between the pre tax supply curve and the post tax



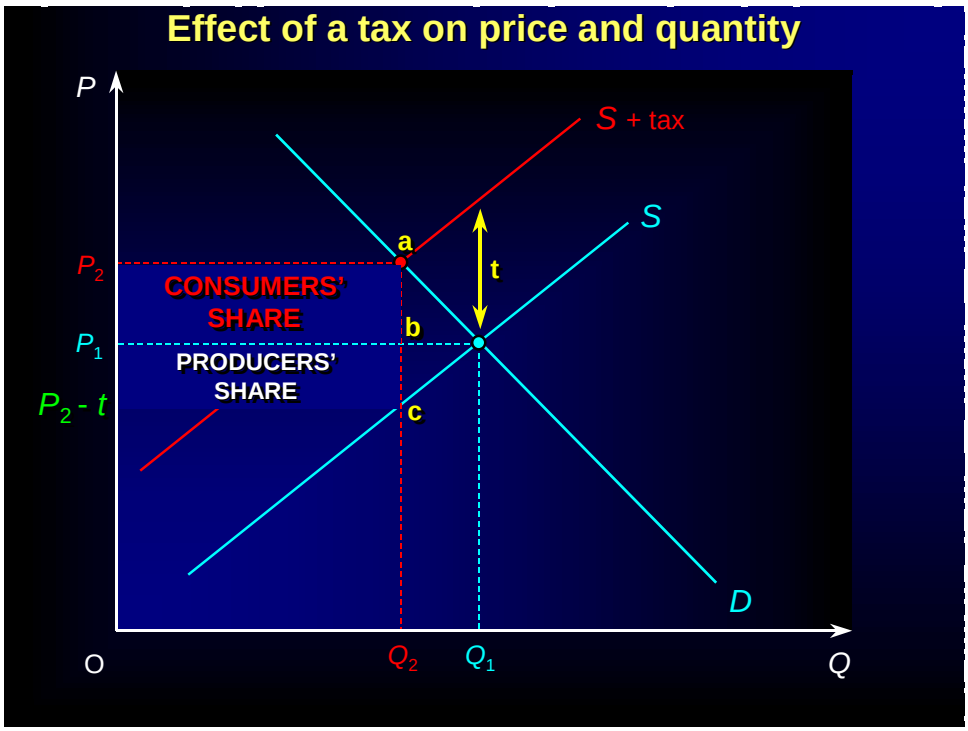
supply curve. This situation is shown on the diagrams below:



THE INCIDENCE OF TAXATION

The incidence of taxation is the burden of tax shared between buyers and sellers.

The following diagram shows how this is worked out:



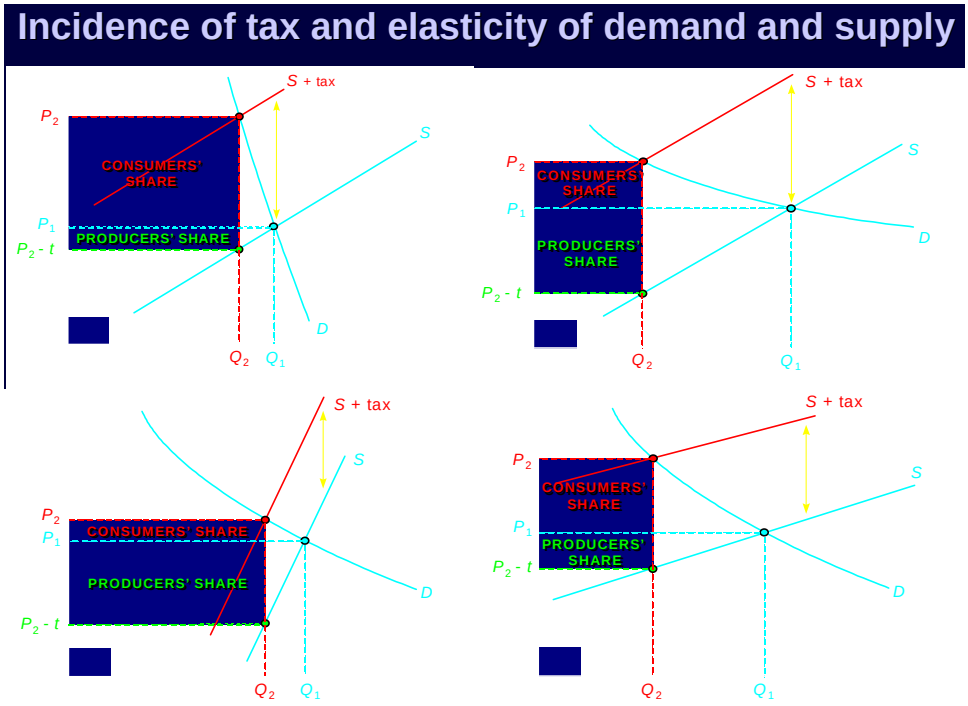
The specific tax per unit is shown as the vertical distance (t) between the two supply curves. The price to the consumer has risen to P_2 and output of the good has fallen to Q_2. The incidence or burden for the consumer can be calculated as the change in price multiplied by the quantity of the good consumed, this gives the area P_1P_2ab. The total government revenue from the tax can be found by multiplying the specific tax per unit (t) by the quantity bought/sold Q_2 this gives the area $P_{2\text{-}t}P_2ac$. That part of the government revenue not paid by the consumer must therefore have been paid by the producer and producer contribution is $P_{2\text{-}t}P_1bc$.

The total government's tax revenue is equal to the specific tax per unit multiplied by the equilibrium output after tax.

The consumer's tax burden or incidence is equal to the change in price multiplied by the equilibrium output after tax. It is the top portion of the government's revenue.

The producer's tax burden is equal to the area of the government's tax revenue which is not paid by the consumer. This is the bottom portion of the government's tax revenue.

TAX INCIDENCE AND ELASTICITY



When demand is inelastic the consumer's tax burden is greater than the producer's.

When demand is elastic the producer's tax burden is greater than the consumer's.

When supply is elastic the consumer's tax burden is greater than the producer's.

When supply is inelastic the producer's tax burden is greater than the consumer's.

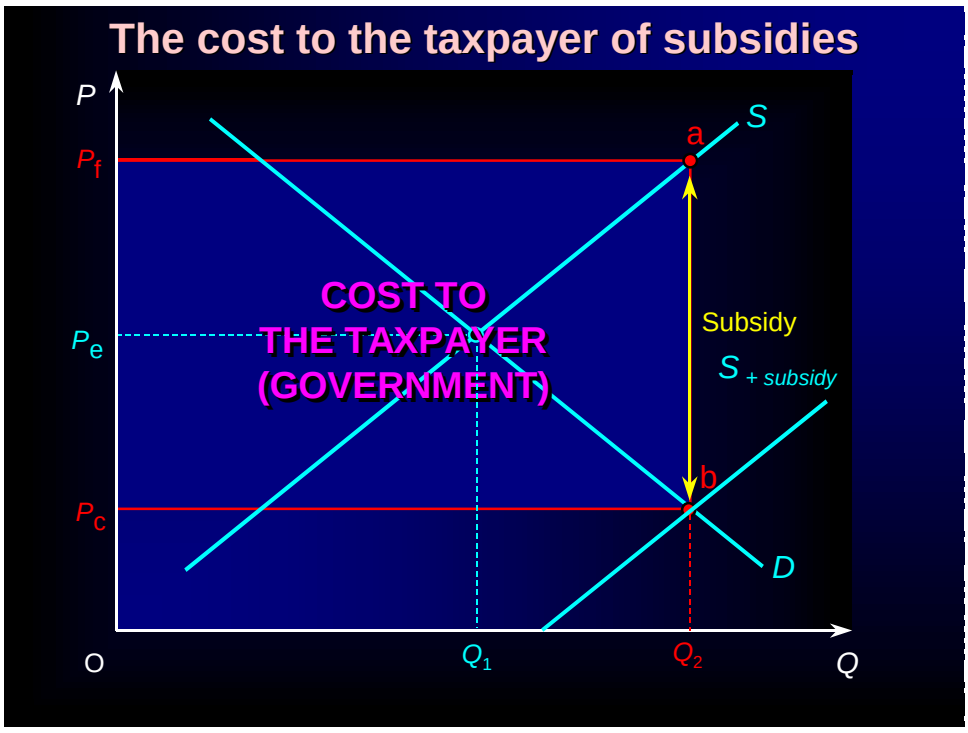
The relationship between elasticity and tax incidence is exactly when an ad valorem tax is levied on goods.

FURTHER OBSERVATIONS

Government's tend to impose specific taxes on alcohol, petrol and cigarettes the reasons for this are:

Demand will be relatively unaffected and so firm's will lose little in the way of revenue.
Government's revenue is highest when taxing goods with inelastic demand.
Recent governments have tried to persuade consumers to use less of these goods for health/environmental reasons.

SUBSIDIES



As with taxes the total subsidy per unit is the vertical distance between the supply curves, but since it has the effect of lowering costs of production the subsidy will shift supply to the right to $S_{+ subsidy}$. This has the effect of increasing output to Q_2 and lowering the price to P_c. The cost taxpayers (paid by the government) is equal to the total subsidy per unit (ab) multiplied by the quantity of the good consumed (Q_2) this gives the shaded area P_cP_fab.

ECONOMIC SYSTEMS

THE COMMAND ECONOMY

Features of a command economy

- planning
- consumption and investment
- matching of inputs and outputs
- distribution of output

Advantages of a command economy

- high investment, high growth
- stable growth
- social goals pursued
- low unemployment

Problems of a command economy

- problems of gathering information
- expensive to administer
- inappropriate incentives
- shortages and surpluses

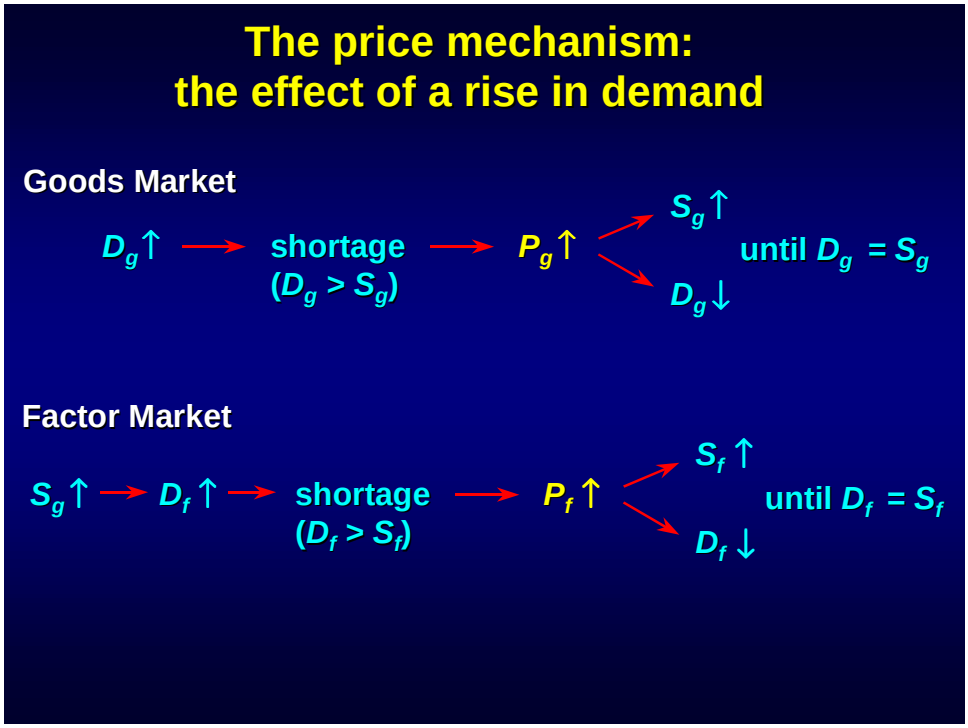
THE FREE-MARKET ECONOMY

Features of the free-market economy

- demand and supply decisions
- the price mechanism:
- shortages and surpluses
- equilibrium price
- response to changes in demand and supply
- the interdependence of markets

Advantages of a free-market economy

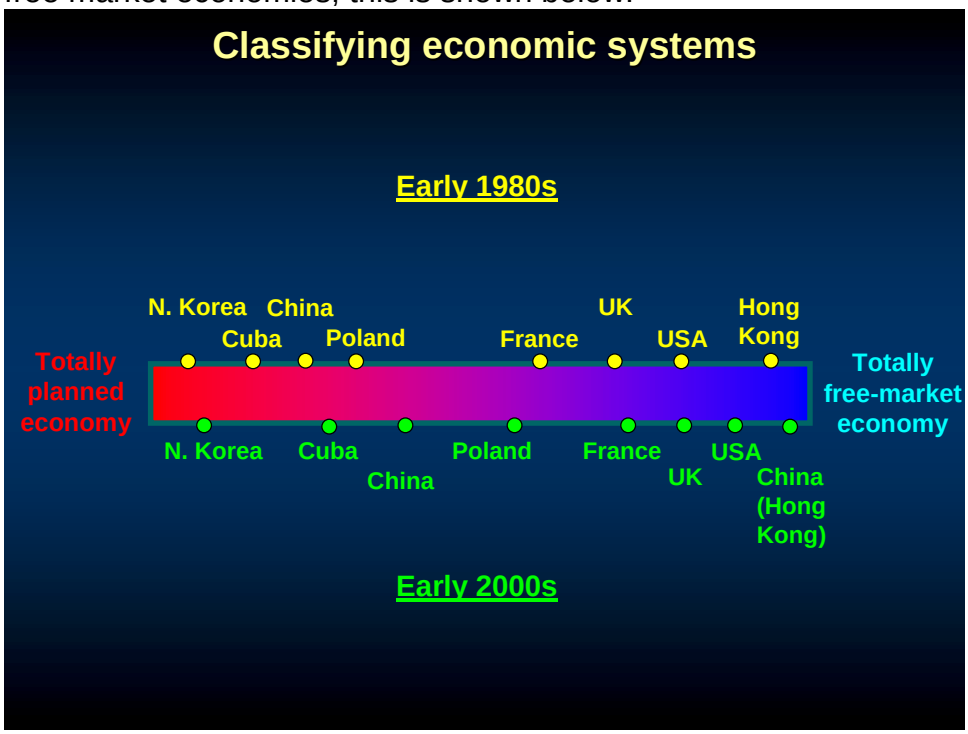
- transmits information between buyers and sellers
- no need for costly bureaucracy
- incentives to be efficient
- competitive markets responsive to consumers



Problems of a free-market economy

- competition may be limited: problem of market power
- inequality
- the environment and other social goals may be ignored

Different countries can be classified on a sliding scale between planned and free market economies, this is shown below:



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