Pearson EdExcel Level 3 Advanced Subsidiary GCE in Economics A (8EC0)

Course Companion

THEME 1: INTRODUCTION TO MARKETS AND MARKET FAILURE

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tutor2u

A Level Economics Year 1 (AS) Micro Topics

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Geoff Riley
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Economics as a Social Science

Models
Economists develop models and theories to help explain the choices that all of us must make in our daily lives. These models are built on assumptions that can often help to simplify analysis but which also run the risk of being criticised for not being realistic.

The ceteris paribus assumption
Economists regularly make use of the ceteris paribus assumption. This means "all other factors remaining constant". The ceteris paribus assumption allows us to isolate the effect of one variable on another variable. For example, many factors affect the market demand for smart-phones, but we might want to focus on the impact of a change in just one factor.

Economics as a social science
Economics is a social science because it studies the complex world of human behaviour. It is hard to make scientific experiments in Economics although many behavioural economists have tested their ideas in laboratories to better understand some of their ideas. Sadly, people's behaviour in a laboratory will be different from the real world!

What are the main purposes of economic activity?
It is often said that the central purpose of economic activity is the production of goods and services to satisfy ever-changing needs and wants. The **basic economic problem** is about **scarcity** and **choice**. Each society must decide:

- **What goods and services to produce?** Does the economy use its resources to build more hospitals, roads, schools or luxury hotels? Do we make more smartphones and smart-watches or flat whites? Can the National Health Service afford free IVF treatment for childless couples?
- **How best to produce goods and services?** What is the best use of our scarce resources? Should government land be sold off to provide more land for affordable housing? Should we subsidize the electric vehicles as a strategy to reduce carbon emissions from transport?
- **Who is to receive goods and services?** Who will get scarce hospital treatment - and who not? Which areas get the go-ahead for transport infrastructure projects and which miss out?

Scarcity
We are always uncovering of new wants and needs which producers attempt to supply by using factors of production. Because of scarcity, **consumers businesses and governments must make choices**. For example, over six million people travel into London each day and they make decisions about when to travel, whether to use the bus, the tube, to walk or cycle or work from home.

Trade-offs and Choices
Making a **choice** or decision made normally involves a **trade-off** – this means that choosing more of one thing can only be achieved by giving up something else in exchange.

1. **Housing:** Choices about whether to rent or buy a home – both decisions involve **risk**. People have to weigh up some of the **costs** and **benefits** of the decision.
2. **Working:** Do you work full-time or part-time? Is it worth your while studying for a degree? How have these choices been affected by the introduction of university tuition fees?
3. **Transport and travel:** The choice between using Euro-Tunnel, a ferry or an airline when travelling to Western Europe.

Key Point: The Cost Benefit Principle

- In many decisions where people consider the **costs** and **benefits** of their actions – economists make use of the **'marginal' idea** i.e. what are the costs and benefits of consuming a little extra of a product
- **Rational decision-makers** attempt to weigh the marginal benefit one receives from an option with its marginal cost, including the opportunity cost.
- Behavioural economics questions the rationality of many of our decisions!

Consumer Welfare and Rationality

- Typically we assume that, when making decisions people aim to **maximise their welfare.** They have a **limited income** and they allocate their money in a way that gives them maximum total satisfaction.
- In reality consumers rarely behave in a well-informed and rational way. Often decisions are based on **incomplete information** which causes a loss of welfare not only for people themselves but which affect others and our society as a whole.
- As consumers we have all made **poor choices** about which products to buy. Behavioural economics is an exciting strand of the subject that looks at whether we are rational in our everyday decisions.

Behavioural Economics

- Behavioural Economics tries to mix insights from Psychology with Economics, and looks at problems through the eye of a "Human", rather than an "Econ". It uses insights from psychology to explain why people make apparently irrational decisions such as why people eat too much and do not save enough for retirement.
- An Econ is said to be infinitely rational and immensely intelligent, emotionless being who can do cost-benefit analyses at will, and is never (ever) wrong. The reality is often different.
- Most of us are not infinitely rational, but rather face "bounded rationality", with people adopting **rules of thumb** instead of calculating optimal solutions for every decision

Opportunity Cost

In economics, "there is no such thing as a free lunch**!"** Even if we are not asked to pay money for something, **scarce resources** are used up in production and there is an opportunity cost involved.

Opportunity cost measures the cost of any choice in terms of the **next best alternative foregone**.

- **Work-leisure choices**: The opportunity cost of deciding not to work an extra 10 hours a week is the lost wages foregone. If you are being paid £7ph to work at the local supermarket, if you take a day off from work you could lose £50 of income
- **Government spending priorities**: The opportunity cost of the government spending nearly £10 billion on investment in National Health Service might be that £10 billion less is available for spending on education or improvements to the transport network.
- **Investing today for consumption tomorrow**: The opportunity cost of an economy investing resources in capital goods is the production of consumer goods given up for today
- **Making use of scarce farming land**: The opportunity cost of using farmland to grow wheat for bio-fuel means that there is less wheat available for food production causing food prices to rise and increasing the risks of food poverty and malnutrition for world's most vulnerable people.

Economic Systems

An economic system is a **network of organisations** used by a society to resolve the basic problem of **what**, **how much**, **how** and **for whom** to produce.

1. **Free market economy**: Where markets allocate resources through the **price mechanism**. An increase in demand raises price and encourages businesses to use more resources into the production. The quantity of products consumed by people depends on their income and income itself depends on the market value of an individual's work. In a free market economy there is a limited role for the government, indeed in a pure free market system, the government limits itself to protecting **property rights** of people and businesses using the legal system and protecting the value of money or the value of a currency.
2. **Planned or command economy**: in a planned or command system associated with a socialist or communist system, the government owns scarce resources. The state allocates resources, and sets production targets and growth rates according to its own view of people's wants. Market prices play little or no part in informing resource allocation decisions and queuing rations scarce goods.
3. **Mixed economy:** In a mixed economy, some resources are owned by the **public sector** (government) and some are owned by the **private sector**. The public (or state) sector typically supplies public, quasi-public and merit goods and intervenes in markets to correct market failure. Nearly all economies in the world are mixed although that mix changes over time for example as some industries are privatised (sold to the private sector) or nationalised (taken back into state ownership).

Scarcity and Rationing

- Rationing is a way of allocating scarce goods and services when market demand exceeds the available supply.
- There are many ways in which rationing might take place
- In a market system, the price mechanism plays a key role in rationing demand. The market price determines which consumers have the effective demand to purchase and who does not
- Rationing might also take place on the basic of need, e.g. clinical need when deciding treatments in the National Health Service
- Discrimination can also happen when rationing is happening
- Rationing raises important issues of equity / fairness in terms of access to scarce resources

Some of the options for rationing resources

By Market Price

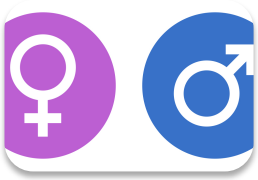
By Consumer Income

By Assessment of Need

By Household Postcode

By Education Level

By Age



By Gender

By Nationality

Economic Resources (Factors of Production)

Land:

- Land includes all **natural physical resources** – e.g. fertile farmland, the benefits from a temperate climate or the harnessing of wind power and solar power and other forms of **renewable energy**.

Labour:

- Labour is the **human input** into production e.g. the supply of workers available and their productivity
- An increase in the size and the quality of the labour force is vital if a country wants to achieve **growth**. In recent years the issue of the **migration of labour** has become important.

Capital:

- **Capital goods** are used to produce other consumer goods and services in the future
- **Fixed capital** includes machinery, equipment, new technology, factories and other buildings
- **Working capital** means **stocks** of finished and semi-finished goods (or components) that will be either consumed in the near future or will be made into consumer goods

Entrepreneurship

- Regarded by some as a specialised form of labour input, an **entrepreneur** is an individual who supplies products to a market to make a profit
- Entrepreneurs will usually invest their own **financial capital** in a business and take on the risks. Their main reward is the **profit** made from running the business

Non-renewable resources:

- Non-renewable resources are finite in supply. With oil, coal, natural gas and other fossil fuels, no mechanisms exist at present to replenish them.
- The rate of extraction of finite resources depends in part on the market price – businesses with rights to extract will have a greater incentive to do so when prices are high because of the profit motive

Renewable resources:

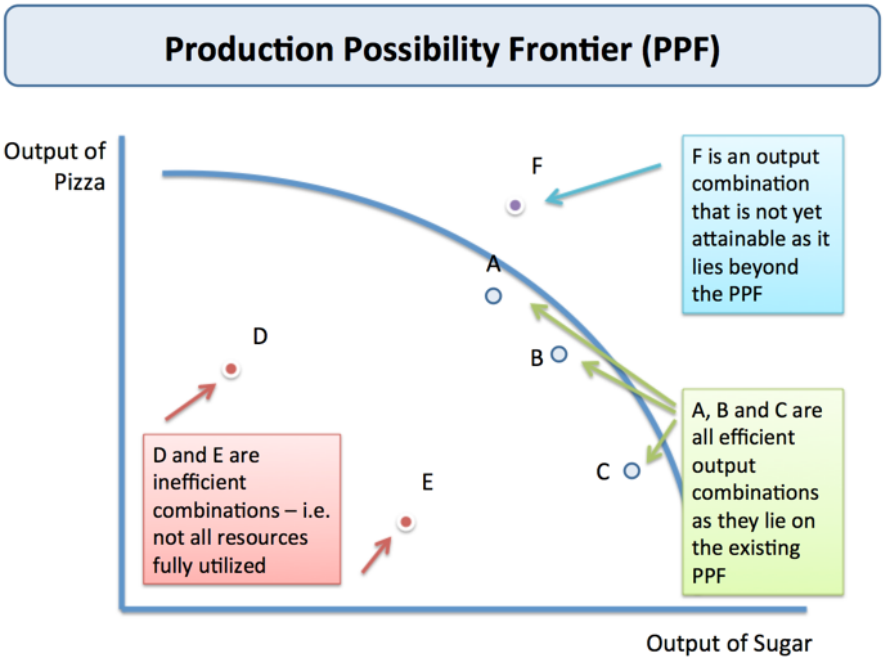
- Renewable resources (in theory) are replaceable over time providing that the rate of extraction of the resource is less than the natural rate at which the resource renews itself
- Examples of renewable resources are solar energy, oxygen, biomass, fish stocks and forestry

Free Goods

- Free goods do not use up any factor inputs when supplied
- Free goods have a **zero opportunity cost** i.e. the marginal cost of supplying an extra unit of a free is zero

Production Possibility Frontiers

- A **production possibility frontier** (PPF) shows the maximum possible output combinations of two goods or services an economy can achieve when all resources are fully and efficiently employed.
- We normally draw a PPF on a diagram as **concave to the origin** i.e. as we move down a PPF, as more resources are allocated towards Good Y the extra output gets smaller, so more of Good X has to be given up in order to produce Good Y.
- This is because **not all factor inputs are equally suited to producing items**.

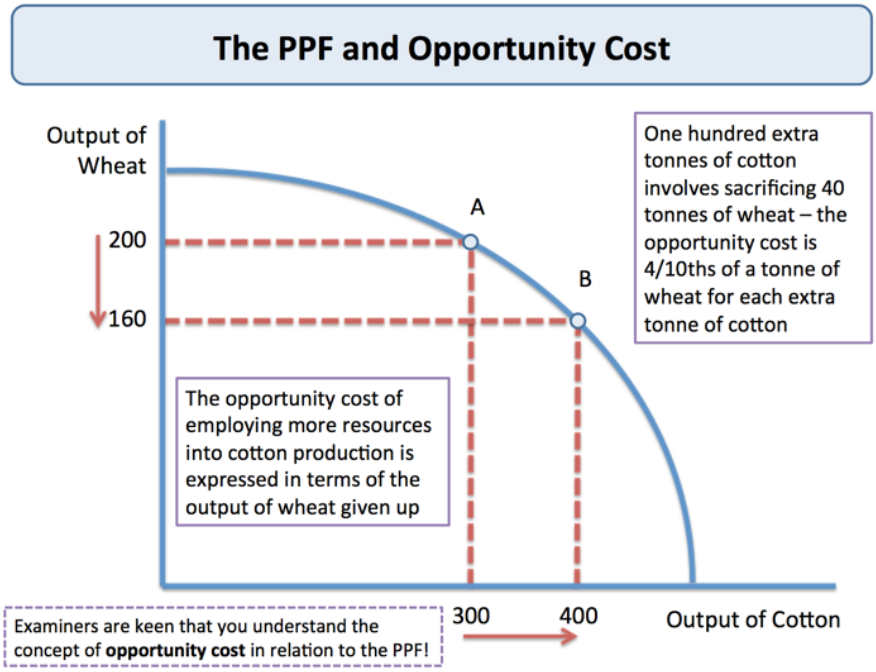


PPF and Economic Efficiency

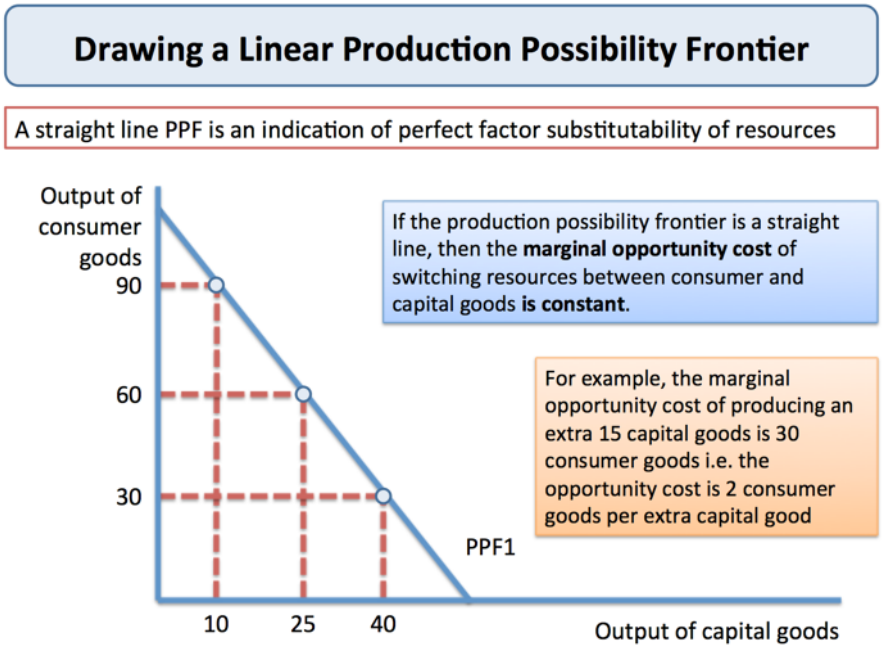
- Combinations of the output of consumer and capital goods lying inside the PPF happen when there are **unemployed resources** or when resources are used **inefficiently**
- Combinations beyond the PPF are **unattainable**. A country would require an **increase in factor resources**, an **increase in productivity** or an **improvement in technology** to reach this combination.
- Trade and exchange between countries allows nations to consume beyond their own PPF.
- Producing more of both goods would represent an improvement in **allocative efficiency**

Opportunity Cost and the PPF

- **Reallocating scarce resources** from one product to another involves an **opportunity cost**
- If we increase our output of consumer goods (i.e. moving along the PPF from point A to point B) then fewer resources are available to produce capital goods
- If the **law of diminishing returns** holds true then the opportunity cost of expanding output of X measured in terms of lost units of Y is increasing.

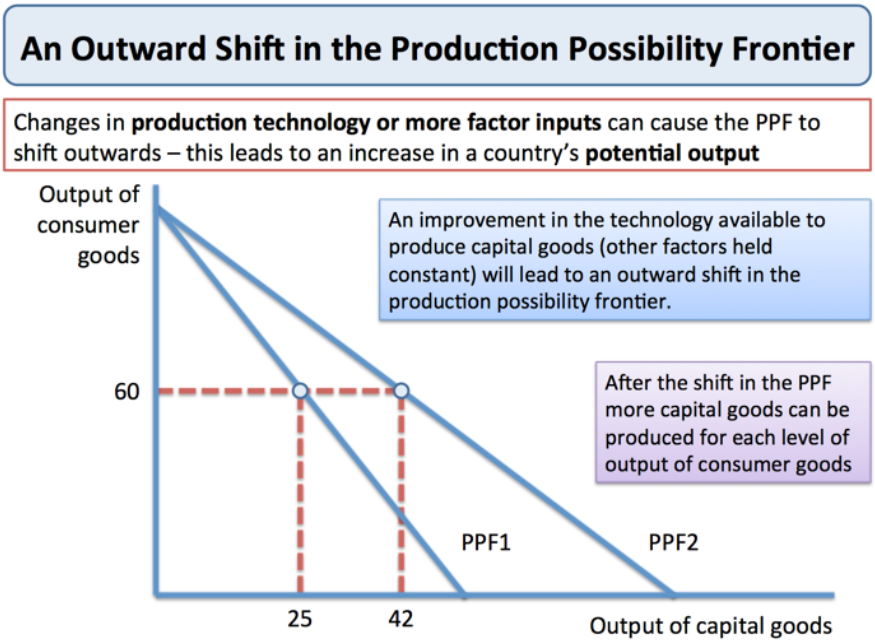


A straight-line production possibility frontier
If the opportunity cost for producing two products is **constant**, then we can draw the PPF as a straight line. The **gradient** of that line is a way of measuring the opportunity cost between two goods.



The PPF will shift outwards when

- There are **improvements in productivity and efficiency** from **new technology** or **advances in the techniques of production** or an increase in the quality of labour
- **More factors of production are available and used** perhaps due to an increase in the workforce due to net inward migration or a rise in the amount of capital following investment projects
- The **discovery of new natural resources** such as shale gas and **better management** of factor inputs
- **Innovation** and **technological advances** which makes exploration and extraction of known resources such as shale oil and gas more commercially viable



Can a production possibility frontier shift inwards?
Yes – if this happened, then the **productive potential** of a country must have suffered perhaps due to:

1. The damaging effects of severe **natural disasters** such as a tsunami, floods, persistent drought and other extreme weather events
2. The economic damage caused by **war** and other types of **conflict** for example in **failing states**
3. Large scale **net migration of people out of a country** e.g. when there is very high unemployment
4. A long term **fall in productivity of labour**

Lower income countries are more exposed to the damaging economic and social effects of severe climatic events in part brought about by long-term climate change.

Resource depreciation and resource depletion

Resource depreciation occurs when factor inputs are used in supplying goods and services and, over time, they deteriorate and become harder and more costly to maintain. The result can be a drop in productivity.

Machinery

Skills Atrophy

Buildings

Basic Infrastructure

Resource depletion happens when the stock of available resources actually declines. For example, the amount of forestry can be permanently damaged by excessive tree logging / deforestation. Another example would be the loss of human capital from a sizeable outward migration of workers from a country.

Human Capital Flight

Capital Scrapping

Natural Disasters

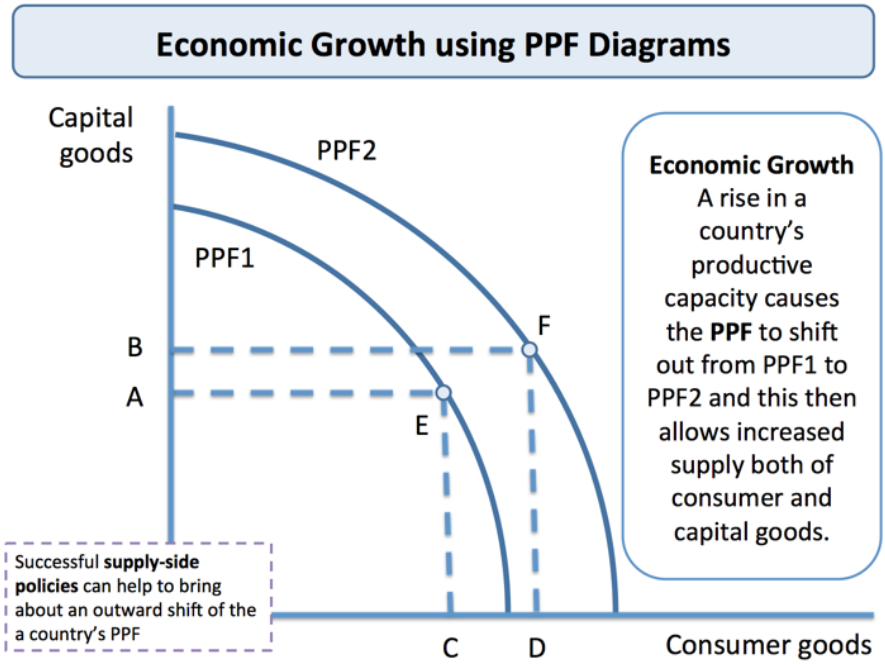
Deforestation

The PPF and Economic Growth

- The PPF can be used to illustrate economic growth which is defined as a sustained increase in a country's productive capacity
- Economic growth flows from:

1. An increase in the stock of capital inputs for example investment in renewable energy
2. An expansion of the available labour supply perhaps driven by population growth or migration
3. An increase in the productivity of factors of production leading to higher output per worker employed
4. A rise in productive potential brought about by innovation and by the growth of entreprenurial activity which leads to more businesses being created and surviving

The PPF diagram showing economic growth can be shown in the diagram below:



In the short term a rise in capital investment might lead to a reduction in short term living standards as more resources are allocated to capital accumulation rather than consumption of goods and services.

Positive and Normative Statements

Value Judgements

- Whenever you are reading articles on current affairs it is important to be able to distinguish between **objective** and **subjective statements**.
- Often, a person writing an article has a particular argument to make and will include **subjective statements** about what ought to be or what should be happening. Their articles carry **value judgements**; they are trying to persuade you of the particular merits or demerits of a policy decision. These articles may be wholly or partially lacking in objectivity.

Positive Statements

Positive statements are **objective statements** that can be tested, amended or rejected by referring to the available **evidence**. Positive economics deals with **objective explanation** and the testing and rejection of theories. For example:

- A fall in incomes will lead to a rise in demand for own-label supermarket foods
- If the government raises the tax on beer, this will lead to a fall in profits of the brewers.
- The rising price of crude oil on world markets will lead to an increase in cycling to work
- A reduction in income tax will improve the incentives of the unemployed to find work.
- Higher mortgage interest rates will reduce house prices

Normative Statements

Normative statements are **subjective statements** – i.e. they carry **value judgments**. For example:

- Pollution is the most serious economic problem
- Unemployment is more harmful than inflation
- The retirement age should be raised to 70 to combat the effects of our ageing population.
- Resources are best allocated by allowing the market mechanism to work freely
- The government should enforce minimum prices for beers and lagers sold in supermarkets and off-licences in a bid to control alcohol consumption

Focusing on the evidence is called adopting an empirical approach – evidence-based work is becoming more and more important in shaping different government policies and how much funding to give to each.

Specialisation and Trade

What is specialisation?
Specialisation is when we concentrate on a product or task. Specialisation happens at all levels:

1. The specialization of tasks within extended families in many of the world's poorest countries
2. Within businesses and organizations for example specialist buyers employed by supermarkets
3. In a country – Bangladesh is a major producer and exporter of textiles; Norway is a leading oil and gas exporter. And Ghana is one of the biggest global producers of cocoa.
4. In a region of a country – for many years the West Midlands has been a centre for motor car assembly, there has been huge investment in recent years in the Mini plant at Oxford

What are the possible gains from specialization?
By concentrating on what people and businesses do best rather than relying on self-sufficiency:

- **Higher output**: Total production of goods and services is raised and quality can be improved
- **Variety;** Consumers have access to a greater variety of higher-quality products
- **A bigger market:** Specialisation and global trade increase the size of the market offering opportunities for economies of scale to be exploited, leading to lower unit costs and prices

The Division of Labour

The **division of labour** – explained in the late 18th century by the classical economist Adam Smith - occurs where production is broken down into many separate tasks. Division of labour raises **output per person** as people become proficient through constant repetition of a task – "**learning by doing**". This gain in productivity helps to lower cost per unit and ought to lead to lower prices for consumers

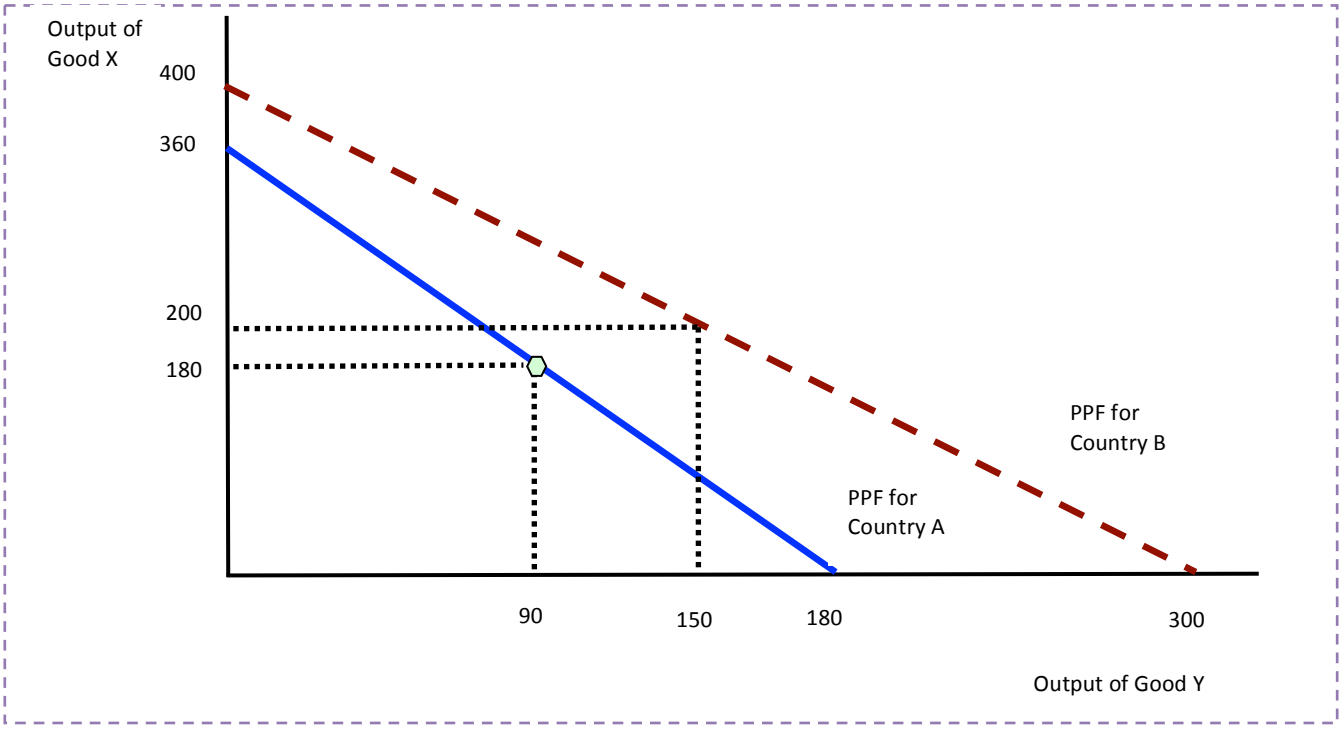
Main Limitations of the Division of Labour

1. Unrewarding, **repetitive work** that requires little skill lowers **motivation** and hits **productivity**. Workers begin to take less pride in their work and quality suffers. We often see dissatisfied workers becoming less punctual at work and the rate of **absenteeism** increases.
2. Many people may choose to move to less boring jobs creating a problem of **high worker turnover** for businesses. The employee turnover rate for the UK is around 12% per year, nearly one worker in seven changes jobs every twelve months. The highest labour turnover is found in retailing, hotels, catering and leisure, call centres and among other lower-paid private sector services groups
3. Some workers receive little training and may not be able to find alternative jobs if they find themselves out of work - they may then suffer **structural unemployment**.
4. Another disadvantage is that mass-produced **standardized goods** lack variety for consumers

Comparative advantage and the gains from specialisation and trade

- First introduced by **David Ricardo** in 1817, comparative advantage exists when a country has a **'margin of superiority'** in the supply of a product i.e. the cost of production is lower.
- Countries will usually specialise in and export products, which use intensively the factors inputs, which they are most abundantly **endowed**.

PPF and the Effects of Specialisation



Two countries are producing two products (X and Y). With a given amount of resources:

	Output of X	Output of Y
Country A	180	90
Country B	200	150

- In this example, country B has an **absolute advantage** in both products. Absolute advantage occurs when a country or region can create more of a product with the same factor inputs.
- But Country A has a comparative advantage in the production of good X. It is 9/10ths as efficient at producing good X but it is only 3/5ths as efficient at producing good Y.
- Comparative advantage exists when a country has lower opportunity cost, i.e., it gives up less of one product to obtain more of another product. In our example above, for country A, every extra unit of good Y produced involves an opportunity cost of 2 unit of good X. For country B, an additional unit of good Y involves a sacrifice of only 4.3 units of good X.
- There are gains to be had from country A specializing in the supply of good X and country B allocating more of their resources into the production of good Y.

Another example of comparative advantage

Consider two countries producing two products – digital cameras and vacuum cleaners.

Pre-specialisation	**Digital Cameras**	**Vacuum Cleaners**
UK	600	600
United States	2400	1000
Total	3000	1600

Were the UK to shift more resources into higher output of vacuum cleaners, the opportunity cost of each cleaner is one digital television. For the United States the same decision has an opportunity cost of 2.4 digital cameras. Therefore, the UK has a comparative advantage in vacuum cleaners.

If the UK chose to **reallocate resources** to digital cameras the opportunity cost of one extra camera is still one vacuum cleaner. But for the United States the opportunity cost is only 5/12ths of a vacuum cleaner. Thus the United States has a comparative advantage in producing digital cameras.

	Digital Cameras	**Vacuum Cleaners**
UK	0 (-600)	1200 (+600)
United States	3360 (+960)	600 (-400)
Total	**3360**	**1800**

- The UK specializes totally in producing vacuum cleaners – doubling its output to 1200.
- The United States partly specializes in digital cameras increasing output by 960 having given up 400 units of vacuum cleaners.
- Output of both products has increased - representing a gain in economic welfare.

For mutually beneficial trade to take place, the two nations have to agree an **acceptable rate of exchange** of one product for another. There are gains from trade between the two countries. If the two countries trade at a rate of exchange of 2 digital cameras for one vacuum cleaner, the post-trade position will be as follows:

- The UK exports 420 vacuum cleaners to the USA and receives 840 digital cameras
- The USA exports 840 digital cameras and imports 420 vacuum cleaners

	Digital Cameras	**Vacuum Cleaners**
UK	840	780
United States	2520	1020
Total	**3360**	**1800**

Compared with the pre-specialisation output levels, consumers in both countries now have an increased supply of both goods to choose from.

We have seen in this chapter how specialisation and trade based on the idea of comparative advantage can lead to an improvement in economic welfare within and between nations.

Markets: Understanding Demand

What is meant by demand?

- Demand is the quantity of a good or service that consumers are **willing and able to buy** at a **given price in a given time period**.
- Each of us has an **individual demand** for particular goods and services and our demand at each price reflects the **value** that we place on a product, linked usually to the enjoyment or usefulness that we expect from consuming it. Economists give this a term - **utility**

Effective Demand

- Effective demand is when a desire to buy a product is backed up by **an ability to pay** for it

Derived Demand

- Derived demand is the demand for a factor of production used to produce another good or service
  - **Steel:** The demand for steel is strongly linked to the market demand for cars and the construction of new buildings
  - **Zinc** is a good example of a product with a **strong derived demand**. It has a wide-range of end users such as galvanised zinc used in cars and new buildings, die-casting used in door furniture and toys, brass and bronze used in taps and pipes. And also rolled zinc (used in roofing, guttering and batteries) and in chemicals used in making tyres and zinc cream.
  - **Wood:** Wood is a product where much demand comes from the uses to which it can be put. The end use of wood in the UK is: Construction: 60%, Furniture: 15%, Packaging: 15%, Fencing: 7%
  - **Labour:** In factor markets, the demand for labour is derived
  - **Transport:** An increase in the demand for air travel will lead to a rise in demand for pilots.

The demand for new bricks is derived from the demand for the final output of the construction industry

The Law of Demand

There is an **inverse relationship between the price of a good and demand**.

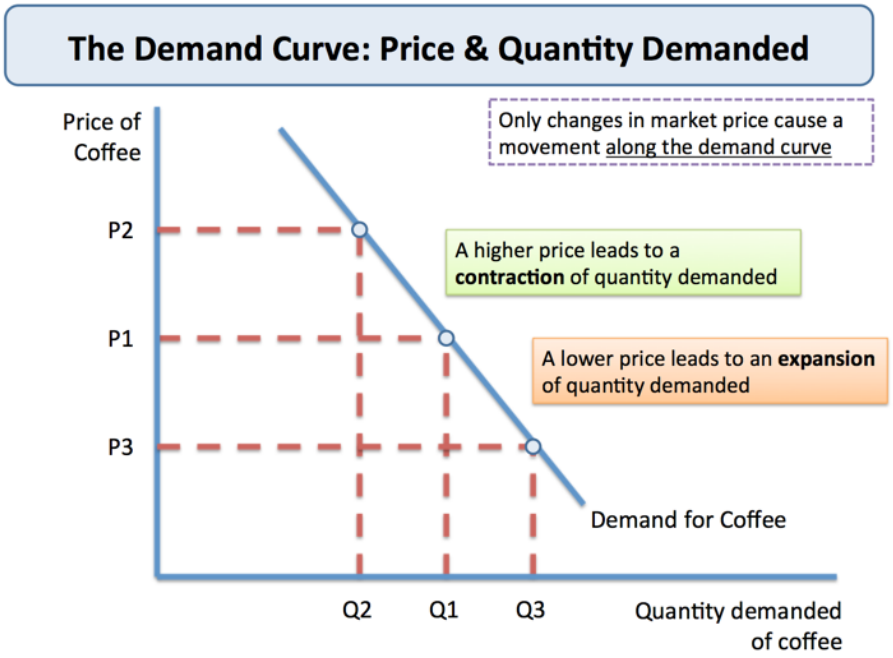
1. As prices fall, we see an **expansion of demand.**
2. If price rises, there will be a **contraction of demand**.

Ceteris paribus assumption

When drawing a demand curve, economists assume all factors are held constant except one – *the price of the product itself*. Ceteris paribus allows us to **isolate** the effect of one variable on another variable

The Demand Curve
A demand curve shows the relationship between the price of an item and the quantity demanded over a period of time. There are two reasons why more is demanded as price falls:

1. **The Income Effect:** There is an income effect when the price of a good falls because the consumer can maintain the same consumption for less expenditure. Provided that the good is normal, some of the resulting increase in real income is used to buy more of this product.
2. **The Substitution Effect:** There is a substitution effect when the price of a good falls because the product is now relatively cheaper than an alternative item and some consumers switch their spending from the alternative good or service.

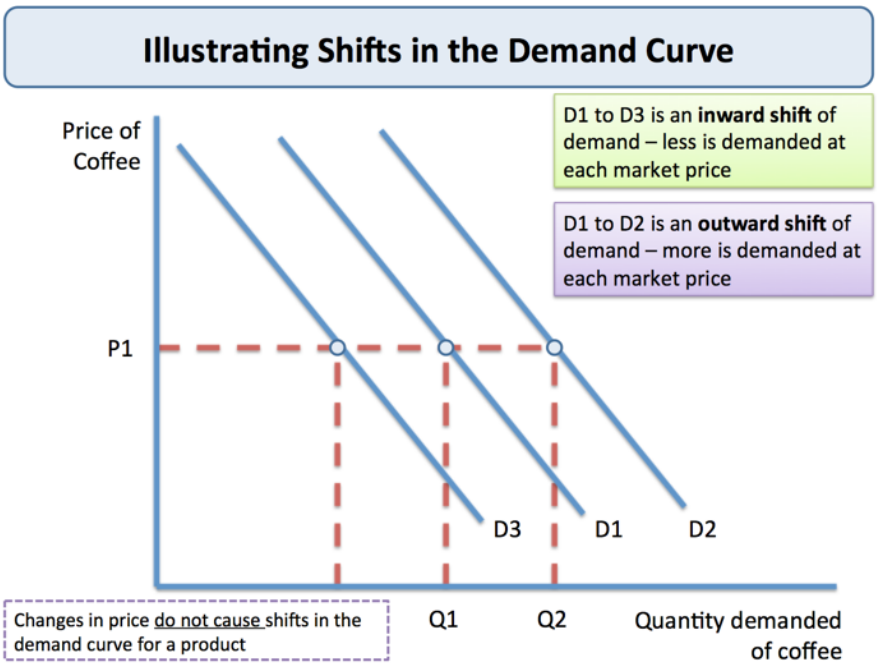


- As price falls, a person switches away from rival products towards the product
- As price falls, a person's willingness and ability to buy the product increases
- As price falls, a person's opportunity cost of purchasing the product falls
- **Note**: Many demand curves are drawn as straight lines to make the diagrams easier to interpret.

Changes in the Conditions of Demand – Shifts in the demand curve
The conditions of demand for a product are as follows:

- Changing prices of a substitute goods or services in competitive demand
- Changing price of complements – i.e. products in joint demand
- Changes in the real income of consumers
    - When real income goes up, our ability to purchase goods and services increases, and this causes an outward shift in the demand curve.
    - But when incomes fall there will be a decrease in demand, except for inferior goods
- Changes in the distribution of income - a more equal distribution of income can increase total demand because relatively poorer consumers spend a higher proportion of their income
- The effects of advertising and marketing
- Interest rates and demand (e.g. affecting the cost of credit)

- Changes in the size and age structure of a population
- Seasonal factors for some goods and services
- Social and emotional factors



Utility and demand

Utility is a measure of the satisfaction that we get from purchasing and consuming a good or service

- **Total utility**: The total satisfaction from a given level of consumption
- **Marginal utility**: The change in satisfaction from consuming an extra unit

Standard economic theory believes in the idea of diminishing returns i.e. the marginal utility of extra units declines as more is consumed

Marginal utility and willingness to pay

Marginal utility is the change in total satisfaction from consuming an extra unit of a good or service

- Beyond a certain point, marginal utility may start to fall (diminish)
- In our example, this happens with the 4th unit where MU falls to 12
- The 8th unit carries zero marginal utility i.e. total utility stays the same
- If marginal utility is falling, then consumers will only be prepared to pay a lower price
- This helps to explain the downward sloping demand curve

Quantity Consumed	Total Utility (TU)	Marginal Utility (MU)
1	10	10
2	24	14
3	40	16
4	52	12
5	61	9
6	68	7
7	72	4
8	72	0

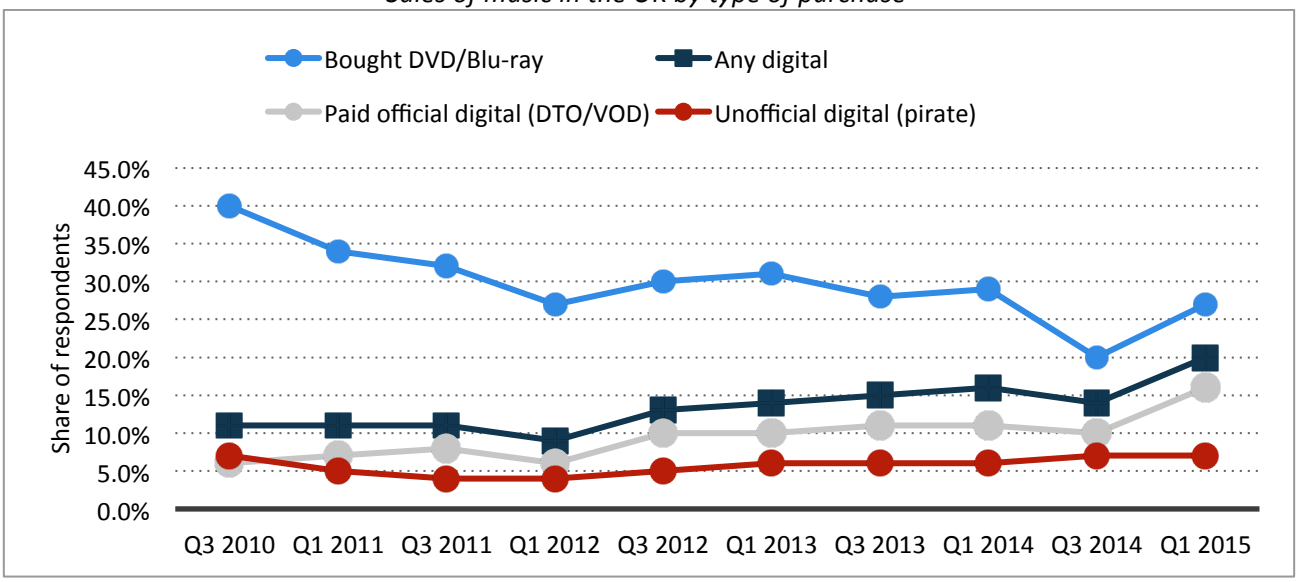
The Paradox of Value

The Paradox of Value is also known as the **diamond-water paradox**

- We understand that water is necessary to sustain life and that ornaments such as diamonds are just that – certainly life sustaining. But water typically has a low price, while a piece of diamond jewellery has a high market price. One reason is that water is abundant relative to demand whereas diamonds are scarce relative to demand
    - **Value in use** i.e. drinking water to satisfy your thirst
    - **Value in exchange** – what a resource can be sold for in exchange for other products. Nothing is more useful than water: but it will purchase scarce any thing. The reverse is usually true for expensive jewellery

Changes in **perceived utility** from consuming different goods and services will have a direct effect on the level of demand and also the platforms used to provide the product. Consider the example below that shows sales of different forms of music.

Sales of music in the UK by type of purchase



Seasonal demand

Seasonality refers to fluctuations in output and sales related to the seasonal of the year. For most products there will be seasonal peaks and troughs in production and/or sales

- Demand for slippers peaks in the run up to Christmas
- Demand for plants at garden centres is linked to the planting season
- There is high demand for decorating materials before the Easter weekend
- High street retailers such as jewellers may sell as much as 80-90% of their products over Xmas
- Theatres take a high % of their income during pantomime season

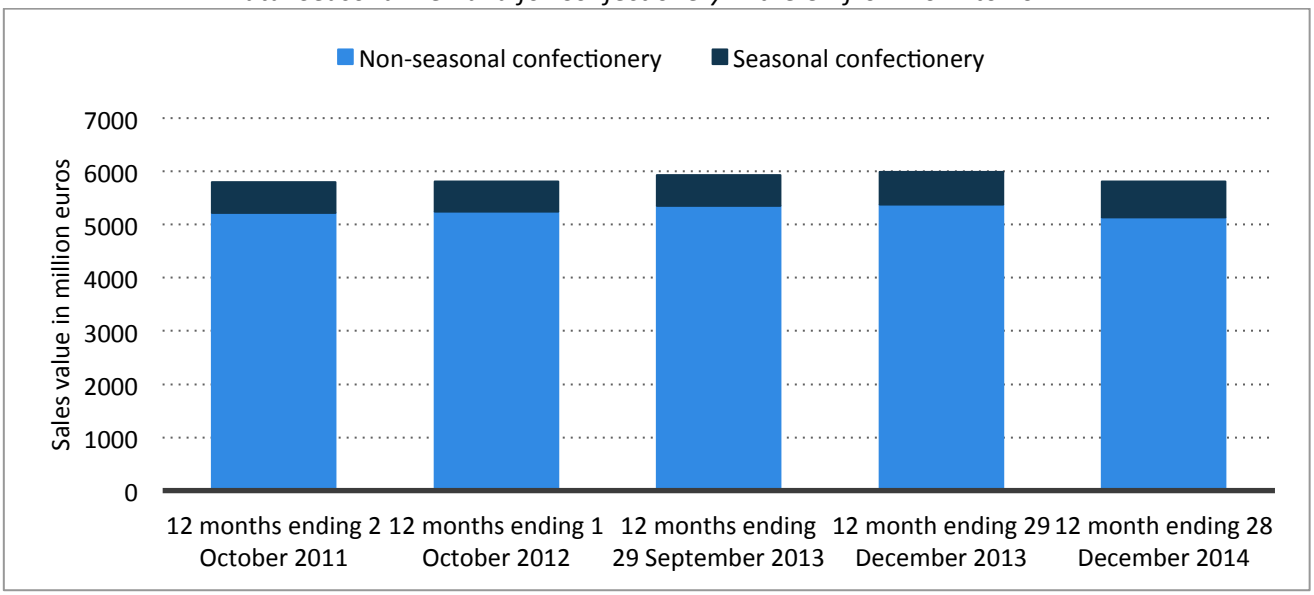
Easter chocolate

Summer fruits

Winter clothing

Ski season products

Data: Seasonal Demand for Confectionery in the UK from 2011 to 2014



Social and emotional factors affecting demand

- Traditional economic theory focused heavily on objective factors affecting demand such as price and income. More recent developments in the subject, especially behavioural economics, gives more weight to psychological and social factors that affect our preferences and choices in markets.
- There are many social factors affecting demand and this means that our spending decisions are rarely taken in isolation. We are strongly influenced by the choices of other people especially when we share the same social groupings and networks. Herd behaviour can be a powerful force in markets
- Emotional factors take into account that we may make different decisions when in "hot" or "cold"states, our emotions may lead us to make short-term spending choices that might not be made in a different emotional frame of mind.

Social factors:

- Social awareness e.g. awareness of health risks from smoking, gambling
- Social norms - changing norms of behaviour e.g. the falling demand for recycled bags used in supermarket
- Social pressures e.g. peer pressures affecting demand for legal highs & other drugs

Emotional factors:

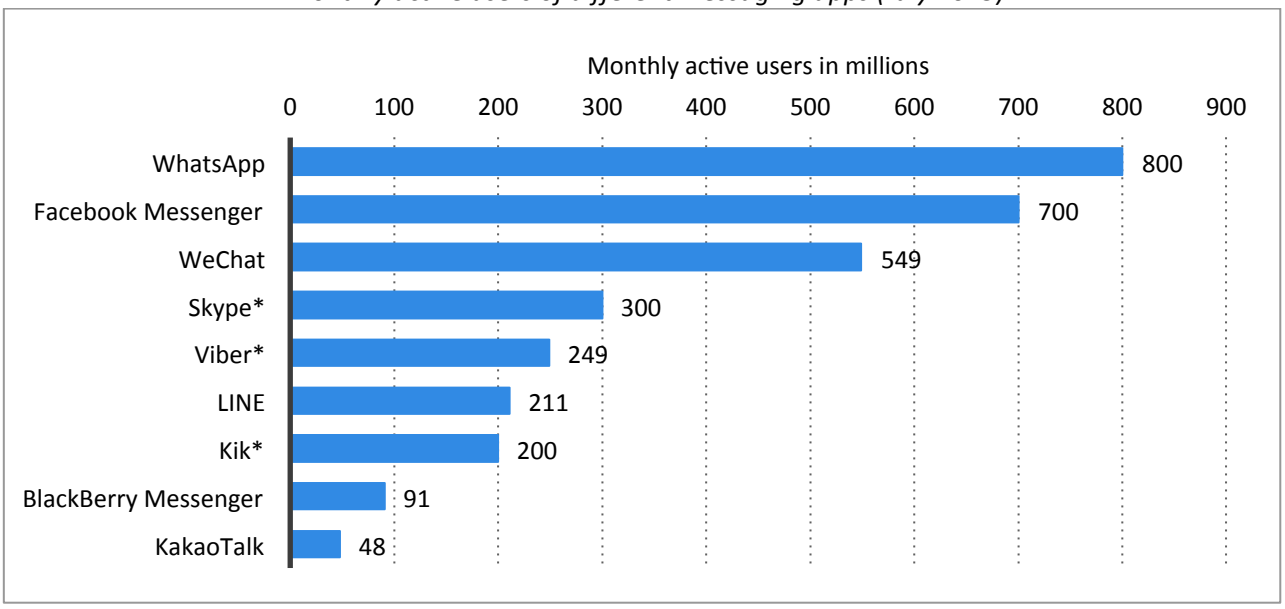
- Emotional arousal can affect the demand for health insurance after major incidents
- Binge drinking and eating at times of personal insecurity
- Demand for products such as football season tickets and antiques also has a strong emotional attachment

Networks effects affecting demand

Increasingly in the digital economy, the choices made by consumers are influenced by the decisions of others. A good example is the decision about which messenger app to use.

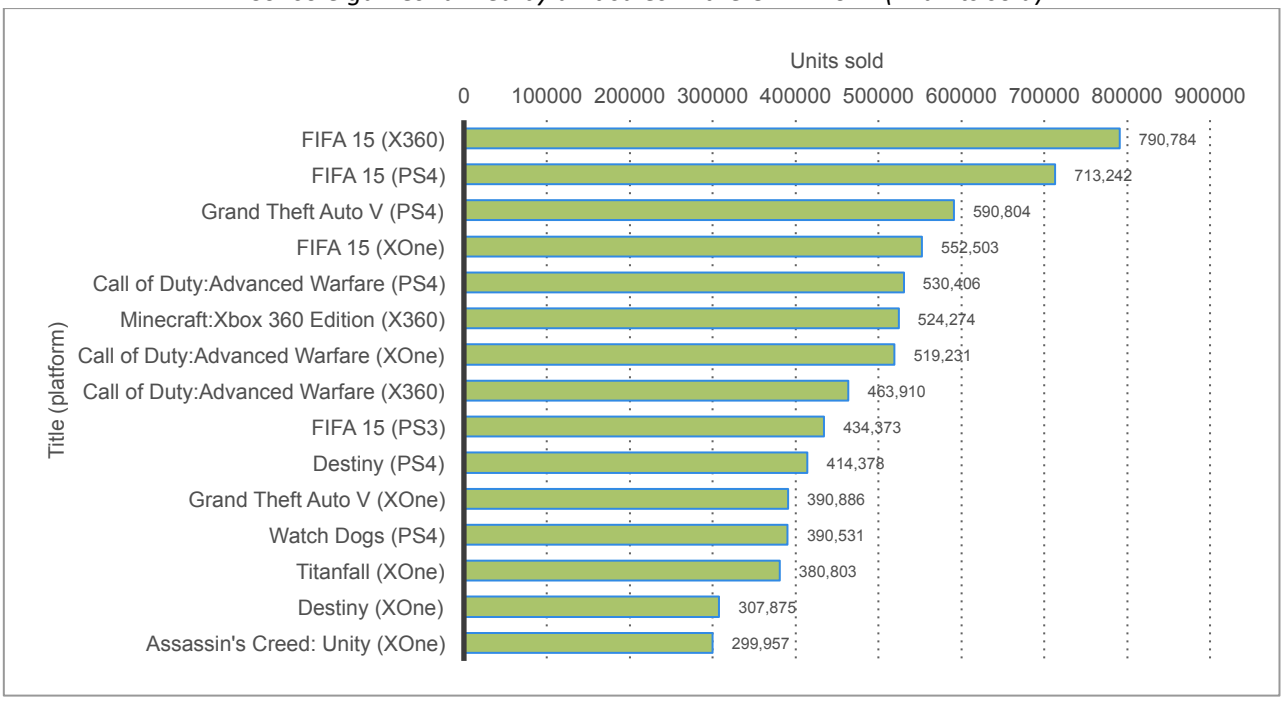
The chart below shows monthly active users for a range of apps during July 2015.

Monthly active users of different messaging apps (July 2015)



Another good example of network effects is the demand for computer games. Millions of consumers buy these products each year and the demand affected by the number of other installed users. The chart below shows the best selling console games (and their platforms) in the UK during 2014.

Console games ranked by unit sales in the UK in 2014 (in units sold)

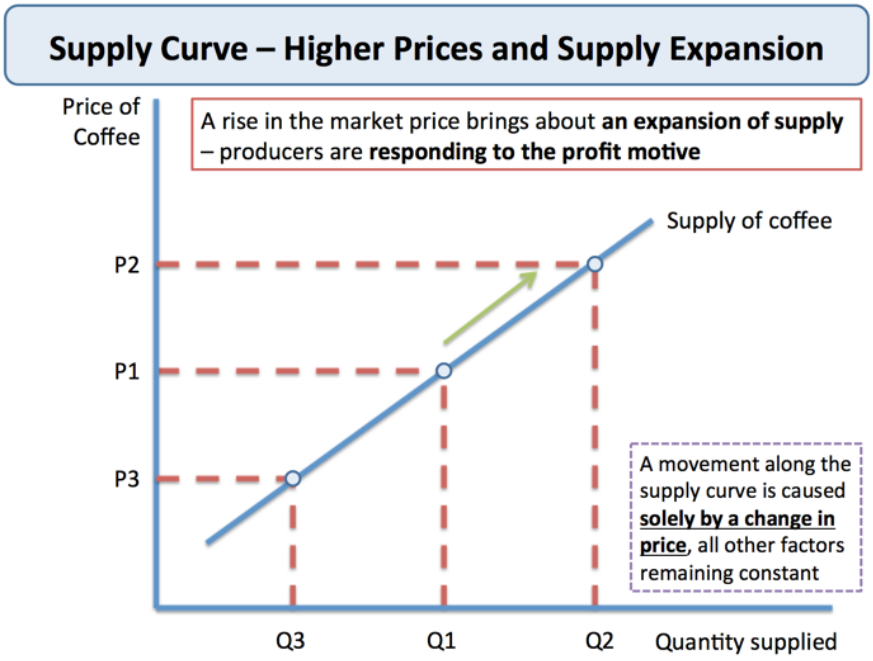


Network effects, social and emotional factors are all worth considering when studying market demand because they connect with the real world of consumer choice across many different markets.

Markets: Understanding Supply

Definition of Supply

- Supply is the quantity of a product that a producer is **willing and able to supply** onto the market **at a given price in a given time period**
- The **law of supply** - as the price of a product rises, so businesses expand supply to the market. A supply curve shows a relationship between price and how much a firm is willing and able to sell
- Supply is not necessarily the amount that is actually sold, since, if consumers do not wish to buy the product, it will remain unsold



- A supply curve is drawn assuming ceteris paribus (other factors held constant) so that if the price of the good varies, we move along a supply curve
- In the diagram above, as the price rises from P1 to P2, there is an **expansion of supply**
- If the market price falls from P1 to P3, there is a **contraction of supply** in the market
- Businesses are responding to market **price signals** when making output decisions.

Explaining the Law of Supply

There are three key reasons why supply curves are drawn as sloping upwards from left to right giving a **positive relationship between the market price and quantity supplied**:

1. **The profit motive:** When the market price rises following an increase in demand, it becomes more profitable for businesses to increase their output
2. **Production and costs:** When output expands, a firm's production costs tend to rise; therefore a higher price is needed to cover these extra costs of production. This may be due to the effects of diminishing returns as more factor inputs are added to production.
3. **New entrants coming into the market:** Higher prices may create an incentive for other businesses to enter the market leading to an increase in total supply.

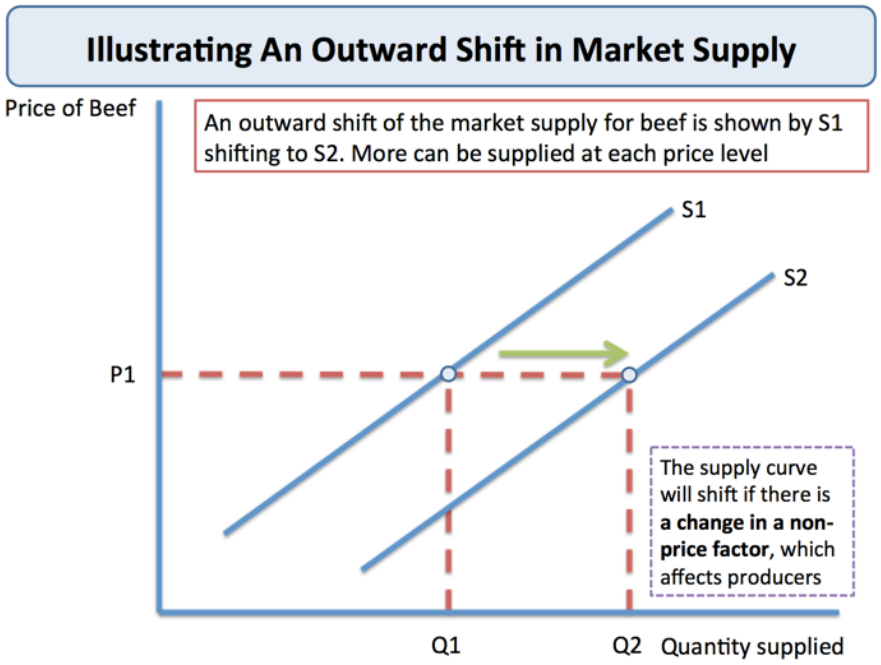
Market Supply

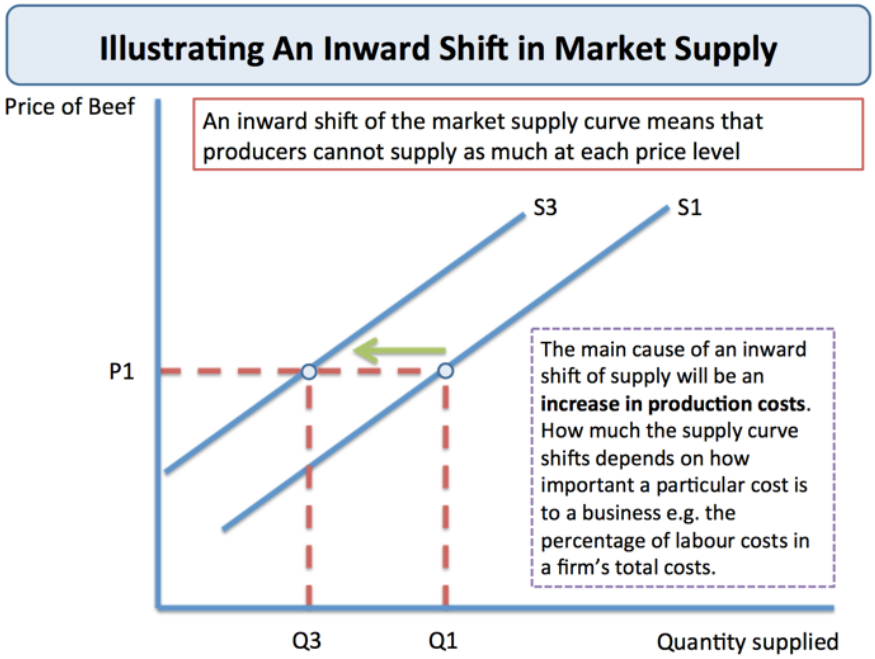
Market supply is total supply brought to the market by producers at each price. To calculate, sum the individual supply schedules. The table below shows how market supply can be worked out.

Price (£)	Firm A's supply +	Firm B's supply +	Firm C's supply +	= Market Supply
10	30	0	5	35
20	45	10	15	70
30	65	20	40	125
40	100	30	70	200

Shifts in the Supply Curve – Conditions of Supply

- If the supply curve shifts to the right (from S1 to S2) this is an **increase in supply**; more is provided for sale at each price
- If the supply curve moves inwards from S1 to S3, there is a **decrease in supply** meaning that less will be supplied at each price
- Make sure that you understand the key factors that can bring about a shift in the supply curve for a product in a market

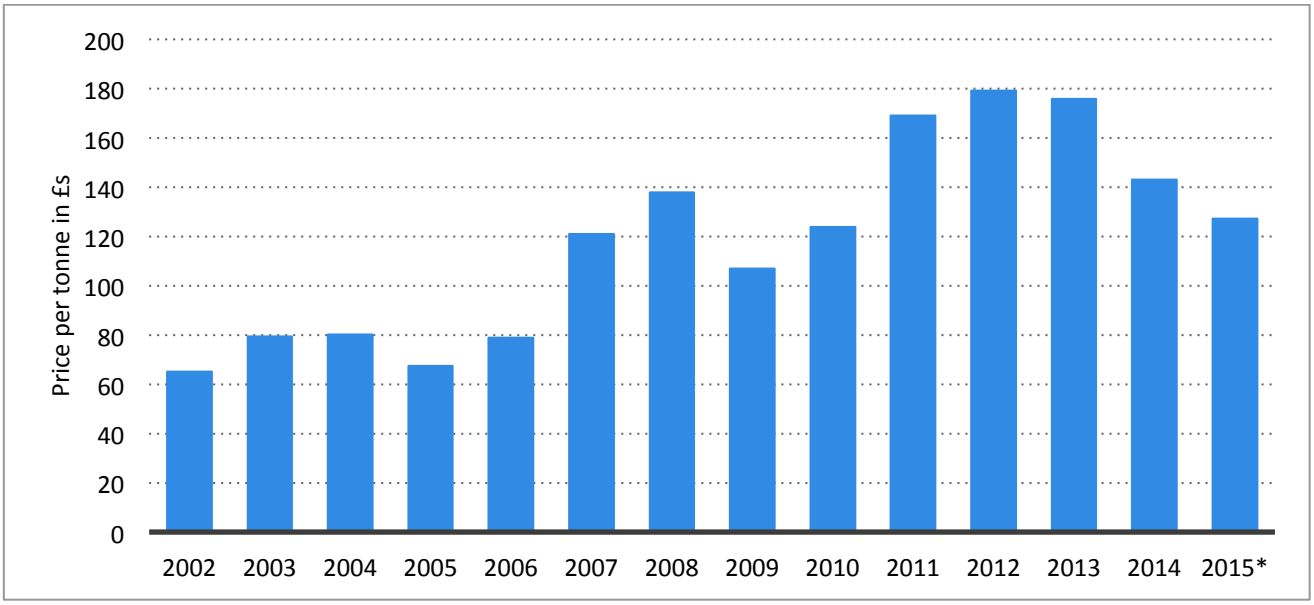




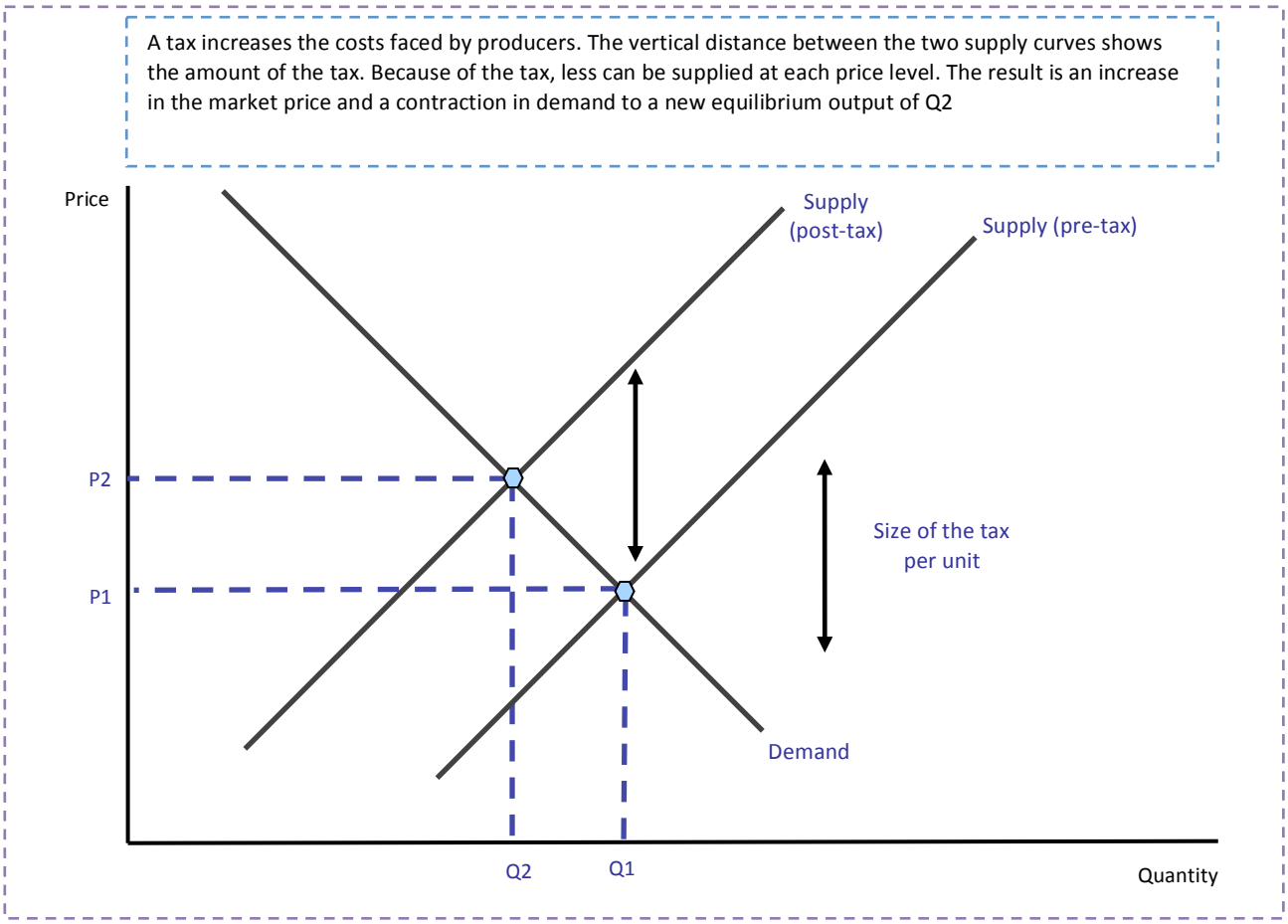
1. **Changes in production costs**
   a. **Lower costs** of production mean that a business can supply more at each price. For example a magazine publisher might see a reduction in the cost of imported paper and inks. These cost savings can then be passed through the **supply chain** to wholesalers and retailers and may result in lower prices for consumers.
   b. If the costs of production increase, for example following a rise in the **price of raw materials** or a firm having to **pay higher minimum wages**, then businesses cannot supply as much at the same price and this will cause an inward shift of the supply curve.
   c. A **fall in the exchange rate** causes an increase in the prices of imported components and raw materials and will lead to a decrease in supply. For example if the pounds falls 10% against the Euro, it becomes more expensive for British car manufacturers to import their rubber, glass, steel and paint from overseas suppliers
2. **Changes in technology**
   a. Production technologies can change quickly and in industries where change is rapid we see increases in supply and lower prices for the consumer.
3. **Government taxes and subsidies and regulations**
   a. **Indirect taxes** cause an increase in production costs - an inward shift of supply
   b. **Subsidies** bring about a fall in supply costs – an outward shift of supply
   c. **Regulations** increase production costs – an inward shift of supply

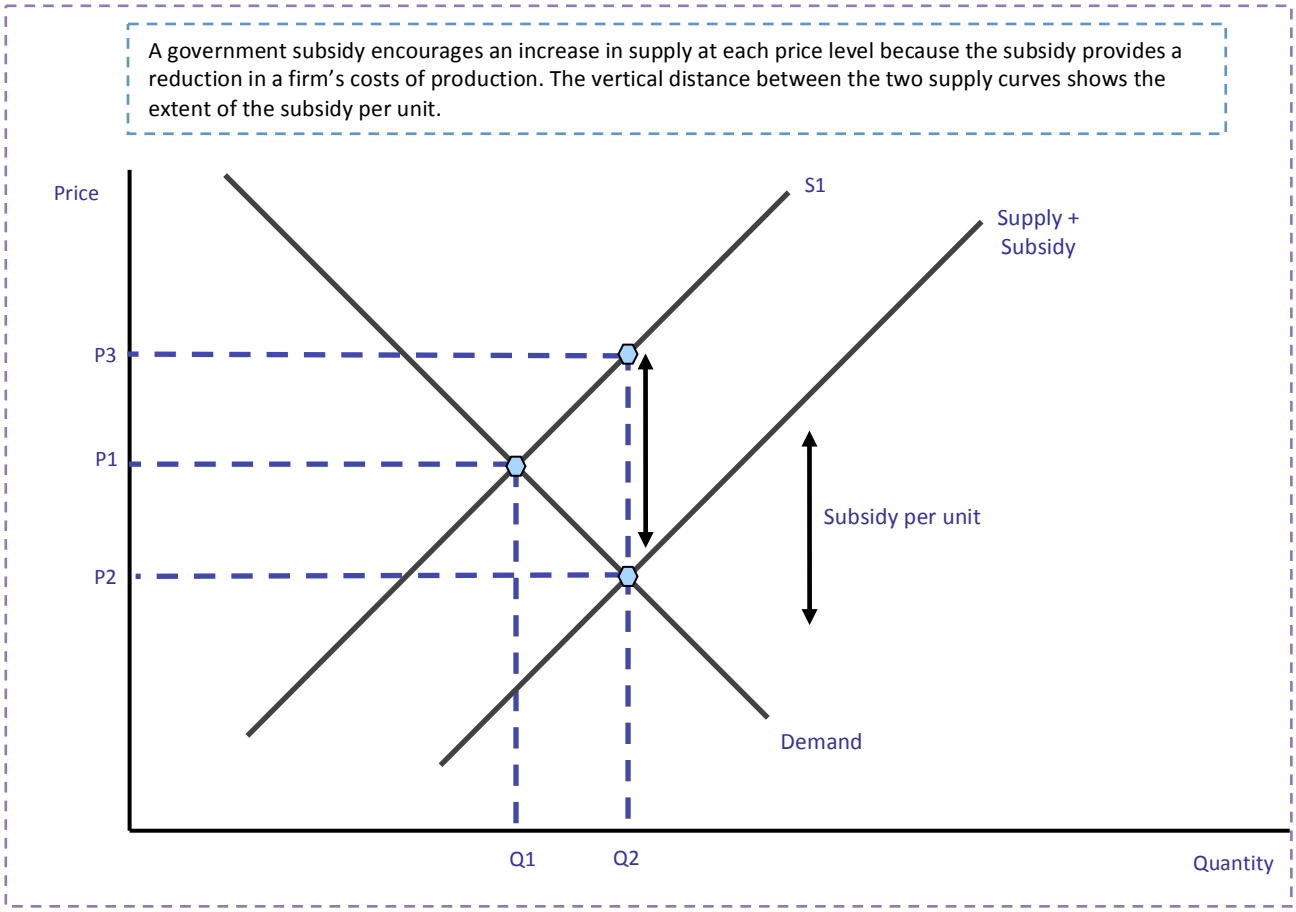
Data: Wheat prices in the UK

Falling wheat prices will cause a reduction in the resource costs for food manufacturers such as cereal producers. If other factors remain constant, producers who use wheat will see an outward shift of supply. The chart below shows the annual average price of a tonne of wheat.



Indirect Tax and Government Subsidy – The Effect on Supply





4. Changes in climate in agricultural industries

- For commodities such as coffee and wheat, **climatic conditions** have a big influence on supply.
- Favourable weather will produce a bumper harvest and will increase supply. (An outward shift)
- Unfavourable weather conditions including the effects of drought will lead to a poorer harvest, lower yields and therefore a decrease in supply (inward shift)
- Because commodities are often used as ingredients in the production of other products, a change in the supply of one can affect the supply and price of another product. Higher coffee prices for example can lead to an increase in the price of coffee-flavoured cakes.

5. Change in the prices of a substitute in production

- A **substitute in production** is a product that could have been supplied **using the same resources**. If cocoa prices rise for example this may cause some farmers to switch from other crops and invest money in establishing new cocoa plantations.

6. The number of producers in the market and their objectives

- The **number of sellers in an industry** affects market supply
- When new businesses enter a market, supply increases causing downward pressure on price. If existing businesses move away from maximising their profits towards seeking a higher market share, then total supply will increase – the market supply curve will shift outwards.

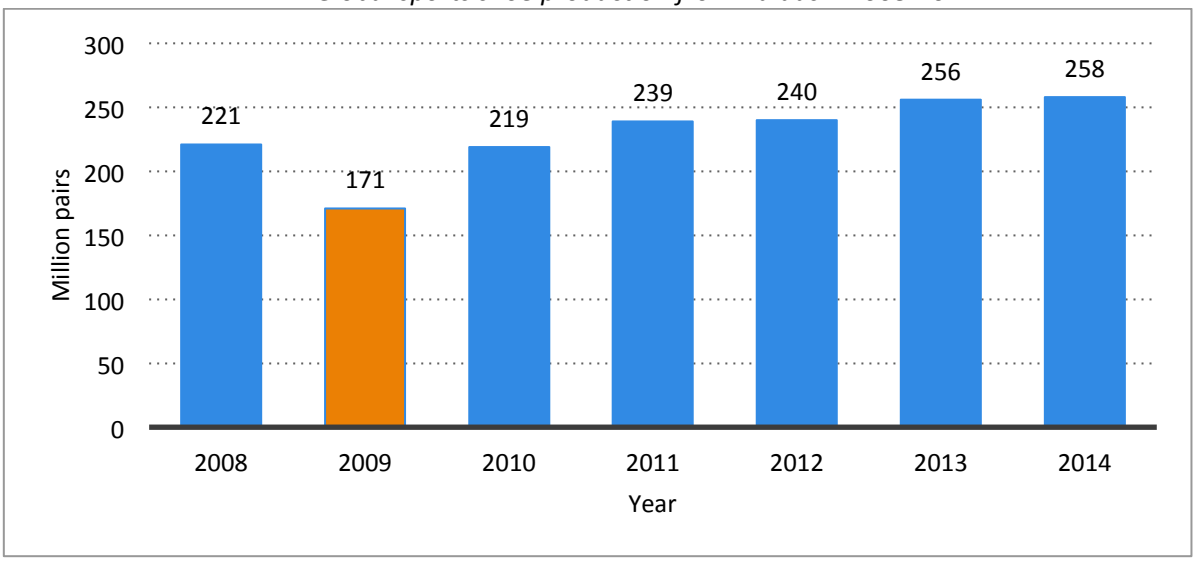
Competitive supply in a market

- Goods and services in **competitive supply** are alternative products that a business could make with its factor resources of land, labour and capital.
- An example is the diversion of land used in supplying food to producing bio-fuels and the impact this has had on global food prices.

Supply in action: Global production of sports shoes by Adidas

In 2009 there was a global economic recession. Demand for sports shoes declined and Adidas responded by cutting output. Many other sportswear companies did the same to avoid a costly build-up of stocks.

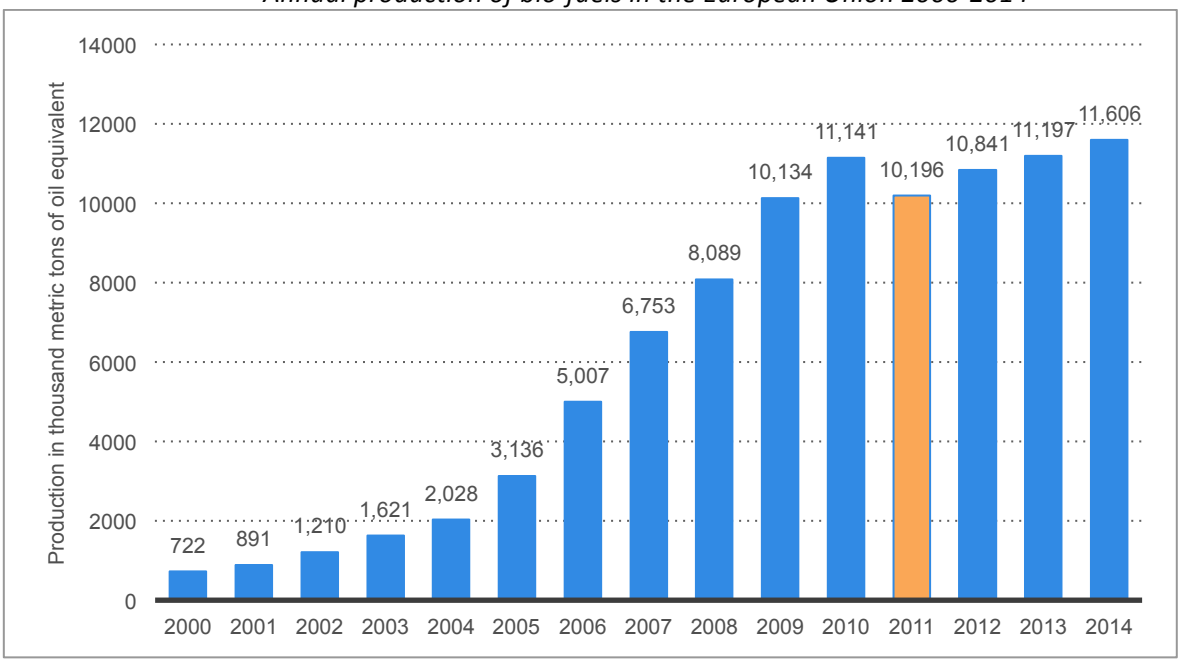
Global sports shoe production from Adidas – 2008-2014



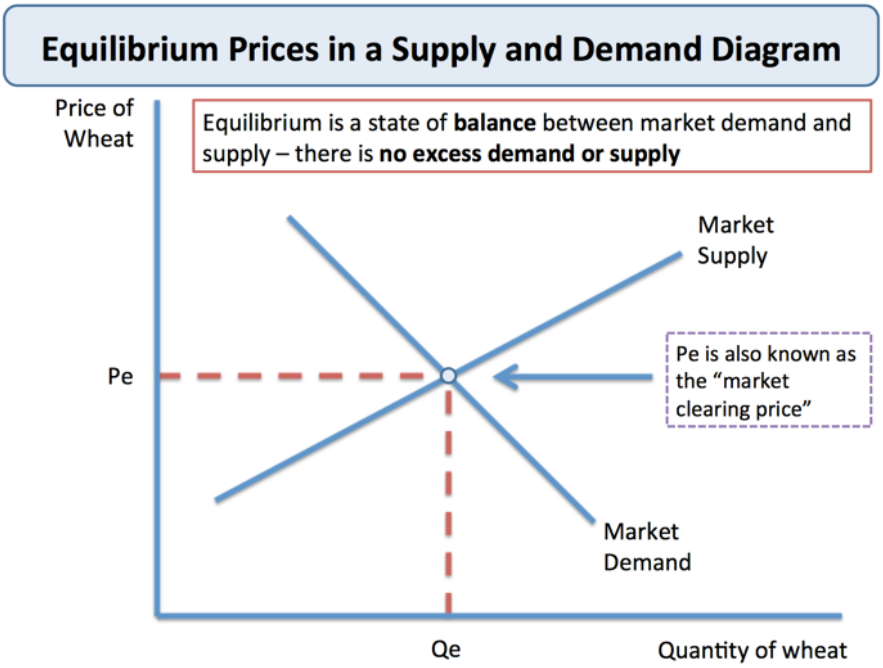
Supply in action: Production of bio-fuels in the European Union

The European Union wants to derive at least 10 per cent of transport fuels from renewable sources by 2020 and as our chart shows, there has been a substantial expansion of production of bio-fuels across Europe interrupted by a sharp contraction of output during the recession years. The UK has substantial bio-fuel refining capacity but some has been mothballed several times when bio-fuel prices have fallen below a commercially viable level.

Annual production of bio-fuels in the European Union 2000-2014



Markets: Finding an Equilibrium Price



Equilibrium means a **state of equality or balance** between **market demand and supply**

- Without a shift in demand and/or supply there will be no change in price. In the diagram above, the quantity demanded and supplied at price P1 are equal.
- Equilibrium price represents a trade-off for buyer and seller – higher prices are good for the producer (higher revenues and profits) but they make the product more expensive for the buyer
- Prices where demand and supply are out of balance are termed points of disequilibrium.
- Changes in the conditions of demand or supply will cause changes in equilibrium price and quantity

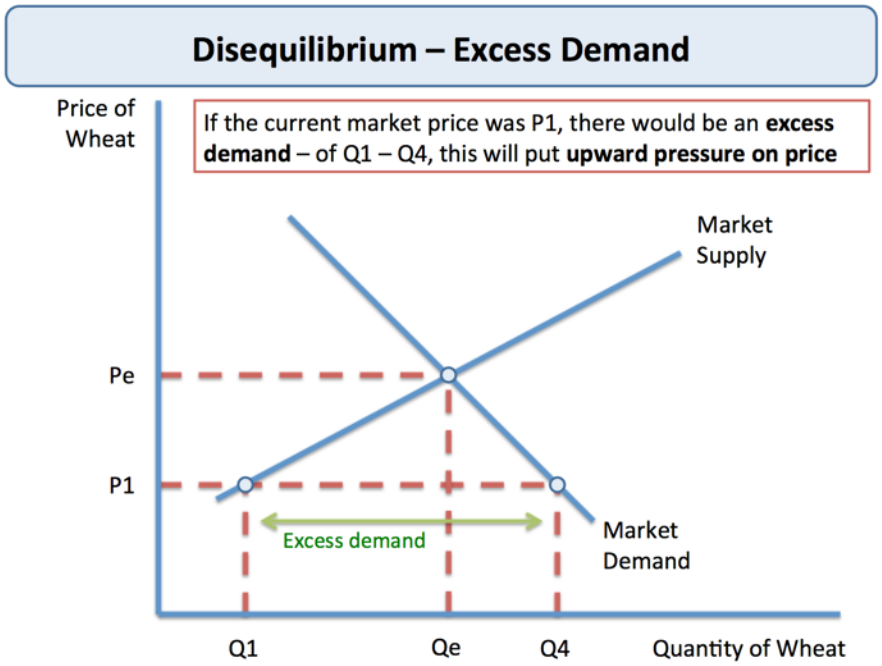
The weekly demand and supply schedules for T-shirts (in thousands) in a city are shown in the next table:

Price per unit (£)	8	7	6	5	4	3	2	1
Demand (000s)	6	8	10	12	14	16	18	20
Supply (000s)	18	16	14	12	10	8	6	4
New Demand (000s)	10	12	14	16	18	20	22	24
New Supply (000s)	26	24	22	20	18	16	14	12

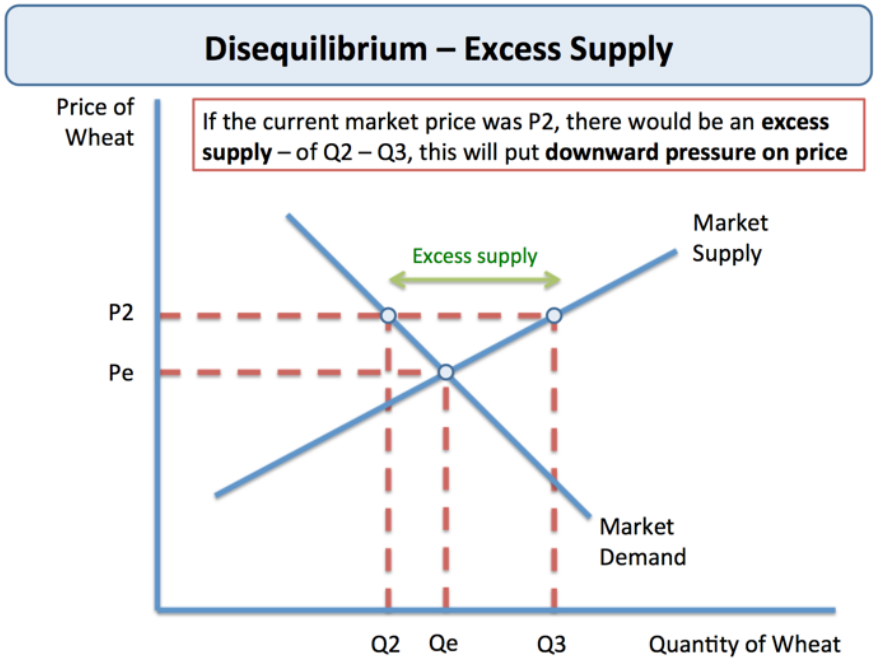
1. The **equilibrium price** is £5 where demand and supply are equal at 12,000 units
2. If the current market price was £3 – there would be **excess demand** for 8,000 units
3. If the current market price was £8 – there would be **excess supply** of 12,000 units
4. A rise in income causes demand to increase by 4,000 at each price. The next row of the table shows the higher level of demand. Assuming that the supply schedule remains unchanged, the new equilibrium price is £6 per tee shirt with an equilibrium quantity of 14,000 units
5. The entry of new producers into the market causes a rise in supply of 8,000 T-shirts at each price. The new equilibrium price becomes £4 with 18,000 units bought and sold

Disequilibrium

Excess demand
When actual supply is less than demand, leading to a market shortage



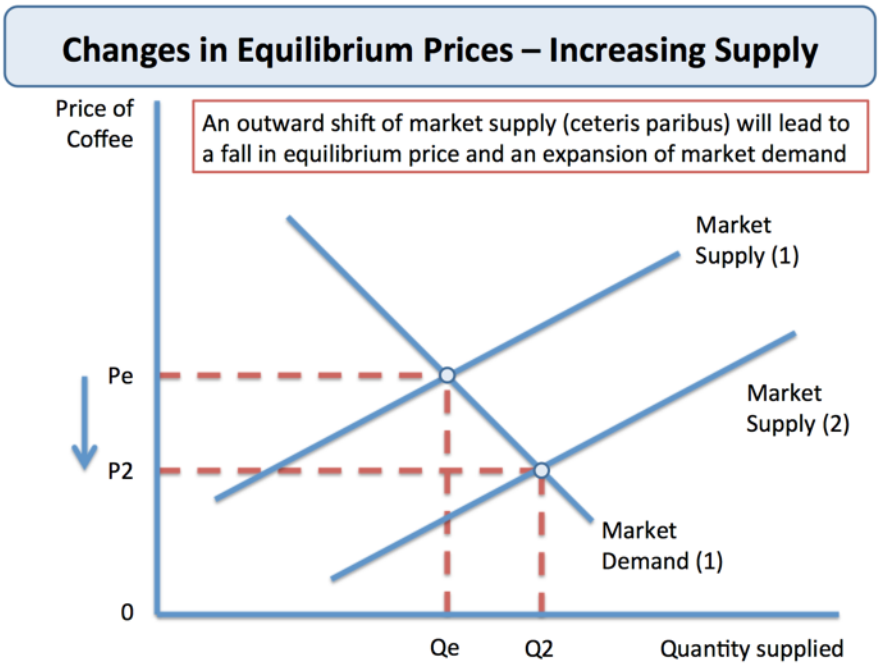
Excess supply
When actual supply is greater than demand, leading to a market surplus

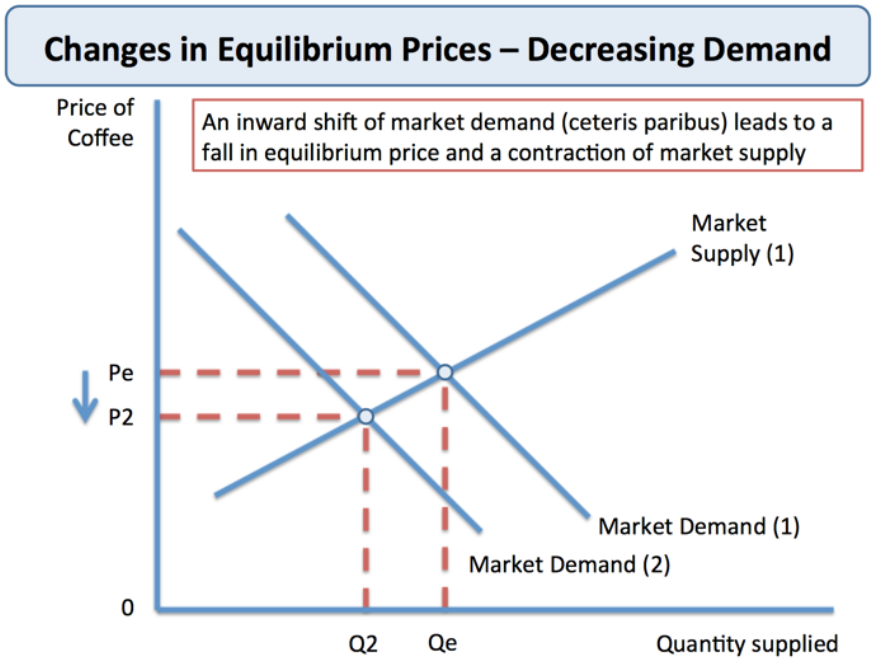


Changes in Market Supply and Equilibrium Price

Price per kg	Quantity Demanded (1)	Quantity supplied	Quantity Supplied (2)
$40	2,000	3,800	4,700
$35	2,500	3,400	4,300
$30	3,000	3,000	3,900
$25	3,500	2,600	3,500
$20	4,000	2,200	3,100
$15	4,500	1,800	2,700

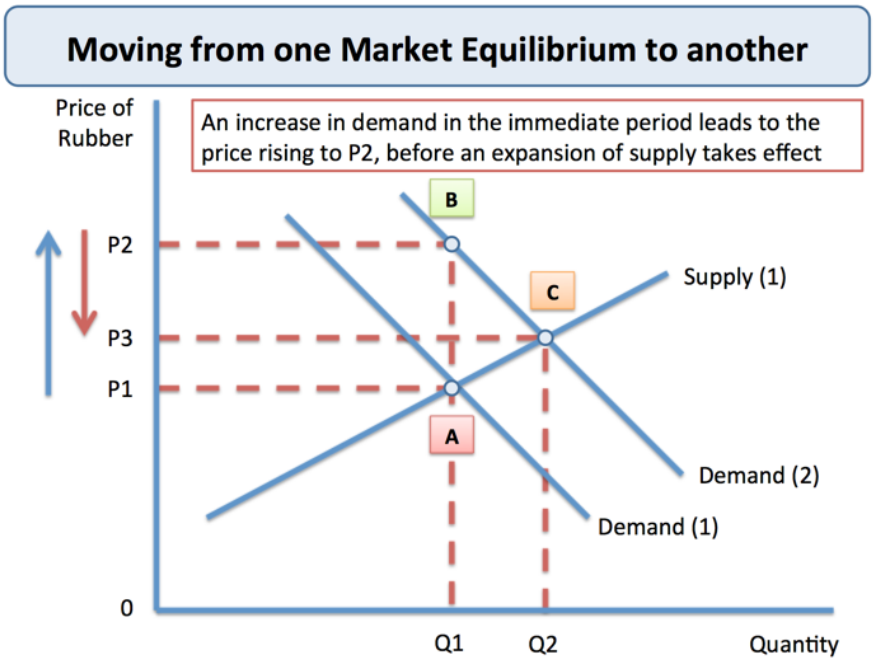
If market supply increases by 900 tonnes, the new equilibrium price will be £25





Moving from one market equilibrium to another

- Changes in equilibrium prices and quantities **do not happen instantaneously**! The shifts in supply and demand outlined in the diagrams before are reflective of changes in conditions in the market.
- So an outward shift of demand (depending upon supply conditions) leads to a short-term rise in price and a fall in available stocks.
- The higher price is an incentive for suppliers to raise their output (termed as an expansion of supply) causing a movement up the short-term supply curve towards the new equilibrium point.



Diagrams are a simplification of reality!

- We tend to use supply and demand diagrams to illustrate movements in market prices and quantities – this is known as **comparative static analysis**
- The reality in most markets and industries is more complex. For a start, many businesses have imperfect knowledge about their demand curves – they do not know precisely how consumer demand reacts to changes in price or the true level of demand at each and every price
- Likewise, constructing accurate supply curves requires detailed information on **production costs** and these may not be readily available.

Summary of Changes in Market Equilibrium Price
Here is a summary when there is a unique change in one of the conditions of market demand or supply

Shift	Equilibrium Price	Equilibrium Quantity
Demand increases	Higher	High
Demand decreases	Lower	Lower
Supply increases	Lower	Higher
Supply decreases	Higher	Lower

The possible outcomes are less certain when there is more than one change in demand and supply conditions

Demand	Supply	Equilibrium Price	Equilibrium Quantity
+	+	?	+
+	0	+	+
+	-	+	?
0	+	-	+
0	0	0	0
0	-	+	-
-	+	-	+
-	0	-	-
-	-	?	-

- (+) Signifies increase in demand / supply
- Signifies no change in conditions of demand / supply
- (-) Signifies a fall in demand / supply

The outcome for market price is often uncertain because it depends on the size of the relative changes in supply and demand in a given time period. For example:

- A 20% rise in demand and a 8% rise in supply will cause prices to rise
- A 10% rise in demand and a 30% rise in supply will cause prices to fall
- A 25% rise in demand and a 25% rise in supply will cause prices to remain constant

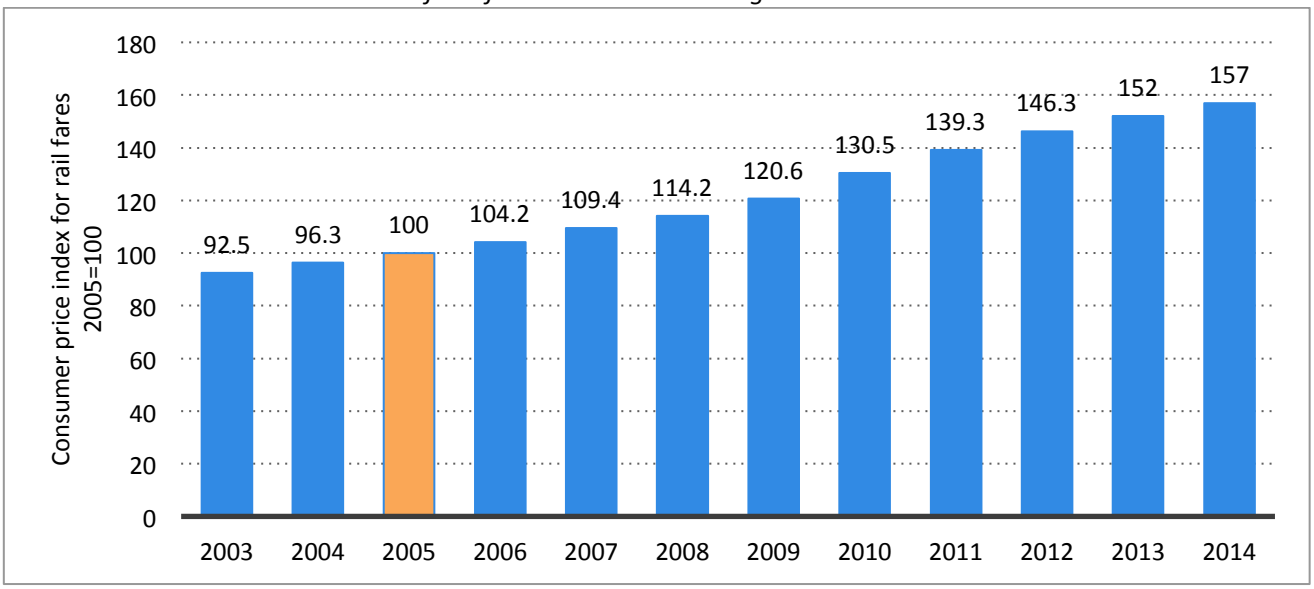
Regulated prices in markets

- The free-market forces of supply and demand set not all prices.
- In Britain, a number of prices are affected by regulators who may impose a pricing formula on suppliers
- Good examples are rail fares, the cost of postage stamps and water bills.
- In the UK rail industry, some fares are unregulated allowing train operating companies to set their own prices. But the rail regulator sets around half of the fares charged for rail travellers.

Data: Rail fare price index for the UK

Around 45 per cent of UK rail fares are subject to regulation (since 2015 this is limited to the rate of RPI inflation. All other fares are set at a commercial rate by the train operating companies such as First Great Western, Southern Trains and Virgin Trains.

Index of rail fares in the United Kingdom 2003-2014



Regulated wholesale prices

Another example of capped prices concerns the **wholesale price** that Sky can charge to other broadband suppliers such as Virgin Media for their Sky Sports services. These prices (charges) are regulated each year by the telecoms industry regulator OFCOM.

Wholesale prices for Sky Sports 1 and 2

Wholesale-must-offer price (from 1 June 2015)

- Sky Sports 1: £17.01
- Sky Sports 2: £16.80
- Sky Sports 1&2: £25.34

Price Elasticity of Demand

- **Price elasticity of demand** measures the **responsiveness of demand** after **a change in price**. The formula for calculating the co-efficient of elasticity of demand is:
- ***Percentage change in quantity demanded divided by the percentage change in price***
- Since changes in price and quantity usually move in opposite directions, usually we do not bother to put in the minus sign. We are more concerned with the **co-efficient** of elasticity of demand.

Values for price elasticity of demand

1. **If Ped = 0** demand is **perfectly inelastic** - demand does not change at all when the price changes – the demand curve will be vertical.
2. **If Ped is between 0 and 1** (% change in demand from A to B is smaller than the percentage change in price), then **demand is inelastic**.
3. **If Ped = 1** (i% change in demand is exactly the same as the % change in price), then demand is **unit elastic**. A 15% rise in price would lead to a 15% contraction in demand leaving total spending the same)
4. **If Ped > 1**, then demand responds more than proportionately to a change in price i.e. **demand is elastic**. For example if a 10% increase in the price of a good leads to a 30% drop in demand. The price elasticity of demand for this price change is –3

Factors affecting price elasticity of demand

1. **The number of close substitutes** – the more close substitutes there are in the market, the more elastic is demand because consumers find it easy to switch. E.g. Air travel and train travel are weak substitutes for inter-continental flights but closer substitutes for journeys of 200-400km between major cities
2. **The cost of switching between products** – there may be **costs** involved in switching. In this case, demand tends to be inelastic. For example, mobile phone service providers may require a contract which has the effect of locking-in some consumers once a choice has been made
3. **The degree of necessity or whether the good is a luxury** – necessities tend to have an inelastic demand whereas luxuries tend to have a more elastic demand. An example of a necessity is rare-earth metals that are an essential raw material in the manufacture of solar cells, batteries.
4. **The proportion of a consumer's income allocated to spending on the good** – products that take up a high % of income will have a more elastic demand
5. **The time period allowed following a price change** – demand is more price elastic, the longer that consumers have to respond to a price change. They have more time to search for cheaper substitutes
6. **Whether the good is subject to habitual consumption** – consumers become less sensitive to the price of the good of they buy something out of habit (it has become the default choice).
7. **Peak and off-peak demand** - demand is price inelastic at peak times and more elastic at off-peak times – this is particularly the case for transport services.
8. **The breadth of definition of a good or service** – if a good is broadly defined, i.e. the demand for petrol or meat, demand is often inelastic. But brands of petrol or beef are likely to be more price elastic

Elasticity of demand and total revenue for a producer

The relationship between elasticity of demand and a firm's total revenue is an important one.

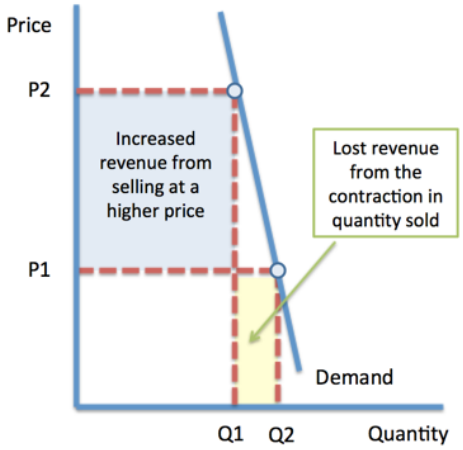
- When demand is **inelastic** – a rise in price leads to a rise in total revenue – A 20% rise in price might cause demand to contract by only 5% (Ped = -0.25)
- When demand is **elastic** – a fall in price leads to a rise in total revenue - for example a 10% fall in price might cause demand to expand by only 25% (Ped = +2.5)
- When demand is **perfectly inelastic** (i.e. Ped = zero), a given price change will result in the same revenue change, e.g. a 5 % increase in a firm's prices results in a 5 % increase in its total revenue

Demand curves with different price elasticity of demand

Inelastic Demand (Ped < 1)

If the co-efficient of price elasticity of demand <1, then demand is said to be **price inelastic** i.e. unresponsive to a change in price

- Following a change in price, the total revenue earned by the producing firm will depend on the PED for its product.
- If the coefficient of PED is <1, a rise in market price (e.g. from P1 to P2) will lead to an increase in total revenue for the seller of the product.



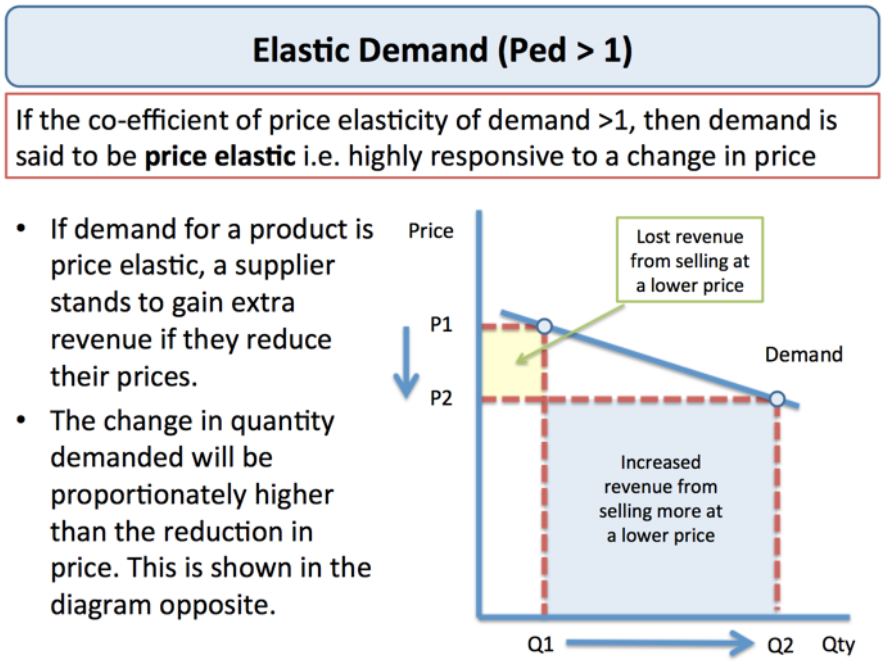
Price elasticity of demand and total revenue

The table below gives an example of the relationships between prices; quantity demanded and total revenue. As price falls, the total revenue initially increases, in our example the maximum revenue occurs at a price of £12 per unit when 520 units are sold giving total revenue of £6240.

Price	Quantity	Total Revenue	Marginal Revenue
£ Per Unit	Units	£	£
20	200	4000	
18	280	5040	13
16	360	5760	9
14	440	6160	5
12	520	6240	1
10	600	6000	-3
8	680	5440	-7
6	760	4560	-11

- Consider the price elasticity of demand of a price change from £20 per unit to £18 per unit. The % change in demand is 40% after a 10% change in price – giving a PED of -4 (i.e. highly elastic).
- In this situation when PED>1, a fall in price leads to higher total consumer spending / producer revenue
- Consider a price change further down the estimated demand curve – from £10 per unit to £8 per unit. The % change in demand = 13.3% following a 20% fall in price – giving a co-efficient of elasticity of – 0.665 (i.e. inelastic). A fall in price when demand is price inelastic leads to a reduction in total revenue.

Elastic demand, price cuts and a rise in total revenue



Summary of Price Elasticity of Demand, Price Changes and the Effects on Total Revenue

CHANGE IN THE MARKET	WHAT HAPPENS TO TOTAL REVENUE?
Ped is inelastic (<1) and a firm raises its price.	Total revenue increases
Ped is elastic (>1) and a firm lowers its price.	Total revenue increases
Ped is elastic (>1) and a firm raises price	Total revenue decreases
Ped is unit elastic (=1) and a firm raises price	Total revenue remains the same
Ped is -1.5 (elastic) and the firm raises price by 4%	Total revenue decreases
Ped is -0.4 (inelastic) and the firm raises price by 30%	Total revenue increases
Ped is -0.2 (inelastic) and the firm lowers price by 20%	Total revenue decreases
Ped is -4.0 (elastic) and the firm lowers price by 15%	Total revenue increases

Unitary price elasticity

Unitary Elastic Demand (Ped = 1)

A demand curve with unitary price elasticity has a coefficient of PED equal to 1 (unity) throughout

- With a demand curve of **unitary price elasticity**, a change in price is met with a **proportionate change in demand**
- This means that **total spending** by consumers on the product **will remain the same** at each price level

Elasticity of Demand and Indirect Taxes

- Many products are subject to indirect taxes. Good examples include the **duty on cigarettes** (cigarette taxes in the UK are among the highest in Europe) alcohol and fuel.
- A tax increases the costs of a business causing an inward shift in supply. The vertical distance between the pre-tax and the post-tax supply curve shows the tax per unit.
- With an indirect tax, the supplier may be able to pass on some or all of this tax to the consumer by raising price.
- This is known as **shifting the burden of the tax** and this depends on the elasticity of demand and supply.
- When demand is price inelastic, most of the indirect tax can be passed onto the consumer by the supplier in the form of a higher price
- When demand is price elastic, consumers are more sensitive to price changes and suppliers may choose to absorb the tax rise by accepting a reduction in their profits

Usefulness of Price Elasticity of Demand for Producers

Firms can use PED estimates to predict:

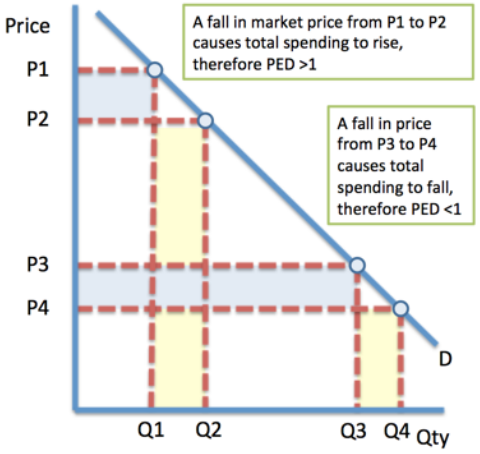
- The effect of a change in price on total revenue of sellers
- The price volatility in a market following changes in supply – this is important for commodity producers who suffer big price and revenue shifts from one time period to another.
- The effect of a change in an indirect tax on price and quantity demanded and also whether the business is able to pass on some or all of the tax onto the consumer.
- Information on the PED can be used by a business for price discrimination. This is where a supplier decides to charge different prices for the same product to different segments of the market e.g. peak and off peak rail travel or prices charged by many of our domestic and international airlines.
- Usually a business will charge a higher price to consumers whose demand is price inelastic (Ped<1)

Price elasticity of demand along a straight-line demand curve

Co-Efficient of PED along a linear demand curve

For a straight-lined demand curve, the PED varies along the curve

- Price elasticity of demand along a straight line demand curve **will vary**
- At high prices, a reduction in price will have an elastic price response – i.e. lower prices cause total revenue to rise
- Demand is price inelastic towards the bottom of the demand curve – a fall in price causes total revenue to drop



Limitations of data on price elasticity of demand

Price elasticity of demand is a really important concept to get hold of because it tells us a lot about how much consumers will respond to changing market prices when making decisions. Price elasticity is more than just a theoretical idea as it has a practical application and relevance to real world markets! However, it is important to remember that most of the elasticity data you are presented with will be at best an estimate and that the values will change over time. Here are some of the key limitations.

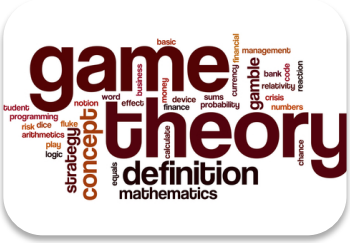
Problems with inaccurate or incomplete data collection

Consumer price sensitivity changes over time

Elasticity of demand varies by region / time

Not all businesses are profit maximisers

Elasticity will vary within product ranges e.g. economy and premium products



Rival producers will change their market strategies from time to time

Price Elasticity of Supply

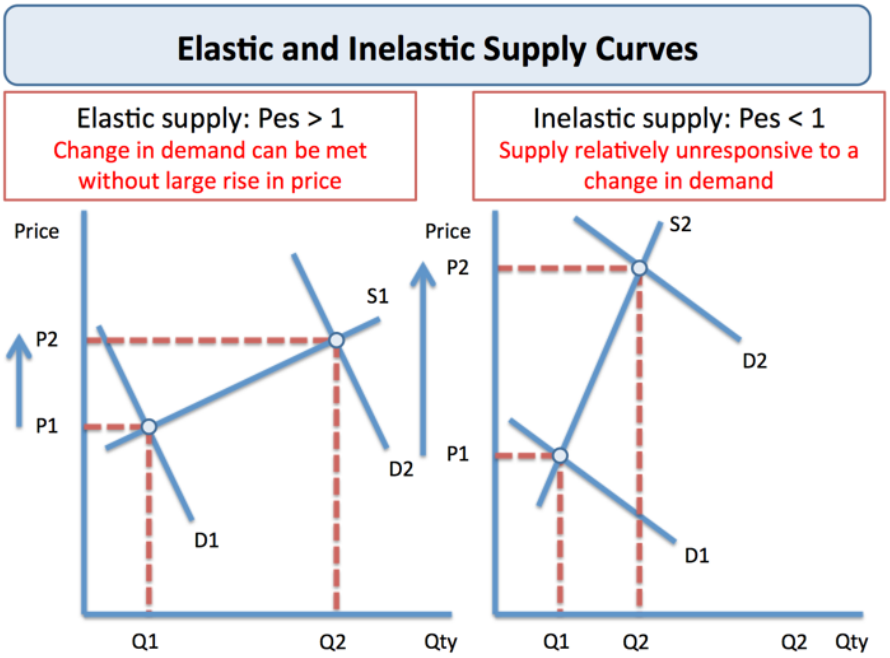
Price elasticity of supply (Pes) measures the relationship a change in quantity supplied and a change in market price.

- If supply is **elastic**, producers can increase output without a rise in cost or a time delay
- If supply is **inelastic**, firms find it hard to change production in a given time period.

The formula for calculating the coefficient of price elasticity of supply is:

Percentage change in quantity supplied divided by the percentage change in price

1. When Pes > 1, then supply is price elastic
2. When Pes < 1, then supply is price inelastic
3. When Pes = 0, supply is perfectly inelastic
4. When Pes = infinity, supply is perfectly elastic following a change in demand



What factors affect the elasticity of supply?

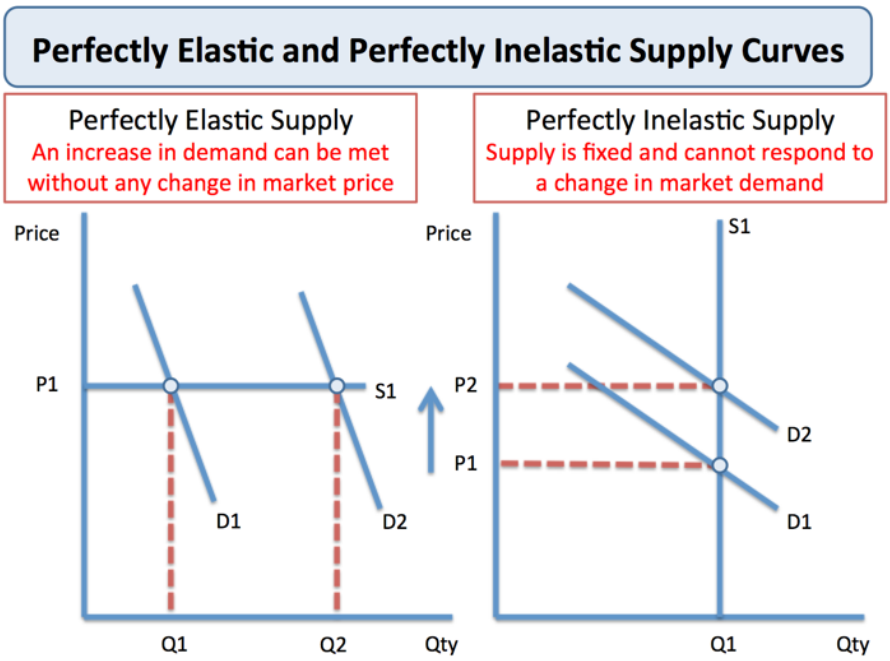
(1) Spare production capacity: If there is plenty of **spare capacity** then a business can increase output without a rise in costs and supply will be elastic in response to a change in demand. The supply of goods and services is most elastic in an economic recession, when there is plenty of spare labour and capital resources.

(2) Stocks of finished products and components: If stocks of raw materials and finished products are at a high level then a firm is able to respond to a change in demand - supply will be elastic. Conversely when stocks are low, dwindling supplies force prices higher because of scarcity

(3) **The ease and cost of factor substitution/mobility:** If both capital and labour are **occupationally mobile** then the elasticity of supply for a product is higher than if capital and labour cannot easily be switched. E.g. a printing press that can switch easily between printing magazines and greetings cards. Or falling prices of cocoa encourage farmers to switch into rubber production

(4) Time period and production speed: Supply is more price elastic the longer the **time period** that a firm is allowed to adjust its production levels. In some agricultural markets the **momentary supply**

is fixed and is determined mainly by planting decisions made months before, and also climatic conditions, which affect the production yield. In contrast the supply of milk is price elastic because of a short time span from cows producing milk and products reaching the market place.



Elasticity of demand and supply and price changes – a quick summary

Elasticity determines how much a shift changes quantity versus price.

- If D increases and S is perfectly inelastic, then price rises and quantity doesn't change.
- If S increases and D is perfectly inelastic, then price falls and quantity doesn't change.
- If D increases and S is perfectly elastic, then price stays the same and quantity rises.
- If S increases and D is perfectly elastic, then price stays the same and quantity rises

Topical applications of price elasticity of supply

Shortages of skilled workers in the labour force

Supplying complex products with rising consumer demand

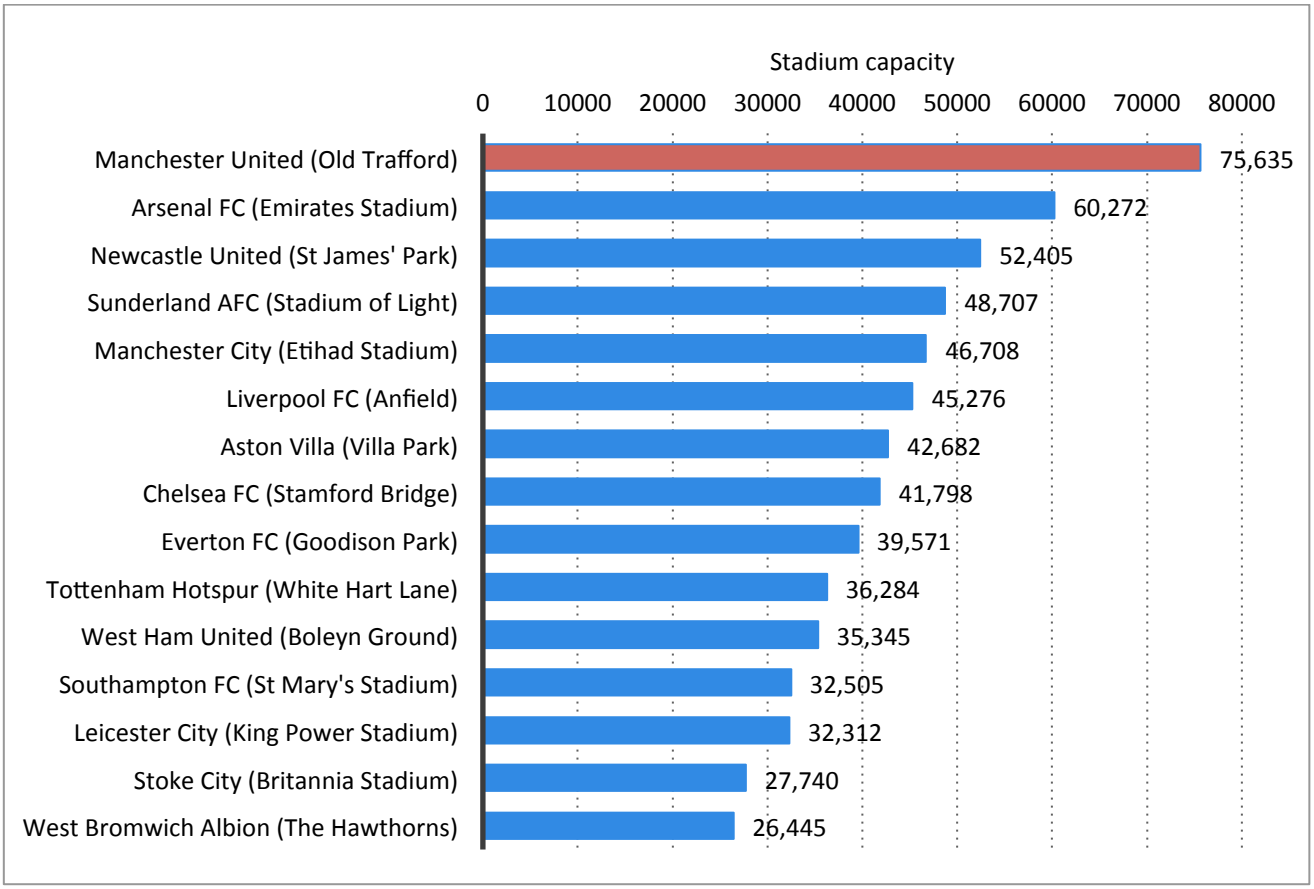
The supply of new housing to buy and to rent (big UK issue!)

Supply response of renewable energy

Elasticity of supply of commodities

Refining capacity in the oil and gas industries

Elasticity of supply in action: The capacity of Premier League stadia for the 2014-15 season



In the short run the capacity of a stadium is fixed, i.e. the price elasticity of supply is zero. Over time, the capacity can change, for example the Etihad Stadium opened the 2015-16 season with an enhanced capacity of over 53,000.

Income Elasticity of Demand

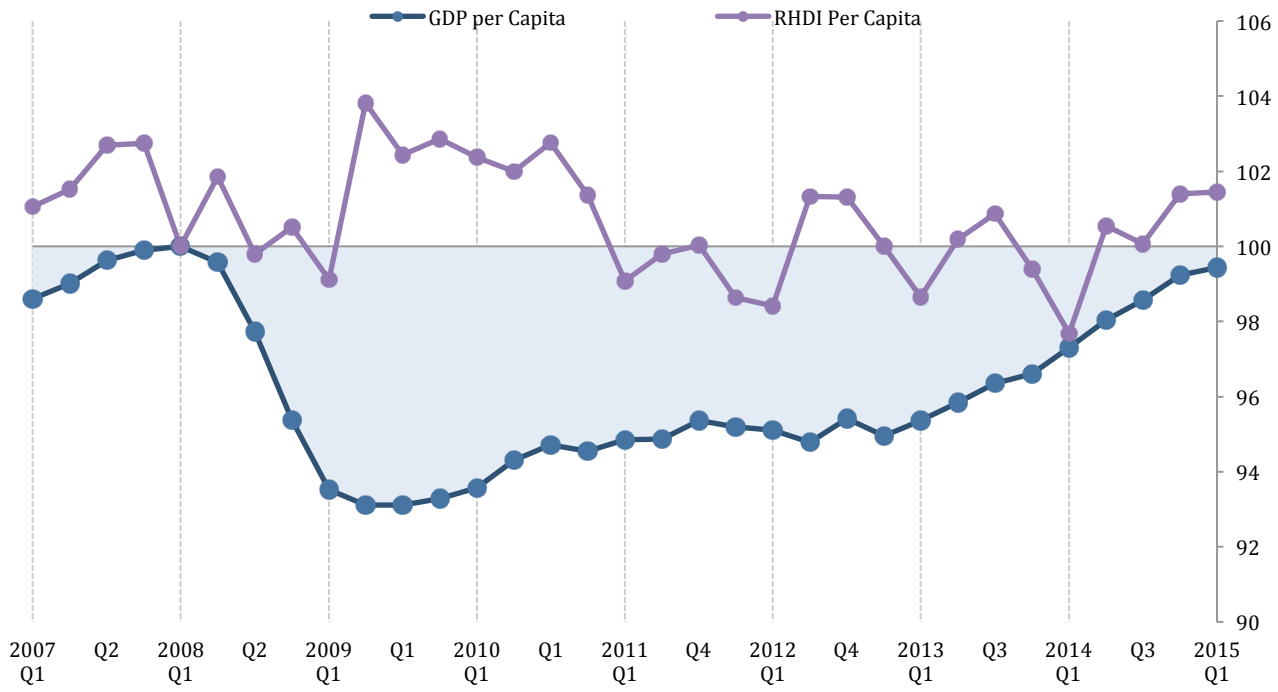
What is income elasticity of demand?
Income elasticity of demand measures the relationship between a change in quantity demanded for good X and a change in real income. The formula for calculating income elasticity is:

% Change in demand divided by the % change in income

Different measures of income
Income can be expressed in a number of ways:

- Gross income: Total income before any deductions such as income tax
- Disposable income: Gross income adjusted for direct taxes and welfare benefits
- Income per capita: Income per head of population
- Real Household Disposable Income: Disposable income adjusted for the effects of inflation

Index numbers of income for the UK economy (2008=100)



(a) Normal Goods

- **Normal goods** have a **positive income elasticity of demand** so as consumers' income rises more is demanded at each price i.e. there is an outward shift of the demand curve
- **Normal necessities** have an income elasticity of demand of **between 0 and +1** for example, if income increases by 10% and the demand for fresh fruit increases by 4% then the income elasticity is +0.4. Demand is rising less than proportionately to income.
- **Luxury goods and services** have an income elasticity of demand **> +1** i.e. demand rises more than proportionate to a change in income – for example a 8% increase in income might lead to a 10% rise in the demand for new kitchens. The income elasticity of demand in this example is +1.25.

(b) Inferior Goods

- **Inferior goods** have a **negative income elasticity of demand** meaning that demand falls as income rises. Typically inferior goods or services exist where **superior goods are available** if the consumer has the money to be able to buy it. Examples include the demand for cigarettes, low-priced own label foods in supermarkets and the demand for council-owned properties.

The income elasticity of demand is usually strongly positive for

- Fine wines and spirits, high quality chocolates and luxury holidays overseas.
- Sports cars
- Consumer durables - audio visual equipment, smart-phones
- Sports and leisure facilities (including gym membership and exclusive sports clubs).

In contrast, income elasticity of demand is lower for

- Staple food products such as bread, vegetables and frozen foods.
- Mass transport (bus and rail).
- Beer and takeaway pizza!
- Income elasticity of demand is negative (inferior) for cigarettes and urban bus services.

Product ranges, income elasticity and longer term trends

- Income elasticity of demand will vary *within* a product range. For example the Yed for **own-label foods** in supermarkets is less for the high-value "finest" food ranges.
- There is a general downward trend in the income elasticity of demand for many basic products, particularly foodstuffs. One reason is that as a society becomes richer, there are **changes in tastes and preferences**. What might have been considered a luxury good several years ago might now be regarded as a necessity? How many of you regard a Sky sports subscription or an iPhone5, an iPad2 or a new Blackberry as a necessity?

How do businesses make use of estimates of income elasticity of demand?
Knowledge of income elasticity of demand helps firms predict the effect of an economic cycle on sales. **Luxury products** with high-income elasticity see greater sales volatility over the business cycle than **necessities** where demand from consumers is less sensitive to changes in the cycle.

Income elasticity and the pattern of consumer demand
As we become better off, we can afford to increase our spending on different goods and services. The income elasticity of demand will also affect the pattern of demand over time.

- For **normal luxury goods** - income elasticity of demand exceeds +1, so as incomes rise, the proportion of a consumer's income spent on that product will go up.
- For **normal necessities** (income elasticity of demand is positive but less than 1) and for inferior goods (where the income elasticity of demand is negative) – then as income rises, the share or proportion of their budget on these products will fall
- For inferior goods as income rise, demand will decline and so too will the share of income spent on inferior products. A good example of a product with a negative income elasticity of demand is tobacco products. Many factors affect demand for cigarettes and related products – not least the level of indirect tax placed on them by the government and also the effects of health campaigns and bans on smoking in public places.

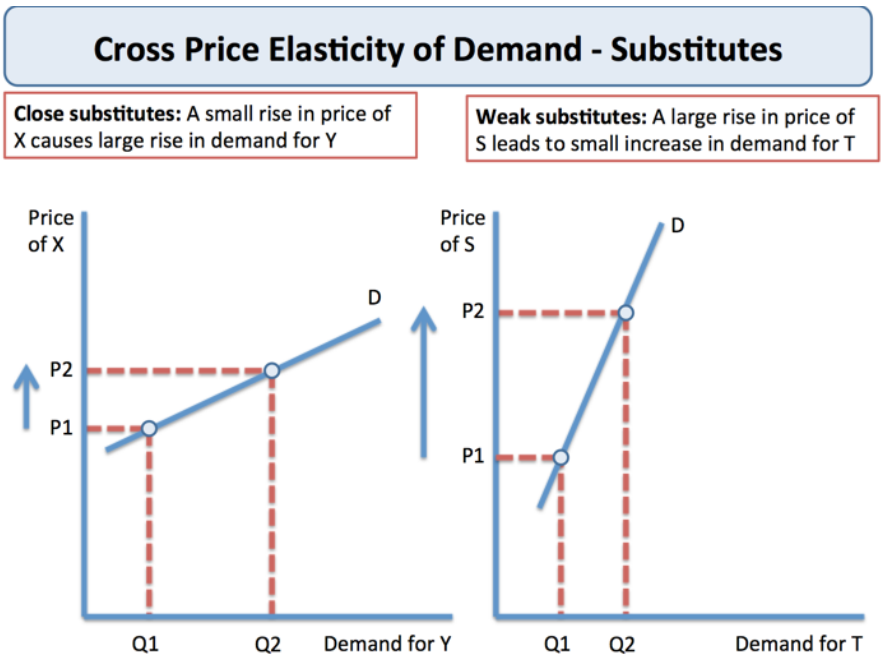
Cross Price Elasticity of Demand

What is cross price elasticity of demand?

Cross price elasticity (CPed) measures the responsiveness of demand for good X following a change in the price of a **related good Y**.

We are looking here at the effect that **changes in relative prices within a market** have on the pattern of demand. With cross elasticity we make a distinction between **substitute** and **complementary products.**

Cross Price Elasticity of Demand – Analysis Diagrams



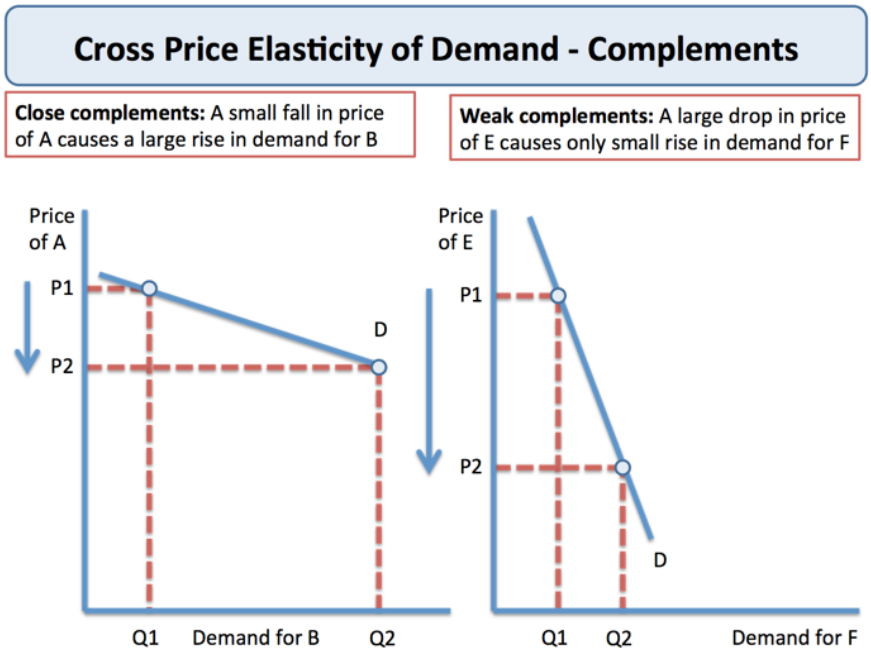
Substitutes:

- With substitute goods such as brands of cereal, an increase in the price of one good will lead to an increase in demand for the rival product. The cross price elasticity for two substitutes will be positive. .

Another example is the cross price elasticity for music. Sales of digital music downloads have been soaring with the growth of broadband and falling prices for downloads. As a result, sales of music CDs have fallen sharply. Although demand for vinyl records has been rising!

Complements:

- Complements are in **joint** demand and the value of CPED for two complements is always negative
- **The stronger the relationship between two products, the higher is the co-efficient of cross-price elasticity of demand**



Unrelated products

- Unrelated products have a zero cross elasticity for example the effect of changes in taxi fares on the market demand for cheese!

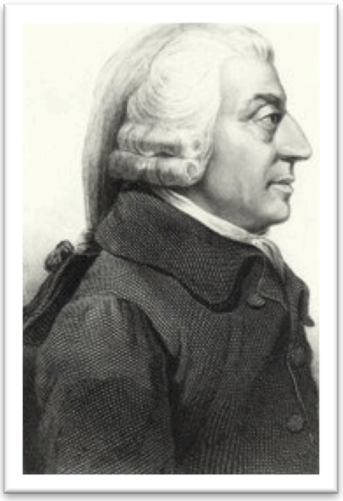
Pricing for substitutes:

- If a competitor cuts the price of a **rival product**, firms use estimates of CPED to predict the effect on demand and total revenue of their own product.

Pricing for complementary goods:

- Popcorn, soft drinks and cinema tickets have a high negative value for cross elasticity– they are strong complements.

Functions of the Price Mechanism



Adam Smith's Invisible Hand

- **Adam Smith**, one of the Founding Fathers of economics described the "invisible hand of the price mechanism" in which the hidden-hand of the market operating in a competitive market through the pursuit of **self-interest** allocated resources in society's best interest.
- This remains a view held by free-market economists who believe in the virtues of an economy with minimal government intervention.

The **price mechanism** describes the means by which millions of decisions taken by consumers and businesses determine the allocation of scarce resources between competing uses. The **price mechanism** plays **three important functions**:

1/ Signalling function

- Prices adjust to demonstrate where resources are required
- Prices rise and fall to reflect scarcities and surpluses
    - If prices are rising because of high demand from consumers, this is a signal to suppliers to expand production to meet the higher demand
    - If there is excess supply in a market, then the price mechanism will help to eliminate a surplus of a good by allowing the market price to fall.

2/ Transmission of preferences

- Through their **choices** consumers send **information to producers**
    - Higher prices are an incentive to raise output because suppliers can make a better profit.
    - When demand is weaker in a recession, supply contracts as producers cut back on output.

One of the features of a market system is that decision-making is **decentralised** i.e. there is no single body responsible for deciding what is to be produced and in what quantities.

3/ Rationing function

- Prices serve to **ration scarce resources** when demand outstrips supply.
- When there is a **shortage**, price is bid up – leaving only those with the **willingness and ability to pay** to purchase the product.
- The popularity of **auctions** as a means of allocating resources is a means of clearing a market.

Mixed and Command Economies and Prices

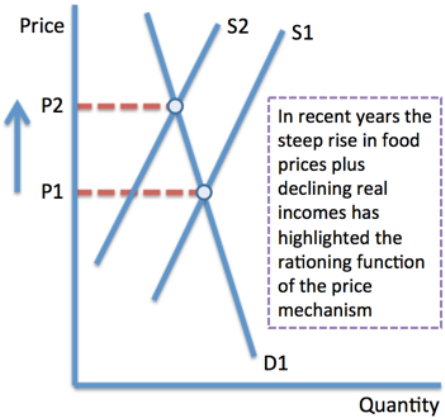
- Most economies are **mixed economies**, comprising not only a market sector, but also a **non-market sector**, where the **government** (or state) uses **planning** to provide public goods and services such as police, roads and **merit goods** such as education, libraries and health.
- In a **command economy,** planning directs scarce resources to where the state thinks there is greatest need

Prices and incentives

- **Incentives** matter! For competitive markets to work efficiently all 'economic agents' (i.e. consumers and producers) must respond to **appropriate price signals** in the market.
- **Market failure** occurs when the signalling and incentive functions of the price mechanism fail to operate optimally leading to a loss of economic and social welfare.

The Rationing Function

The **rationing function** - when there is a shortage of a product, price will rise and deter some consumers from buying the product



Higher food prices

Rising cost of renting

Online auctions

Tickets for major event

tutor2u

The Signalling Function

The **signalling function** - changes in price **provides information** to both producers and consumers about changes in market conditions

Coffee farmers

Shale oil and gas

Share prices send signals

Interest rates on loans

Consider the **price signals** in this example

"Cotton farmers hit hard as prices drop to lowest since 2009" (December 2014)

Plentiful global supplies of cotton thanks to favourable weather have caused cotton prices to fall to a 5 year low. China's farmers benefited from a $5bn scheme which ran from 2011-14 where the government purchased cotton at a minimum price, building up a huge stockpile — China's reserves have risen six-fold since 2010 and it holds 60% of the world's cotton inventories. The slump in prices is being badly felt by growers in the southern African country Zambia whose cotton industry employs a fifth of the population.

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Secondary markets

- Secondary markets occur when buyers and sellers are prepared to use a second market to re-sell items that have already been purchased.

Government intervention in the market mechanism

- The incentives that consumers and producers have are changed by **government intervention**
- For example a change in relative prices brought about by **government subsidies and taxation**.
- The government might also intervene through **maximum and minimum prices**
- Agents may not always respond to incentives in the manner in which textbook economics suggests.
- The **"law of unintended consequences"** encapsulates the idea that government intervention can often be misguided of have unintended consequences

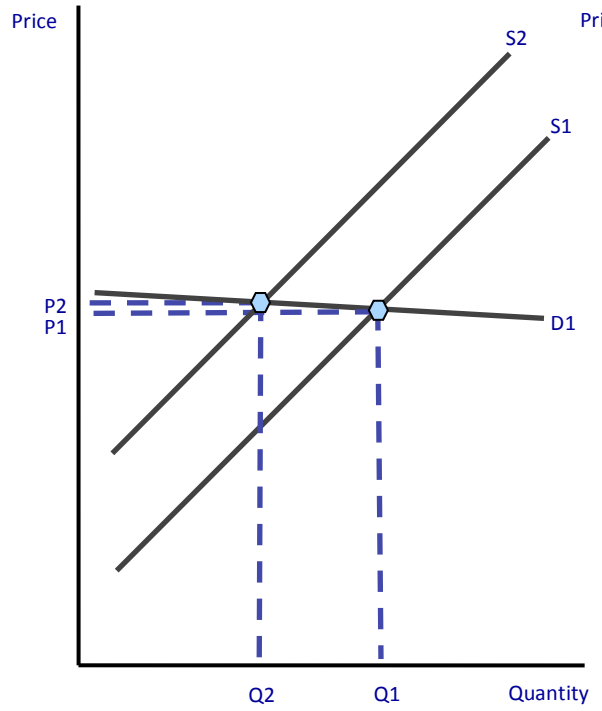
Price Volatility in Markets

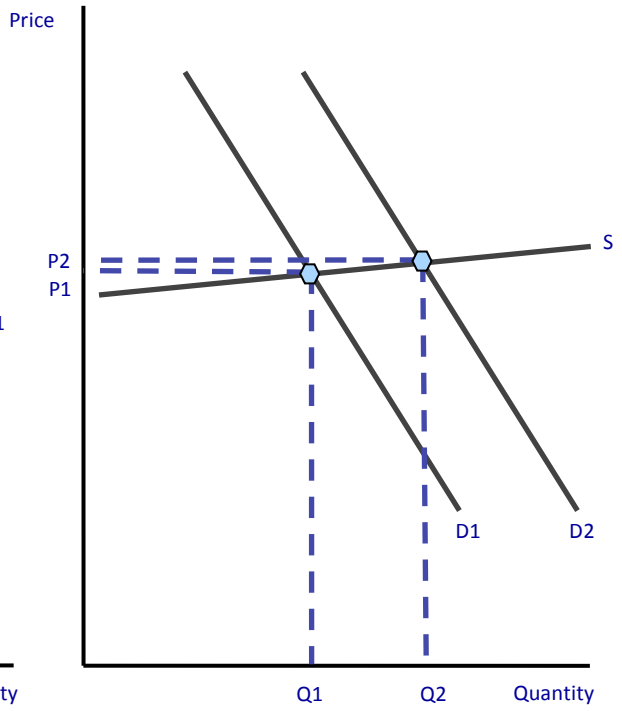
Price stability

- Not all markets experience volatile prices. They tend to be markets with products where the conditions of supply and demand are stable from year to year and where the price elasticity of demand and the elasticity of supply are both high. We can see this in the diagram below.

Elastic demand
When demand is highly elastic, shifts in the supply curve have little effect on the market equilibrium price, although market quantities will change. In the example below, there is a fall in market supply with conditions of demand remaining unchanged.

Elastic supply
When supply is highly elastic, shifts in demand again have little impact on the market equilibrium price. In the example below we see the effects of an outward shift in the market demand curve.





Products with **unstable conditions of supply and demand** will experience price fluctuations

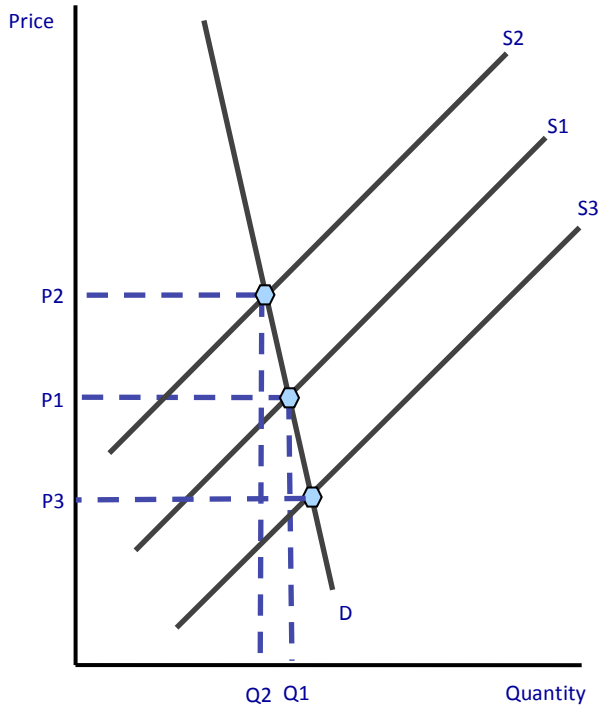
- For example, for many products there are seasonal variations in demand which cause prices to rise sharply at peak times and then fall back during the off-peak periods
- Seasonal demand is strong in the tourism and leisure industries. Prices for hotel rooms and the prices of package holidays are higher during the school holidays because hoteliers and travel businesses know that the demand is price inelastic and families will have to pay higher prices.

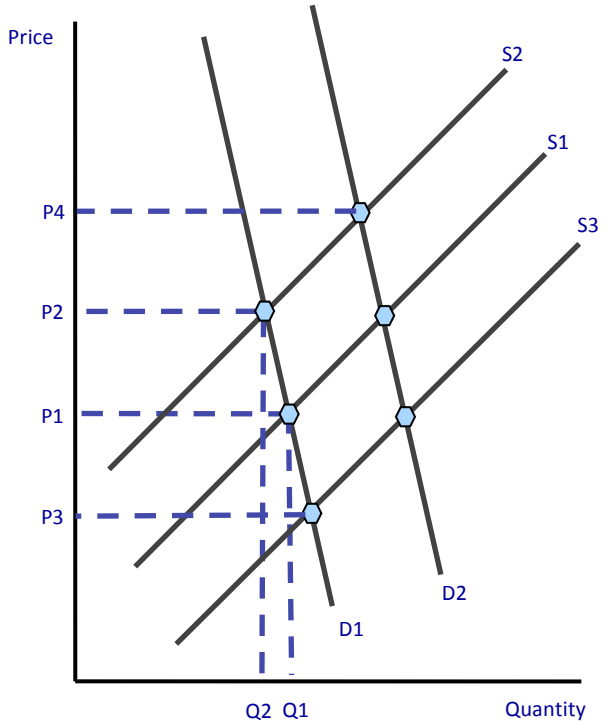
Inelastic demand and shifts in supply

When the price elasticity of demand is low, volatile shifts in market supply causes large changes in the market equilibrium price, although the equilibrium quantity traded may not change that much.

Inelastic supply and demand

We then consider shifts in demand when the price elasticity of demand is low. If Ped and Pes are both low then the scene is set for big changes in the market equilibrium price. E.g. a fall in supply from S1 to S2 and an increase in demand from D1 to d2 causes market price to jump from P1 to P4





What are the main causes of price volatility in markets?

Low Ped – particularly when the product is a necessity - demand insensitive to the price

Low price elasticity of supply especially in the short run

Volatile Market Supply – markets subject to supply shocks affecting production

Speculators – buying and selling to amplify price changes e.g. buying when prices are expected to rise

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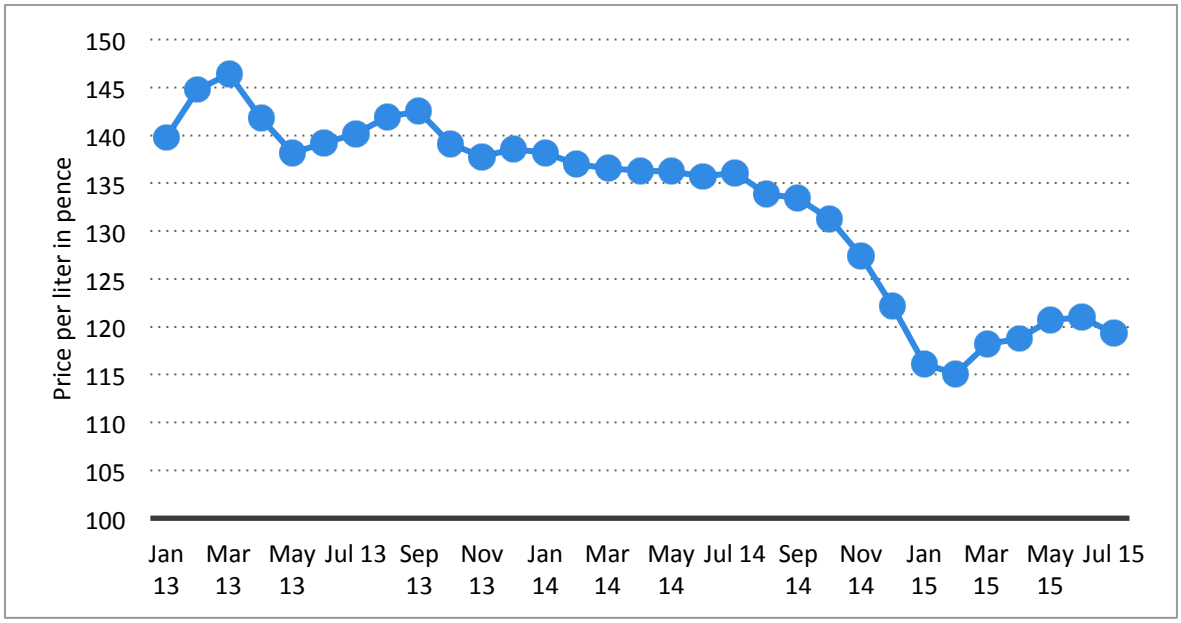
Examples of volatile prices

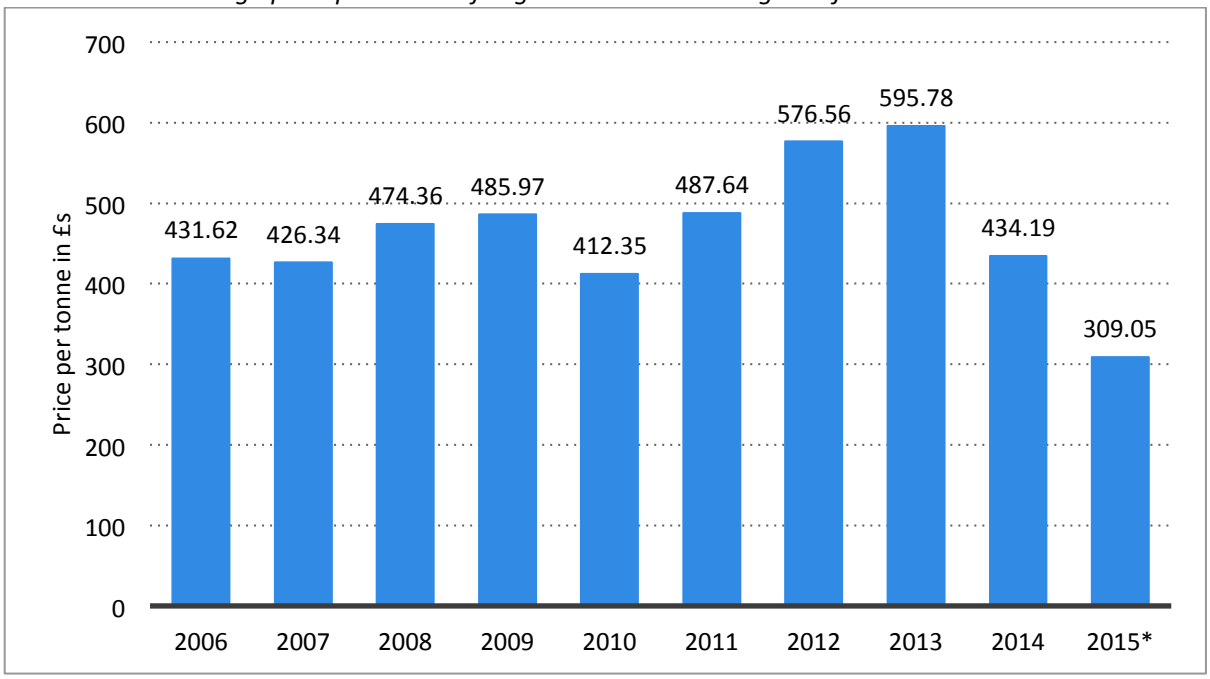
Diesel prices



The world price of sugar

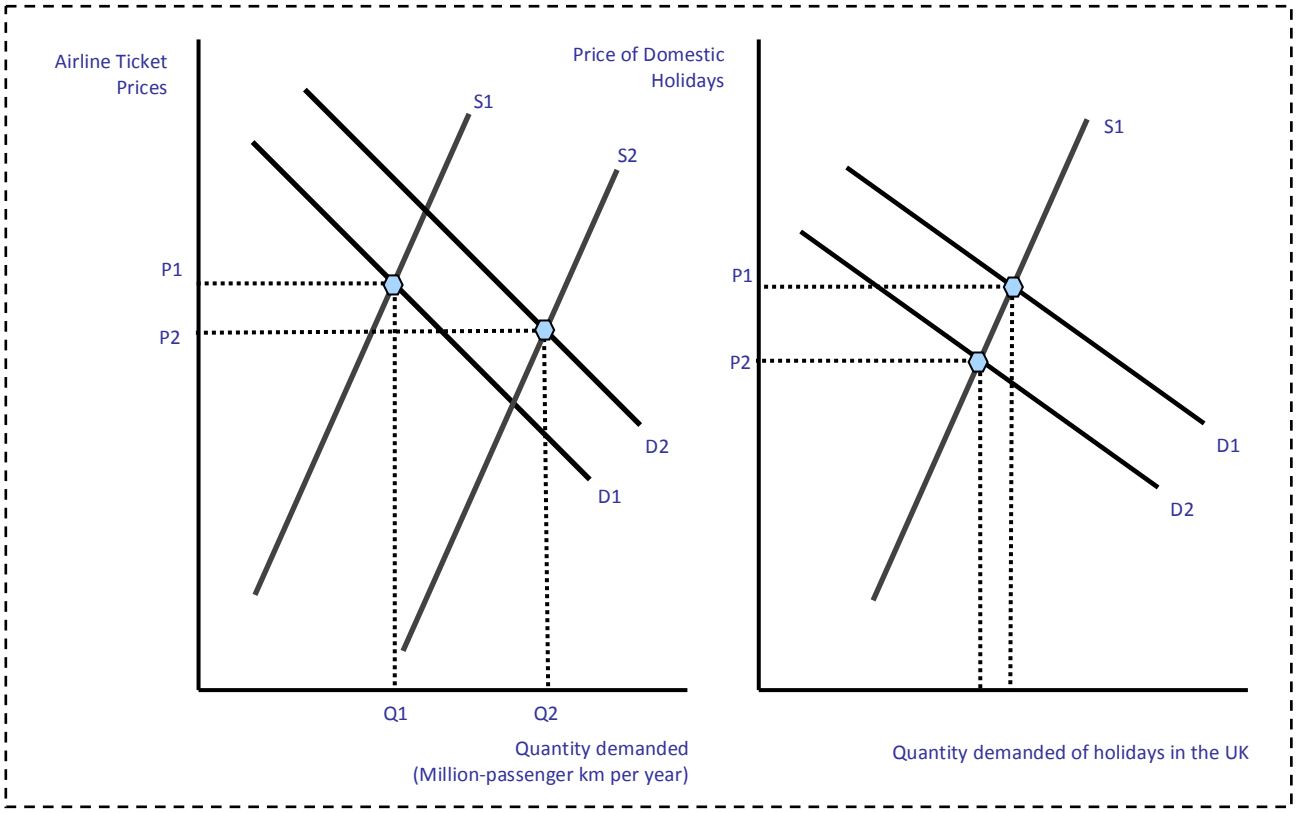
- The world sugar price has been falling in recent years
- The main factor has been much stronger supply helped by favourable weather conditions and by the lagged effects of the high prices in 2012 and 2013
- Brazil, India, China and Thailand are the main sugar-producing nations
- Demand growth has slowed down in part due to health concerns in many advanced countries

Average price per tonne of sugar in the United Kingdom from 2006 to 2015



Inter-relationships between Markets

In the real world, all markets are **inter-connected** in some shape or form. Supply and demand analysis can help to explain and **inter-relationships between different markets and industries**.



Composite Demand

- Composite demand exists where **goods or services have more than one use** so that an increase in the demand for one product leads to a fall in supply of the other
- The most commonly quoted example is **milk** used for cheese, yoghurts, cream, butter and other products. Another good example is **land** – land can be developed in many different ways

Some examples of composite demand

Butter

Yoghurt

Milk Chocolate

Cheese

Joint Supply

- **Joint supply** is where an increase or decrease in the supply of one good leads to an increase or decrease in supply of another. For example an expansion in the volume of beef production will lead to a rising market supply of beef hides. A contraction in lamb supply will reduce the supply of wool

Some examples of joint supply

Beef and hide

Lamb and wool

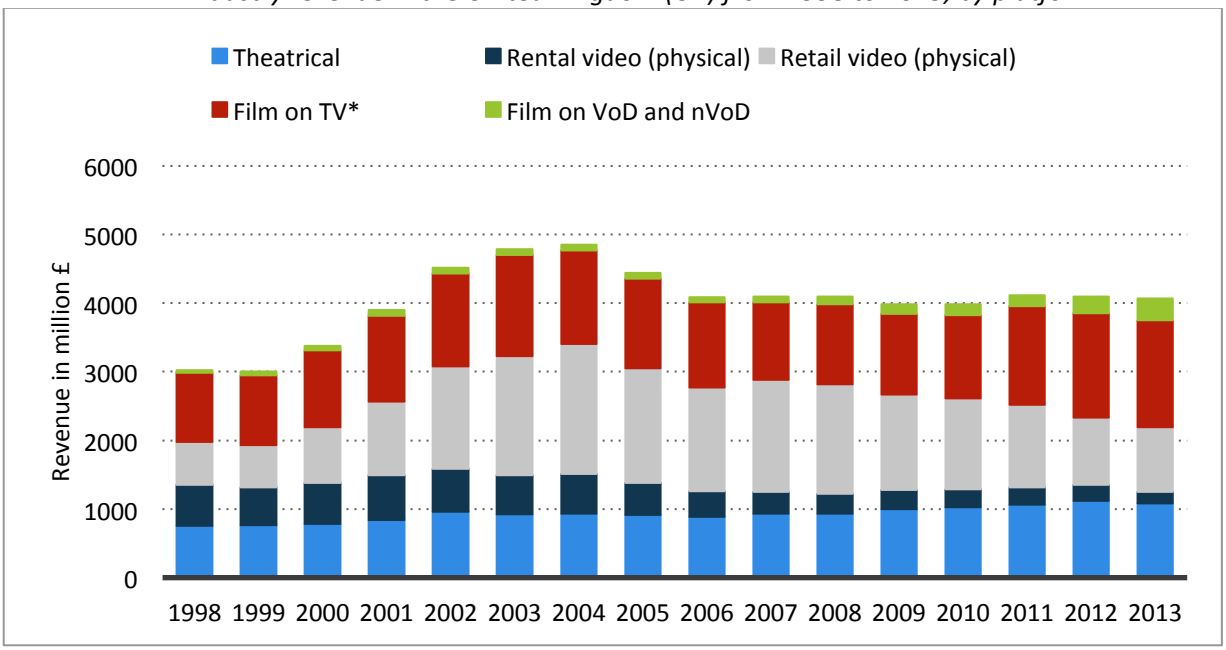
Wheat and straw

Cotton and cotton seed

Changing market conditions in the film rental market

Developments in related markets have helped to bring about a steep decline in the number of films sold physically either for renting or to buy outright.

Film industry revenue in the United Kingdom (UK) from 1998 to 2013, by platform



Some of the factors causing the decline in physical film rentals e.g. from rental stores are shown below

Falling cost of fast broadband

- Increase speed of downloads
- Shift in consumer preferences

Recovery in live cinema visits

- Investment in digital projection
- Greater use of dynamic pricing

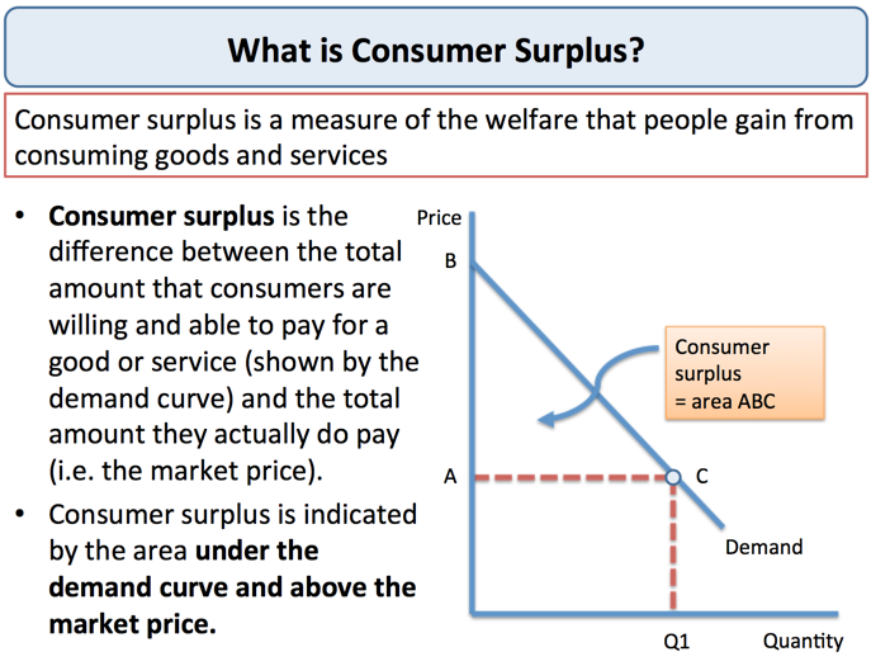
Film rentals seen as inferior good

- Preference to download or buy
- Real incomes rising, demand for rentals falls (negative income elasticity)

Consumer and Producer Surplus

What is meant by consumer surplus?
When there is a difference between the price that you pay in the market and the value that you place on the product, then the concept of consumer surplus becomes a useful one to look at.

- **Consumer surplus** is a measure of the **welfare** that people gain from consuming goods and services
- Consumer surplus is the difference between the total amount that consumers are **willing and able to pay** for a good or service (indicated by the demand curve) and the total amount that they actually do pay (i.e. the market price).
- The area underneath the demand curve and above the price shows consumer surplus.

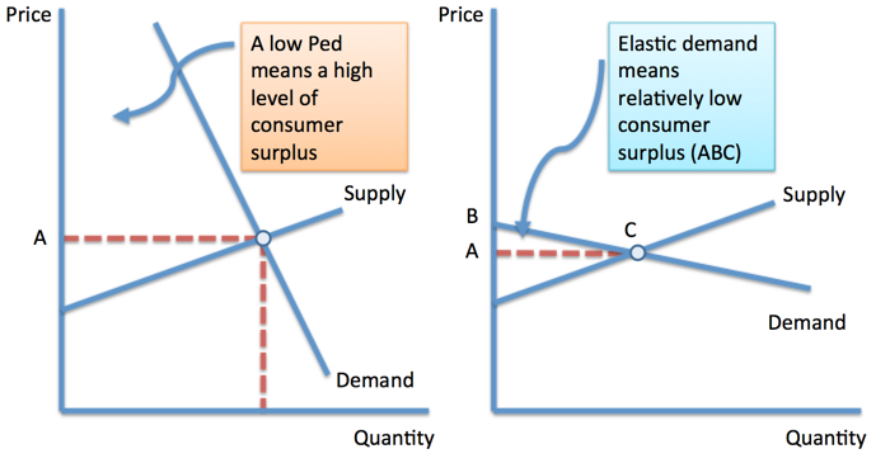


Consumer surplus and price elasticity of demand

1. When the demand for a good or service is perfectly elastic, consumer surplus is zero because the price that people pay matches what they are willing to pay.
2. In contrast, when demand is perfectly inelastic, consumer surplus is infinite. Demand does not respond to a price change. Whatever the price, the quantity demanded remains the same. Are there any examples of products that have such zero price elasticity of demand?
3. The majority of demand curves are downward sloping. When demand is inelastic, there is a greater potential consumer surplus because there are some buyers willing to pay a high price to continue consuming the product.

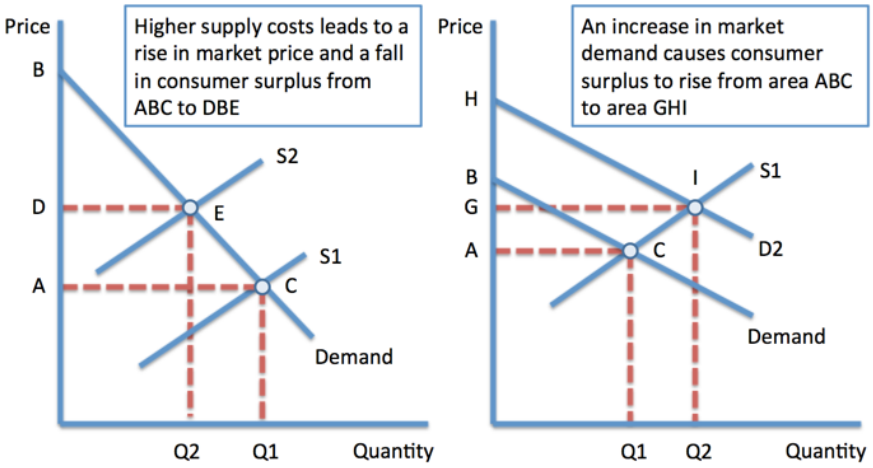
Consumer Surplus and Price Elasticity of Demand

When demand is inelastic, there is a greater consumer surplus because there are some buyers willing to pay a very high price to continue consuming the product



Consumer Surplus and Changes in Market Prices

The level of consumer surplus changes as the market price for a good or service changes – here are two examples:



Price discrimination and consumer surplus

- Producers often take advantage of consumer surplus when setting prices
- If a business can identify groups of consumers within their market who are willing and able to pay different prices for the same products, then sellers use **price discrimination** – this is a way of turning consumer surplus into producer surplus, put simply to make higher revenues and profits.
- Airlines and train companies are expert at this, extracting from consumers the price they are willing and able to pay for flying to different destinations are various times of the day, and exploiting **variations in elasticity of demand** for different types of passenger service.
- If a businessman is desperate to fly from Newcastle to Paris in 24 hours time, his or her demand is said to be price inelastic and the corresponding price for the ticket will be much higher.

Price discrimination and market power

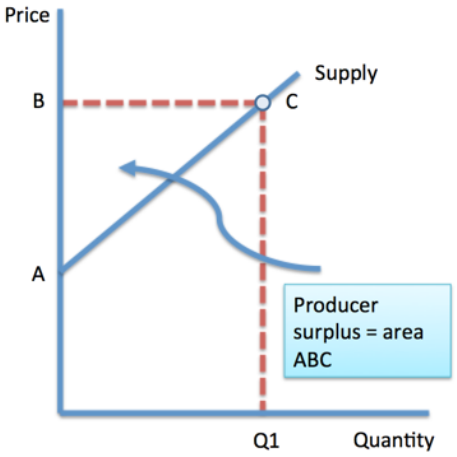
One of the main arguments against firms with **monopoly power** is that they can exploit their monopoly position by raising prices in markets where demand is inelastic, extracting consumer surplus from buyers and increasing profit margins at the same time.

Producer Surplus

What is Producer Surplus?

Producer surplus is the **difference between two price levels**

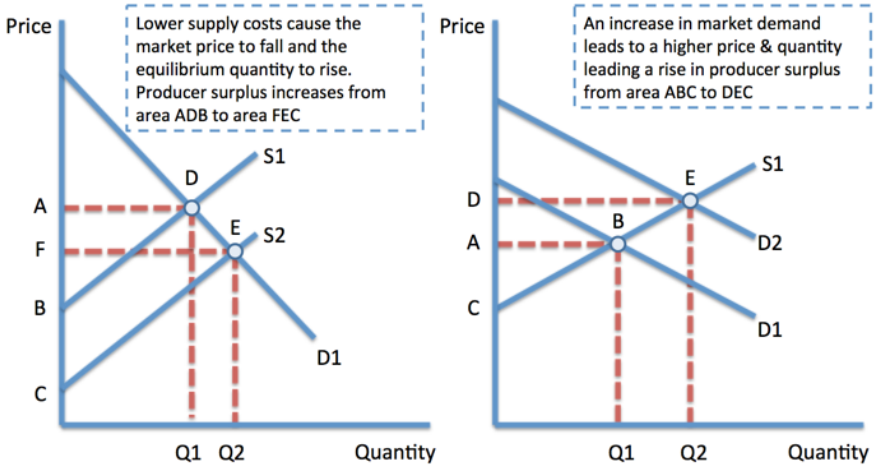
- Producer surplus is the difference between the price producers are willing and able to supply a good or service for and the price they actually receive.
- Producer surplus is shown by area above the supply curve and below the current market price.
- Higher prices provide an incentive to supply more to the market. This is due to the profit motive.



Producer surplus is a measure of **producer welfare**. It is measured as the difference between what producers are willing and able to supply a good for and the price they actually receive

Producer Surplus and Changes in Market Prices

The level of producer surplus changes as the market price for a good or service changes – here are two examples



Markets in Action: UK Housing Market

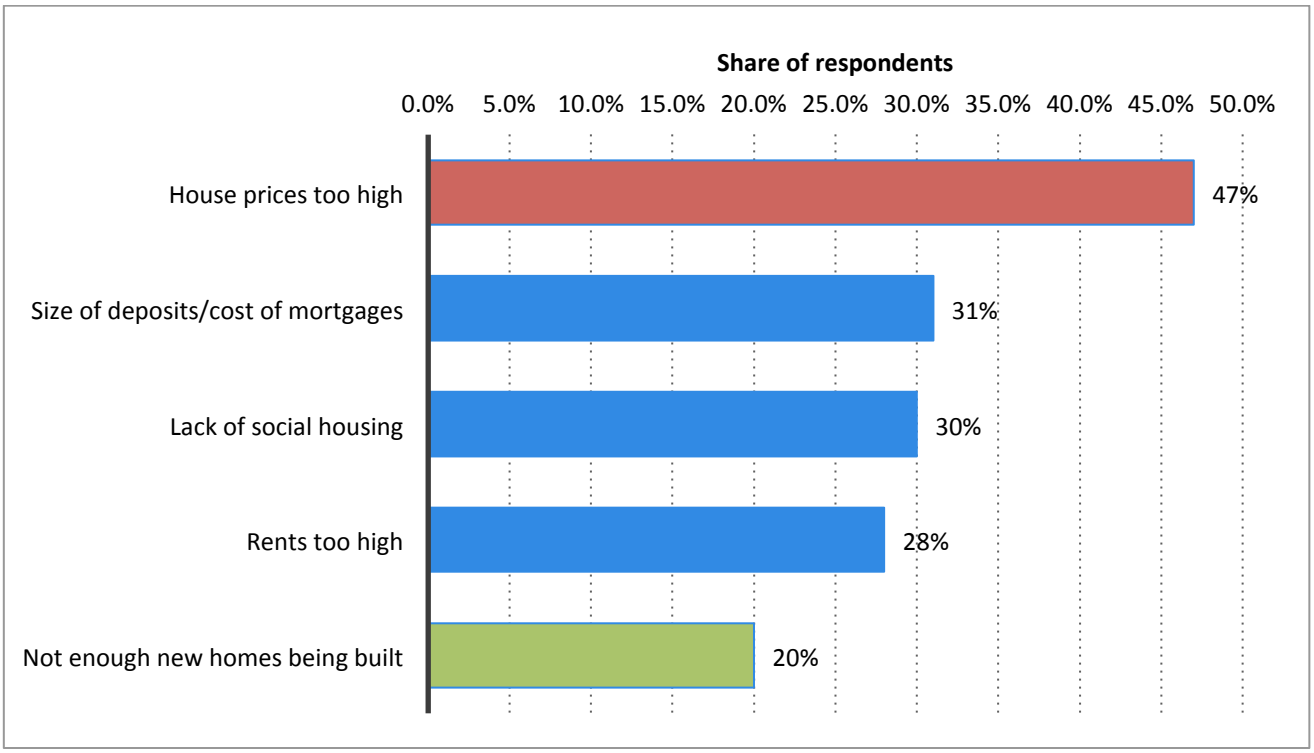
This chapter applies supply and demand concepts to the housing market. The price that is established with each housing transaction in the market depends on

- The price that the **seller** is willing to agree for their property.
- The actual price that the **buyer** is willing and able to pay.

A Sellers Market
When demand for properties in an area or region is high and when there is a shortage of properties then the balance of power shifts towards the seller. They can wait for offers on their property to reach (or exceed) their minimum selling price. Indeed early potential buyers may come straight in with an offer in excess of the asking price in order to avoid the possibility of losing the property that they want.

A Buyers Market
When there is a glut of properties available (excess supply) the balance of power switches to buyers. They have a wider choice of housing and they should be able to negotiate a price lower than the published price. Sellers may require a quick sale and this puts extra bargaining power into the hands of buyers.

Key problems facing housing market in the UK as of 2014



Housing Demand
The demand for housing is the quantity of properties that homebuyers are willing and able to buy at a given price in a given time period. Some of the conditions of demand in the market are as follows:

1. **Real Incomes**: As living standards rise, so the demand for housing expands, including demand for more expensive properties as people move "up market."
2. **Mortgage Interest Rates**: Since most homes are purchased with a mortgage, changes in interest rates affect demand for housing. A rise in mortgage rates increases the cost of financing the loan on the purchase of a property.

3. **Consumer confidence**: Consumer confidence is vital for if expectations for the future performance of the economy deteriorate and people become less optimistic about their own financial circumstances, they may be tempted to delay entry into the market for property.
4. **Economic Growth**: When the economy is enjoying sustained growth and rising prosperity, improved confidence raises the number of homebuyers. The reverse is true in a recession.
5. **Unemployment**: In areas or regions when unemployment is above the national average, incomes will be lower and this limits the number of people who are able to afford properties.
6. **Price of Substitutes**: For people wanting to buy their own home, the main alternative is to rent – so a higher cost of renting could lead to an increased demand for owner-occupied homes.

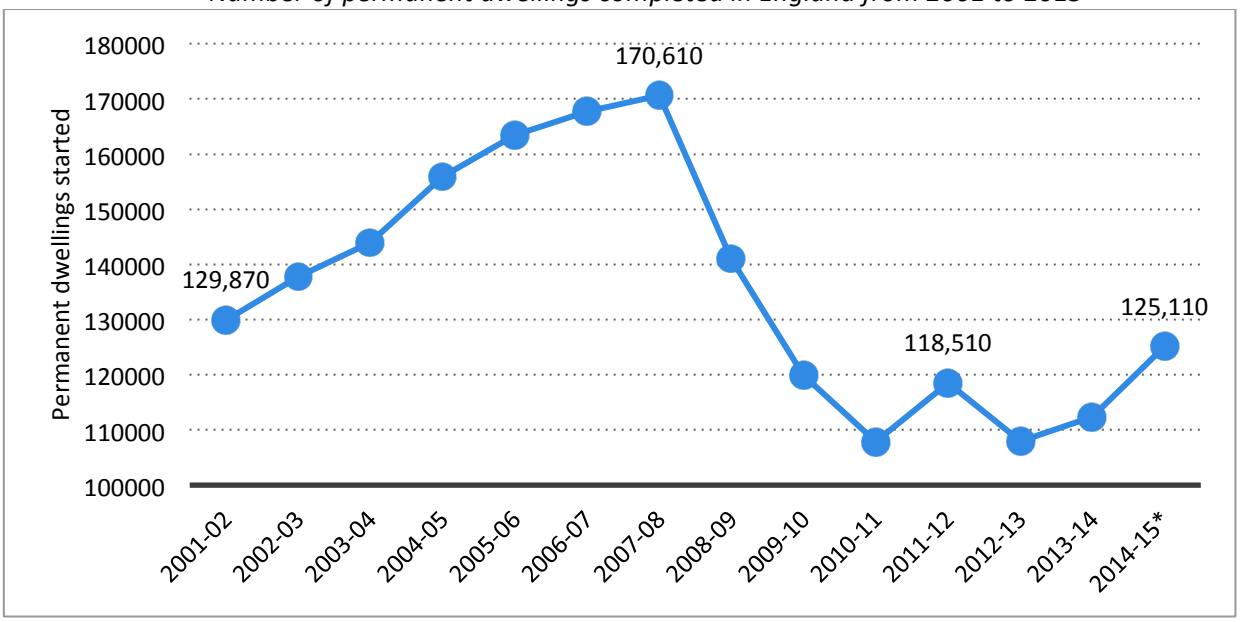
Effective demand for housing – property affordability
Demand in a market is only effective when potential buyers have the ability to pay. Nowhere is this truer than in the property market where for millions of people, finding the money to buy a home is very difficult.

Price elasticity of demand for housing
Price elasticity of demand (Ped) measures the responsiveness of demand for a product to a change in its own price. When housing is regarded as a necessity and with few close substitutes available, we expect demand to be inelastic. This may well force up the eventual market price when a transaction is agreed.

The **price elasticity of demand** for a property depends on the availability of close substitutes – for example the supply of rented housing.

Housing Supply
The housing supply is the **flow of properties** available for buyers at a given price in a given time period. The supply will be a mix of newly built housing and older properties.

Number of permanent dwellings completed in England from 2001 to 2015



For new housing, the conditions of supply include the following:

1. **Costs of production** for construction companies
    a. Employment costs (including wages, overtime payments and employment taxes).
    b. Costs of purchasing land for housing development.
    c. Costs of purchasing building components and raw materials.

d. Costs associated with achieving planning consent from local authorities.

2. The **number of construction companies** in the market and their business objectives.
3. Whether property builders can achieve **economies of scale** in house building and reduce their constructions costs by implementing innovation in building projects.
4. **Government taxation and subsidy** of new housing developments

Price Elasticity of Housing Supply

The supply of new housing tends to be **inelastic in the short run** which means that house prices are determined almost exclusively by demand factors such as income, unemployment and interest rates. Several reasons have been put forward for the low price elasticity of supply of housing:

1. Construction companies cannot suddenly plan and then build thousands of new homes in areas when there is an increase in demand. One reason is the existence of **planning regulations** and other constraints on new housing developments.
2. Supply is also restricted by the **limited availability of skilled labour** such as bricklayers, plumbers and electricians and other factor inputs needed in the housing construction process.

Some of the key factors behind rising property prices in the UK

Low mortgage interest rates

Speculative buying of property

High cost of renting a property

High land prices

Low level of new house building

Incentives such as Help to Buy Scheme

Explaining property price differences using supply and demand factors
What supply and demand factors help to explain persistent differentials in property prices in different parts of the UK? Why are prices for example so much higher in London? Some the factors might include:

(a) Population growth – driving total market demand for housing higher every year

(b) The absence of a ready supply of affordable rented housing and social housing

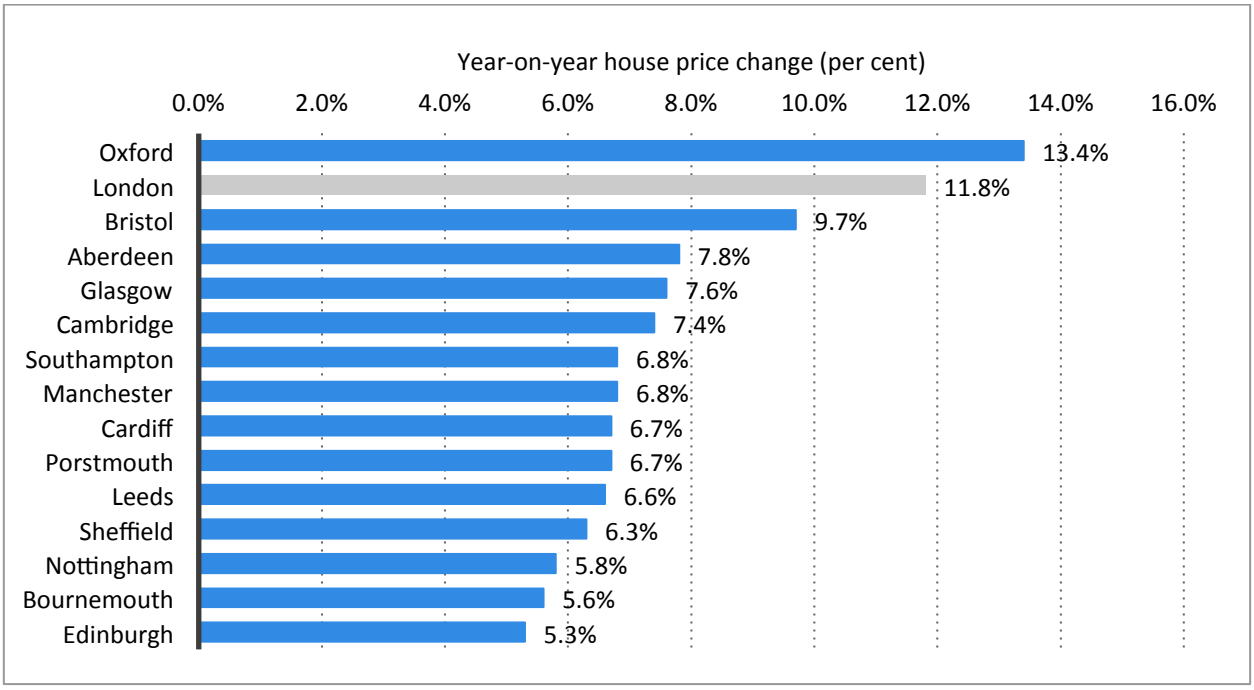
(c) Higher per capita incomes among people living in London – even though the unemployment rate is higher than the national average (there are many economically-deprived boroughs in the capital)

(d) High land prices which increases the cost of acquiring land for new property development

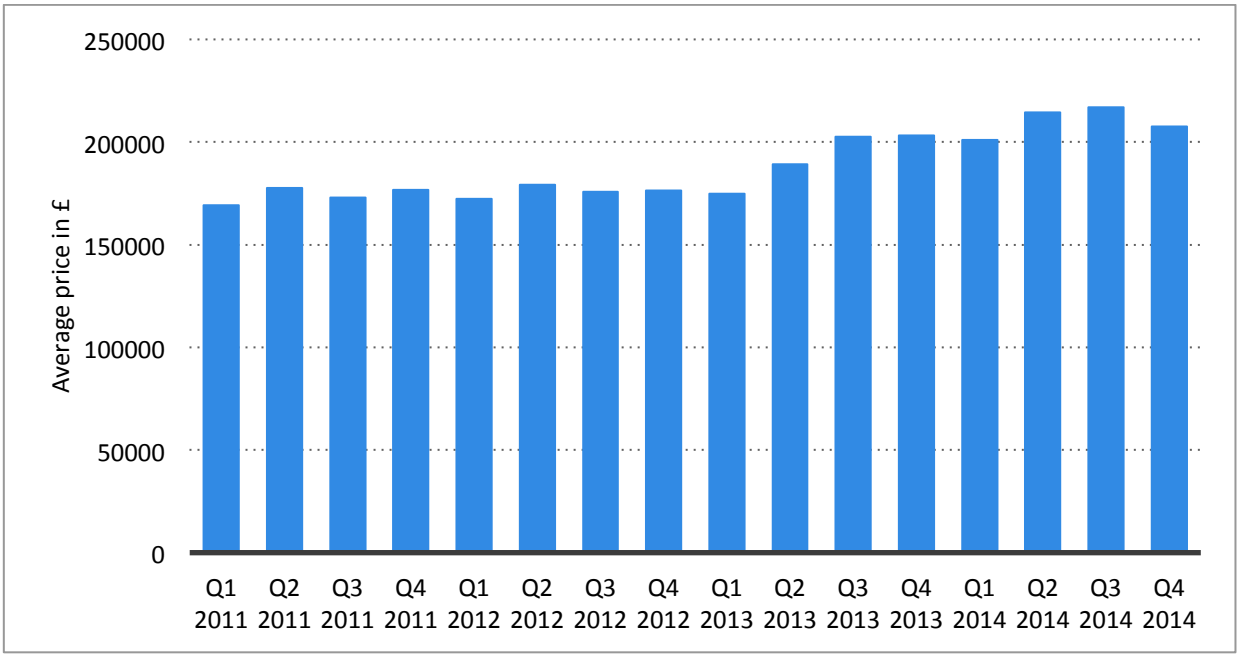
(e) Higher wage costs when employing skilled workers in the construction industry

(f) The impact of speculative demand for new properties in London especially from overseas buyers

The chart below shows the scale of house price inflation in a selection of UK cities in 2014. What economic factors help explain why cities such as Oxford, Aberdeen and Cambridge regularly appear at the top of this list?



Average House Prices in the United Kingdom in recent years
Source: Halifax House Price Index



Market failures in the housing market

Market failure happens when the market mechanism fails to bring about an economic efficient or socially acceptable allocation of resources. There are many instances of market failure in the housing industry.

Information Gaps (e.g. between buyer and seller)

Empty Housing & Homelessness

Inequalities of Wealth (The Widening Property Divide)

Externalities from building homes

Labour Immobility due to high house prices and rents

Chronic Under-Supply of Homes creating excess demand

Government intervention in the housing market

Market failure provides a justification for government intervention in housing either on grounds of making the market work more efficiently or to achieve more fairness in resource allocation. Interventions may lead to government failure.

Rent controls on properties to let

Subsidies for builders to encourage new building

Incentives for home buyers to get on the housing ladder

Funding of apprenticeships to expand the labour supply

Housing regulations to improve building standards

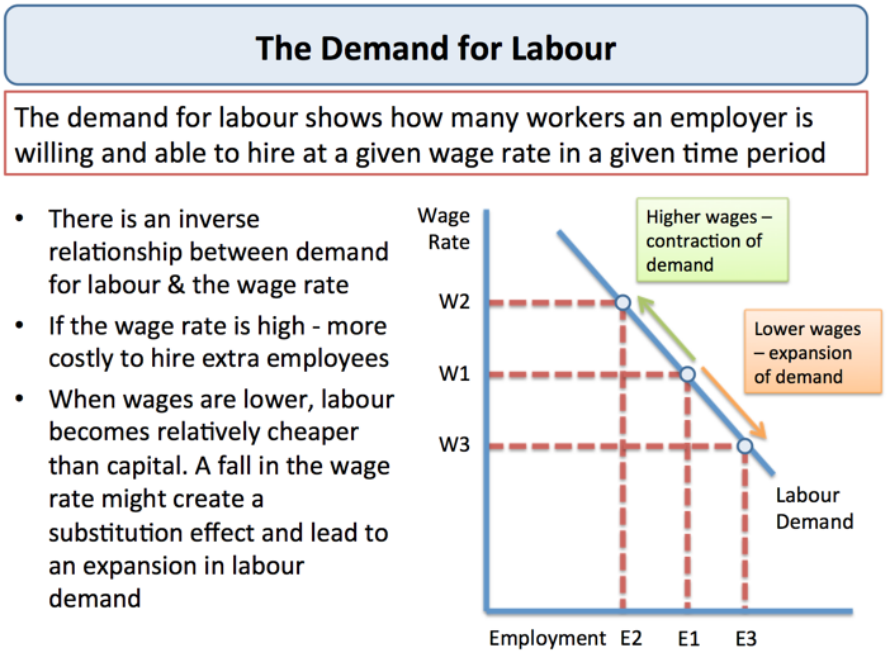
Social house building to improve the stock of affordable homes

Markets in Action: Labour Market

What is a labour market?
The labour market is a factor market – it provides a means by which employers find the labour they need, whilst millions of individuals offer their labour services in different jobs.

Demand for Labour

- Many factors influence how many people a business is willing and able to take on. But we start with the most obvious – the **wage rate or salary**
- There is an inverse relationship between the demand for labour and the wage rate that a business needs to pay as they take on more workers
- If the wage rate is high, it is more costly to hire extra employees
- When wages are lower, labour becomes relatively cheaper than for example using capital inputs. A fall in the wage rate might create a substitution effect and lead to an expansion in labour demand.



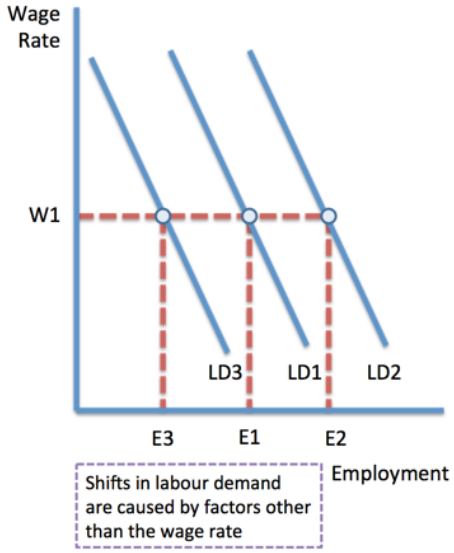
Shifts in the Demand for Labour
The number of people employed at each wage level can change and in the next diagram we see an outward shift of the labour demand curve. The curve shifts when there is a change in the conditions of demand in the jobs market. For example:

- A rise in the level of consumer demand for a product which means that a business needs to take on more workers (see below on the concept of derived demand)
- An increase in the productivity of labour which makes using labour more cost efficient than using capital equipment
- A government employment subsidy which allows a business to employ more workers

The labour demand curve would shift inwards during a recession when sales of goods and services are in decline, business profits are falling and many employers cannot afford to keep on their payrolls as many workers. The result is often labour redundancies and an overall decline in the demand for labour at each wage rate.

Shifts in Labour Demand

- The labour demand curve shifts when there is a change in the conditions of demand in the jobs market.
- A rise in consumer demand which means that a business needs to take on more workers
- An increase in the productivity of labour which makes labour more cost efficient than capital
- A government employment subsidy which allows a business to employ more workers
- The labour demand curve would shift inwards during a recession as businesses shed labour



Labour as a Derived Demand

- The demand for all factor inputs, including labour, is a **derived demand** i.e. the demand depends on the demand for the products they produce
- When the economy is expanding, we see a rise in **demand for labour** providing that the rise in output is greater than the increase in labour productivity
- During a recession or a slowdown, the aggregate demand for labour will decline as businesses look to cut their operations costs and scale back on production.
- In a recession, business failures, plant closures and short-term redundancies lead to a reduction in the derived demand for labour.
- In fast-growing markets, there is often a strong rise in demand for labour – for example an increase in demand for new apps for smart phones and tablets causes an increase in labour demand and then higher wage rates for app programmers

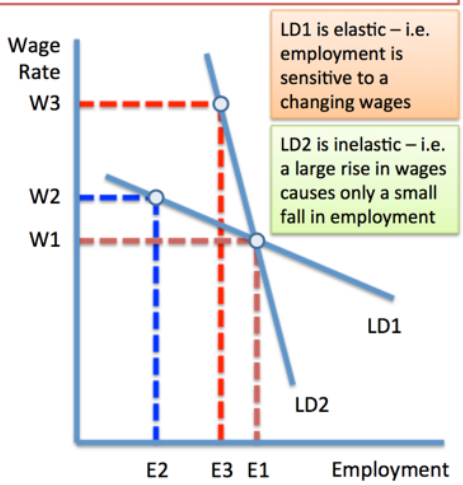
Elasticity of Demand for Labour

Elasticity of labour demand measures the responsiveness of demand for labour when there is a change in the ruling market wage rate.

Elasticity of Labour Demand

Elasticity of labour demand measures the responsiveness of demand when there is a change in the wage rate. It depends on .....

1. **Labour costs as a % of total costs**: When labour expenses are a high % of total costs, then labour demand is more elastic.
2. **Ease and cost of factor substitution**: Labour demand is more elastic when a firm can substitute easily between labour and capital inputs.
3. **Price elasticity of demand for the final output**: This determines whether a firm can pass on higher labour costs to consumers in the form of increased prices.



Labour Supply

The **labour supply** is the number of hours people are willing and able to supply at a given wage rate

- It is the number of workers willing and able to work in a particular job or industry for a given wage
- The labour supply curve for any industry or occupation will be upward sloping. This is because, as wages rise, other workers enter this industry attracted by the incentive of higher rewards. They may have moved from other industries or they may not have previously held a job, such as housewives or the unemployed
- The extent to which a rise in the prevailing wage or salary in an occupation leads to an expansion in the supply of labour depends on the elasticity of labour supply.

Key factors affecting labour supply

1. **The real wage rate on offer in the industry itself** – higher wages raise the prospect of increased factor rewards and should boost the number of people willing and able to work
2. **Overtime:** Opportunities to boost earnings come through overtime payments, productivity-related pay schemes, and share option schemes
3. **Substitute occupations:** The real wage rate on offer in competing jobs affects the wage and earnings differential that exists between two or more occupations. For example an increase in the earnings available to trained plumbers and electricians may cause some people to switch their jobs
4. **Barriers to entry:** Artificial limits to an industry's labour supply (e.g. through the introduction of **minimum entry requirements**) can restrict labour supply and force pay levels higher – this is the case in professions such as legal services and medicine where there are strict "entry criteria"
5. **Improvements in the occupational mobility of labour:** For example if more people are trained with the necessary skills required in a particular occupation.
6. **Non-monetary characteristics of specific jobs** – include factors such as the risk with different jobs, the requirement to work anti-social hours or the **non-pecuniary benefits** that certain jobs provide including **job security**, **working conditions,** opportunities for promotion and the chance to live and work overseas, employer-provided in-work training, employer-provided or subsidised health and leisure facilities and other in-work benefits including occupational pension schemes.

7. **Net migration of labour** – the UK is a member of the European Union single market that enshrines free movement of labour as one of its guiding principles. A rising flow of people seeking work in the UK is making labour migration an important factor in determining the supply of labour available to many industries – be it to relieve shortages of skilled labour in the NHS or education, or to meet the seasonal demand for workers in agriculture and the construction industry.

Labour Supply to an Industry / Occupation

The labour supply is the number of hours people are willing and able to supply at a given wage rate

- The labour supply curve for any industry or occupation will be upward sloping.
- As wages rise, other workers enter this industry attracted by the incentive of higher rewards.
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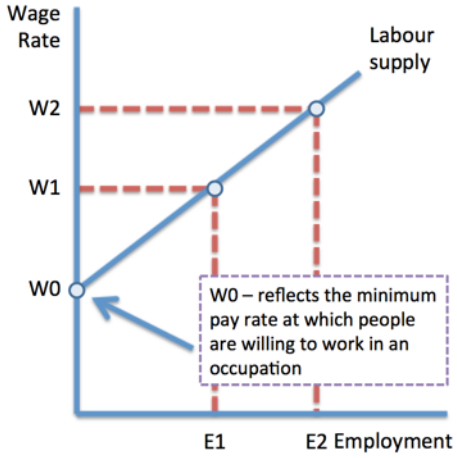
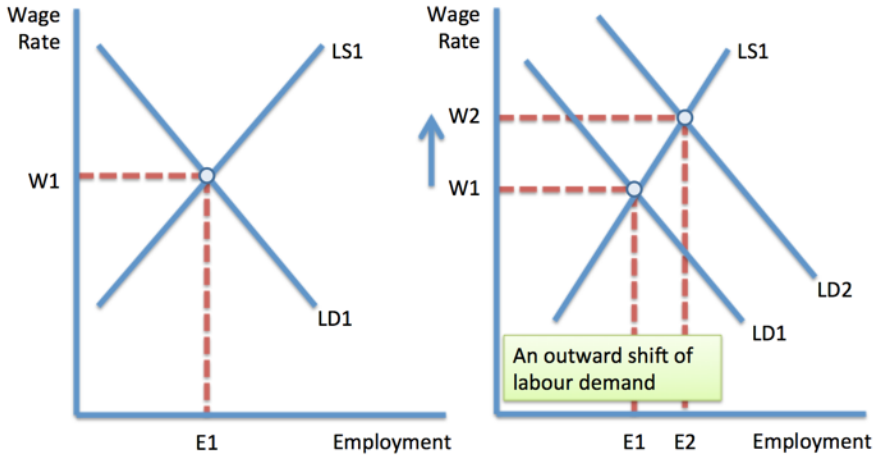


Equilibrium Wages – Using Supply and Demand Analysis

The equilibrium market wage rate is at the intersection of the supply and demand for labour. Employees are hired up to the point where the extra cost of hiring an employee is equal to the extra sales revenue from selling their output.

Equilibrium Wages in the Labour Market

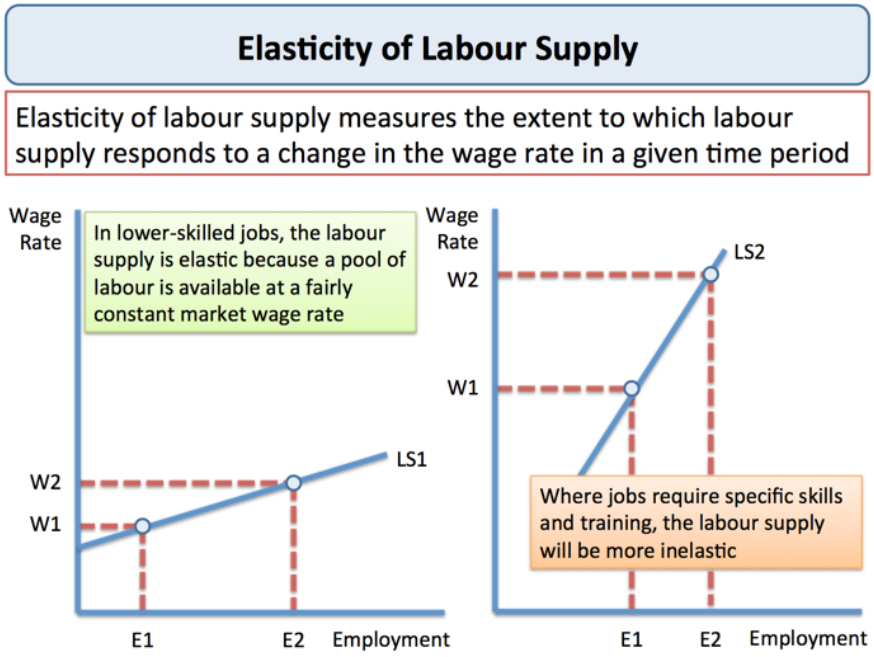
The equilibrium market wage rate is at the intersection of the supply and demand for labour. Employees are hired up to the point where the extra cost of hiring an employee is equal to the extra sales revenue from selling their output.



Elasticity of labour supply

Elasticity of labour supply measures the extent to which labour supply responds to a change in the wage rate in a given time period

- In lower-skilled jobs, the labour supply is elastic because a pool of labour is available at a fairly constant market wage rate
- Where jobs require specific skills and training, the labour supply will be more inelastic



Explaining Wage / Pay Differentials

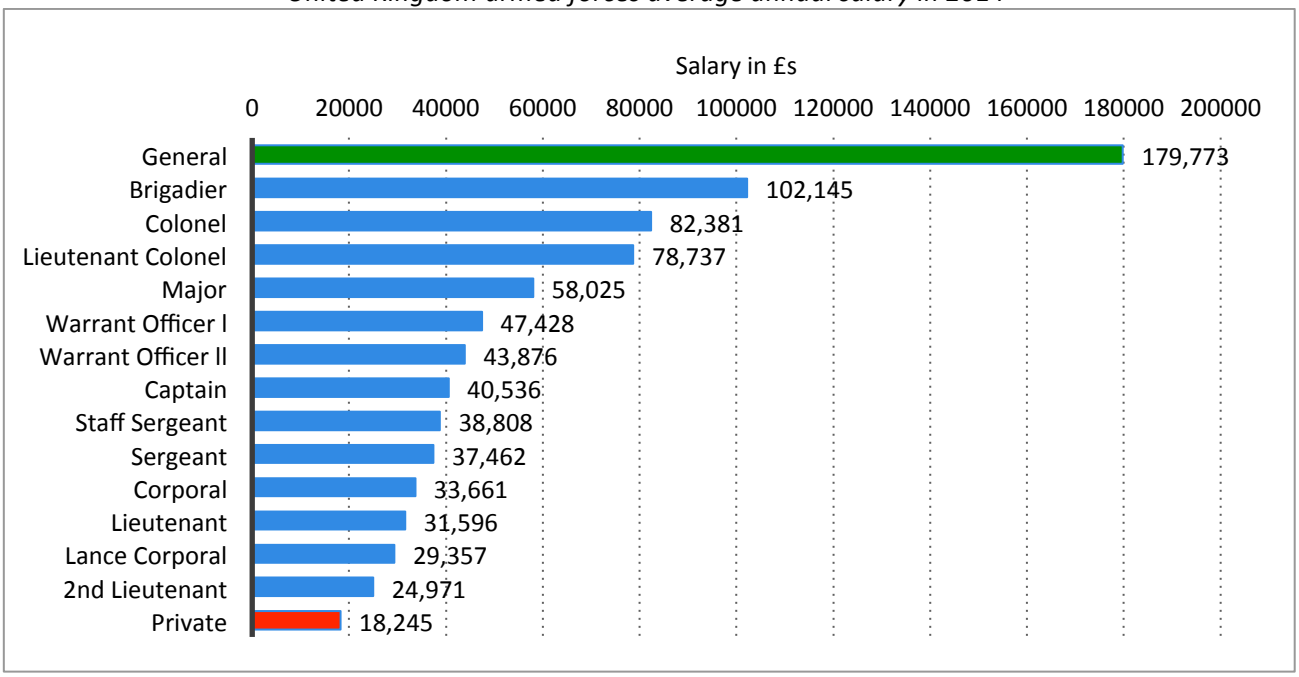
There is a wide gap in pay and earnings rates between the highest and the lowest paid jobs in the labour market. Evidence for this is shown in the table below:

Median full time gross weekly pay for different UK occupations, April 2014*

Highest paid occupations in 2014	£s	Lowest paid occupations in 2014	£s
Aircraft pilots and flight engineers	1,746	Bar staff	254
Air traffic controllers	1,549	Waiters and waitresses	258
Chief executives and senior officials	1,533	Dry cleaners and pressers	259
Marketing and sales directors	1,298	Hairdressers and barbers	269
Advertising and public relations directors	1,289	Kitchen and catering assistants	268
Information technology and telecommunications directors	1,226	Leisure and theme park attendants	273
Legal professionals	1,217	Retail cashiers and check-out operators	279
Medical practitioners	1,167	Other elementary services occupations	280
Brokers	1,149	Nursery nurses and assistants	285
Financial managers and directors	1,143	Cleaners and domestics	286

** The table above uses the median (that's the middle value when everyone's wages are arranged from highest to lowest) this means that salaries that are exceptionally high or low are less likely to affect the national figures as they would with averages (means)*

United Kingdom armed forces average annual salary in 2014



Some of the relevant factors behind wage and salary differentials are listed below

1. **Compensating wage differentials** - higher pay can often be some reward for **risk-taking** in certain jobs, working in poor conditions and having to work **unsocial hours.**

2. **A reward for human capital** – in some jobs wage differentials compensate workers for (opportunity and direct) costs of human capital acquisition. There is an opportunity cost in acquiring qualifications - measured by the current earnings foregone by staying in full or part-time education.

3. **Different skill levels** - the gap between poorly skilled and highly skilled workers gets wider each year. One reason is that the market demand for skilled labour grows more quickly than the demand for semi-skilled workers. This pushes up pay levels. Highly skilled workers are often in inelastic supply and rising demand forces up the "**going wage rate**" in an industry.

4. **Differences in labour productivity and revenue creation** - workers whose efficiency is highest and ability to generate revenue for a firm should be rewarded with higher pay. City economists and analysts are often highly paid not least because they can claim annual bonuses based on performance. Top sports stars can command top wages because of their potential to generate extra revenue from ticket sales and merchandising.

5. **Trade unions and their collective bargaining power** - unions might exercise their bargaining power to offset the power of an employer in a particular occupation and in doing so achieve a **mark-up** on wages compared to those on offer to non-union members

6. **Employer discrimination** is a factor that cannot be ignored despite over twenty years of equal pay legislation in place

Markets in Action: Economics of Health Care

Who should pay for health care?
In 2008 the British National Health Service celebrated its 60th birthday but the future of the NHS as it exists at present always seems to be under question. How much longer can most NHS treatments and other services be provided free at the point of treatment and based on clinical need rather than people's ability to pay?

In most advanced countries the state is the dominant provider and funder of health care. The lowest share is in the United States where state funding represents less than fifty per cent of total health spending. In Canada, Britain and Sweden, the health service is funded mainly through general taxation. In Germany and France the system is funded largely from compulsory contributions made by employers and workers and from voluntary private insurance.

In most countries, health care is provided by the mixed economy. Doctors are usually self-employed or in private practice. The government sector is most heavily involved in operating hospitals. Although in Britain, the government is giving hospitals greater autonomy in running their own affairs and in contracting out some health care to the private sector through its foundation hospital system

Four of the possible funding options for health care are

1. **Co-payments** - Ask patients to contribute towards the cost of non-emergency surgery, such as hernias and varicose veins.
2. **Ration care** - To some extent, this is already done by the National Institute for Clinical Excellence watchdog,
3. **NHS tax** - A specific tax could be levied to help pay for treatment
4. **Social insurance** - Public could be asked to pay into an insurance scheme

Equity and Efficiency in Health Care

(1) Economic Efficiency
Consider first the two main types of efficiency – **allocative** and **productive**:

- Does the health care provided in Britain meet people's changing needs and wants (i.e. do we achieve allocative efficiency?)
- Is health care provided at the lowest possible cost per treatment (i.e. do we achieve productive efficiency?) or could improvements be made in the efficiency with which health services are provided for millions of people?

(2) Equity
Are people's health needs met by health treatments on the basis mainly of **clinical need** or alternatively based on an **ability to pay for health services**? Are health outcomes in the UK reasonably equal across localities, regions, ethnic groups, and age groups and by gender? Or are there unacceptable inequalities in the provision of health care across different sections of the population? The issue of equitable provision of health is an important on-going issue.

Possible Causes of Market Failure in Health Care
What might cause market failure in the provision of health services?

1. **Imperfect information among health care providers and consumers** - Consumers may under-value the long-term private benefits of consuming health care – due to information failure (or 'patient ignorance'). Health providers such as doctors and consultants have more specialised knowledge than consumers – an example here of asymmetric information.
2. **Moral hazard**: Many consumers in the healthcare market take out insurance to help pay for treatment; this, however, leads to a problem of moral hazard, where they take more risks and therefore require more treatment because they are insured. Again, this is a consequence of asymmetric information in the market where consumers know more than insurers about their intended future actions
3. **Lack of adequate health insurance:** It is virtually impossible for people to predict their future health needs. Sudden illness or injury may require extensive and expensive medical care for which most people are unlikely to have adequate health care insurance. Indeed the private health insurance market will not provide cover for all groups of people. High-risk individuals may find it impossible or expensive to get medical insurance if the market was the only provider of health care. The 'failure' of health insurance companies to provide cover for high risk groups is an example of **'missing markets'** – another cause of market failure
4. **Externalities from health care provision:** Health services are normally assumed to be **merit goods** providing a private benefit for people who consume them and additional **external benefits** for society as a whole.
5. **Inequalities in access to basic health care**: There are regional and local differences in the quality and quantity of health care available (media stories are fond of discussing so-called "**postcode prescribing**"). Millions of people are wholly dependent on the NHS for health care– they have no hope of being able to fund private health insurance. If people were required to pay for more treatments they would often be unable to afford them
6. **Monopoly power among health care suppliers:** if there was a wholly free market in providing health care, it is likely that in the long run, several dominant health care providers would emerge raising concerns about increasing market concentration and the opportunities for these firms to exploit their monopoly power.

Who should pay for health care?
The fundamental policy question regarding health care in the UK is this: Should it remain essentially **funded by the tax system** and provided mainly **free at the point of need?**

In the **United States,** which remains the world's largest spender on health care, state provided and state-financed health care goes mainly to the old and families on low incomes. Most American workers are insured privately through the **health insurance schemes** run by their employers. But this does not stop many millions of Americans being unable to afford their own health care insurance – this has become a huge political issue in the United States. There are also huge worries among US companies about the soaring cost of employer-funded health benefit schemes.

In rich developed countries, health care spending on average takes up nearly ten per cent of national income (GDP) and the projections for the years ahead see that figure continuing to rise.

The NHS will always face the problem of **resource scarcity** because our ever-growing demand for different types of health care exceeds the available supply. The Labour government is committed to significant increases in real spending on health + share of health in total GDP.

Fundamental Principles of the National Health Service
The building blocks of the NHS are as follows:

- Providing a national universal (comprehensive) health care service
- Health care free at the point of use
- Medical care is not based on ability to pay but rather on the basis of **clinical need**

Economic and Social Importance of Health Care

- **Quality of Life and Poverty**: Health and wellbeing in childhood affect educational attainment with consequences for people throughout their lives. Ill health in adulthood is associated with poverty and long periods out of work. There is now solid evidence that improvements in medical care pay off in the long term in terms of healthier and longer lives.
- **Employment:** The NHS is the largest employer in UK with over 1.3 million people employed in the NHS in England alone. After social security payments, health is the biggest single component of government expenditure.
- **Productivity**: Ill health imposes a restriction on the productive potential of the economy. Around 2 per cent of working days each year are lost due to short-term sickness, while more than 7 per cent of the working age population is unable to work due to long-term sickness or disability costing over £12 billion a year in welfare benefits.
- **Higher Economic Growth and Standard of Living**: If average life expectancy could be increased by five years, UK real GDP could be £5 billion a year higher.

Problems Facing the NHS

The NHS faces many challenges – these are some of the main ones:

(1) **Persistent resource crises**: Resource problems are the consequence of under-funding and under-investment in the health service over many years – affecting the quality and quantity of the capital stock available to health providers

(2) **Hospital waiting lists:** There are persistent delays in people receiving appointments to see consultants and delays in receiving emergency treatment

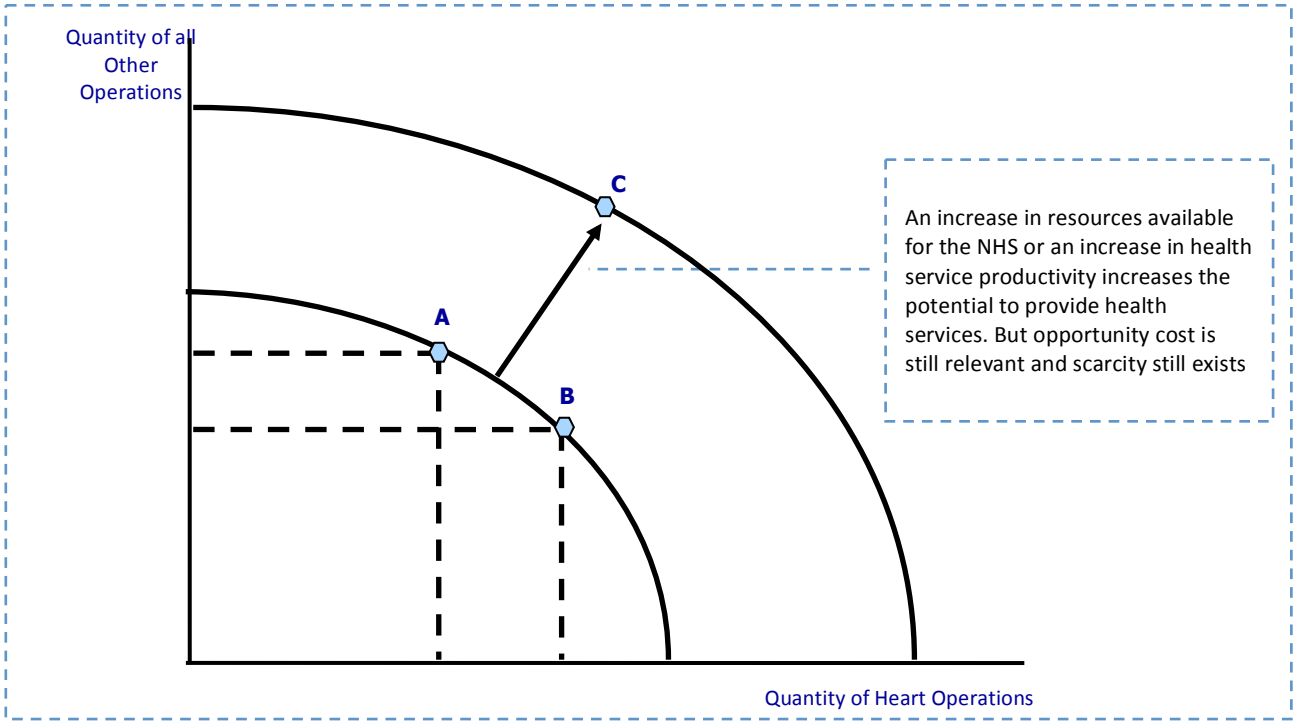
(3) **Problems in recruiting sufficient well qualified staff** which leads to long hours for NHS staff and contributes to wide disparities in the quality of care and range of care from region to region and between local health authorities.

(4) **Meeting the growing demand for health care**: There are growing doubts as to whether the NHS is meeting changing consumer preferences and growing health needs

Health Care Rationing – An Inevitable Process

Health rationing occurs because **demand for health care always outweighs supply**. In a free market, markets match supply and demand by altering prices. This form of rationing relies on the simple fact that post-tax incomes are unequal and that those households on relatively low incomes will be the first to be priced out of the market. **Rationing in the NHS is inevitable** - no amount of resources from the Government funded by taxation can possibly meet all of our demands for health care when the NHS system remains based on the fundamental principle of most health services being free at the point of need.

In the diagram below, even if the government invests higher levels of money into the NHS system permitting an outward shift in the PPF for health care services, there is still an issue of scarcity to resolve even though the total "output" of the NHS can rise as a result.



The NHS currently rations health resources in a variety of ways

(1) **Government rationing**: Ministers and Parliament decide on the overall size of the NHS budget thus dictating the type and volume of care the NHS can provide from year to year

(2) **The National Institute for Clinical Excellence (NICE)** advises the NHS on clinical and economic benefits and costs of certain health care interventions including new treatments as they become available

(3) **Health authorities and primary care groups allocate money to particular disease/treatment areas**. Treatment decisions for individuals are made at the clinical level by health care professionals

Factors Putting Increased Financial Pressures on the NHS

(1) **Developments in medical technology and treatments:** The fruits of research and development in health sciences has brought us many new medical procedures (such as transplants); new treatments and new products (e.g. magnetic-resonance imaging scanners)

(2) **New drugs** including drugs that reduce the "risk" of disease rather than the symptoms of illness – e.g. statins to lower cholesterol

(3) **The increased costs of staffing in the NHS** -the NHS is a highly labour intensive industry. The costs of staff can take up to sixty per cent of the operating expenses of a hospital.

(4) **Growing health problems associated with changing lifestyles** including diseases associated with affluence and the health issues following an increase in relative poverty – for example the costs of treating smoking related diseases and the costs of treating illness associated with rising levels of obesity

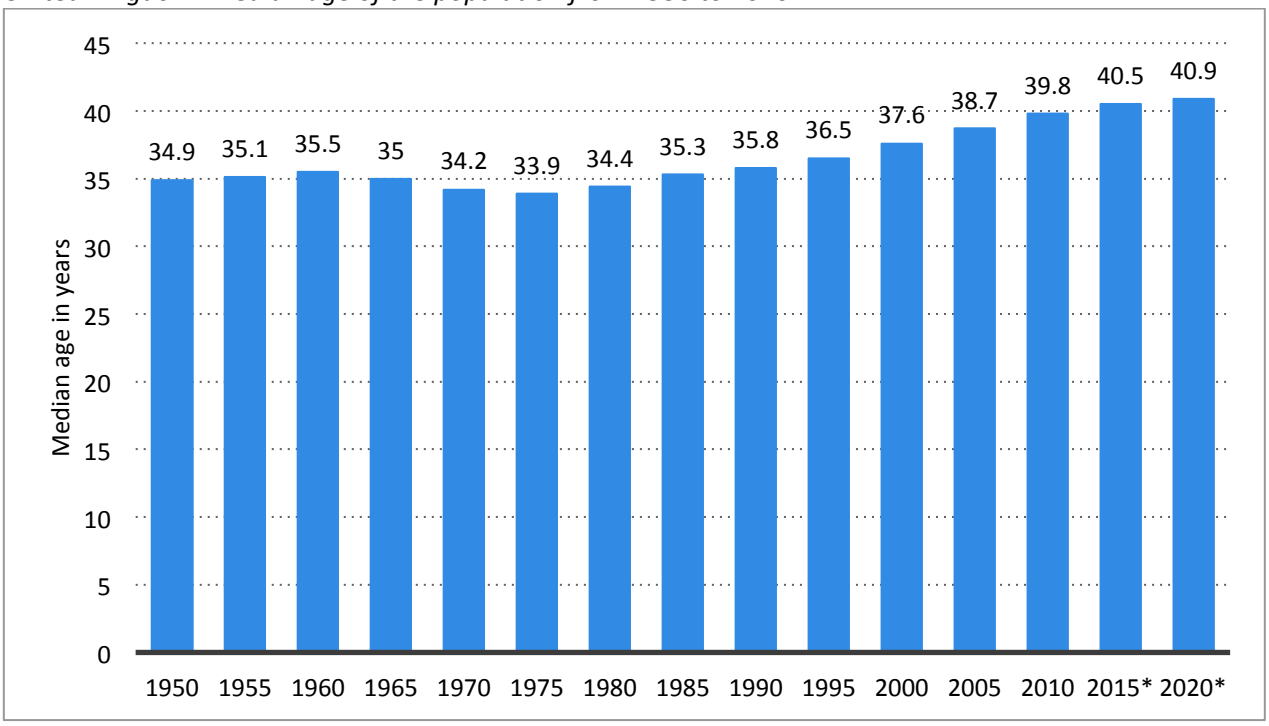
(5) **Long term change in age structure of the population** - The cost of health care rises dramatically for older patients and the UK population along with that of many other countries is becoming older as average life expectancy continues to grow

(6) **Increasing expectations of patients and their families** – in part the result of politicians promising to achieve improved health outcomes from extra funding

Demographic Change and the NHS

The UK population is **ageing** and the medical conditions that account for the majority of the burden of disease in the UK are primarily related to old age – e.g. cancer and coronary heart disease. Spending on health varies significantly with age. The beginning and end of life are the most expensive. On average, 25% of all the health care someone consumes in a lifetime is consumed in the last year of life.

United Kingdom: Median age of the population from 1950 to 2020



Case for Maintaining a Tax Funded Health Care System

1. The NHS can exploit **economies of scale** and provide health services for millions of people at an efficient cost – these scale economies include the benefits of specialization and significant buying power in the purchasing of drugs from pharmaceutical companies
2. Revenue to fund the NHS is drawn from a millions of taxpayers who pay mainly through a progressive system of direct taxation- satisfying the principle of **vertical equity.** Higher income taxpayers are therefore paying more towards the general provision of health care – the NHS is a means towards greater equality of opportunity within society
3. Basing health care treatments on being able to pay might discourage people from seeking important treatments which will have negative consequences for society as a whole

Case for using the Market Mechanism in Health Care

Free provision at the point of use indicates that the price mechanism is not currently being used for allocating scarce resources within the NHS between alternative uses – there is a case for more use of charging for different treatments as a way of funding more health care and reducing excess demand.

1. With **user charges**, households would choose their own pattern of consumption and the supply of health care would then adjust to the pattern of preferences
2. The demand for health treatments would be linked to the **private benefit to the patient** – so a wider system of charging / private sector provision would lead to a lower demand for non-essential treatments and free up resources for more urgent treatments
3. Some user charges already exist within the NHS such as those for dental treatment, eye examinations and prescriptions – the principle of user charges could be extended without challenging the fundamental principles upon which the NHS is based

Reforming Health Care Funding in the UK – Some Options

Private insurance tax relief

Prescription charges

Private Hotel-style Beds

NHS subscription system

More health tourism to generate extra funds

Funding preventative programmes

Rationing treatment in the NHS – the role of NICE

- The National Institute for Clinical Excellence (NICE) was created in 1999 and makes decisions about which types of drugs ought to be made available through the National Health Service (NHS).
- One of their aims is to ensure a standardised level of medical care throughout the country and minimise the risk of postcode prescriptions - where healthcare seems to be determined by where someone lives rather than their clinical need.
- If a drug is recommended by NICE, the NHS in England and Wales has a legal obligation to fund it. NICE investigates the effectiveness and cost of new drugs and medical technologies and considers their impact on the quality of life of patients. The system is different in Scotland.
- At the heart of their decision-making is the requirement to achieve cost-efficient health care.
- NICE must determine (using evidence-based medicine) whether a new drug is better value than the next best alternative treatment already in use.
- NICE assesses the costs of providing treatments - decisions are made using existing market prices for each drug – and calculate the like benefits to patients using metrics such as symptom free days, life years or months gained and also the impact on the quality of life during and after a treatment.
- If NICE opts not to recommend a new drug or treatment, people have to find their own money to purchase it - and many choose to go overseas for medical care.

Introduction to Supply: Production and Costs

Production

Production refers to the output of goods and services produced by businesses. To simplify the idea of the **production function**, economists create a number of **time periods** for analysis.

1. **Short run production:** The **short run** is a time period when there is **at least one fixed factor input** - usually capital such as machinery and technology. In the short run, the output of a business expands when more variable factors such as raw materials and extra workers are brought into use

2. **Long run production:** In the long run, **all of the factors of production can change** allowing a business to change the **scale of its operations.**

The long run for a retail business such as Pret a Manger will be different from the long run for the power generation industry. The long run is when all factors of production are variable – there are no fixed factors!

The length of time between the short and the long run will vary from industry to industry. For example, how long would it take a newly created business delivering sandwiches around a local town to move from the short to the long run? Let us assume that the business starts off with leased premises to make the sandwiches to leased vehicles for deliveries and five full-time and part-time staff. In the short run, they can increase production by using more raw materials and by bringing in extra staff as required.

But if demand grows, it won't take the business long to perhaps **lease** another larger building, buy in some more capital equipment and also lease some extra delivery vans – by the time it has done this, it has already moved into the long run!

Productivity and the Law of Diminishing Returns

Productivity is a measure of the efficiency of a factor input. The basic measure of productivity is output per person employed. There is a difference though between marginal and average productivity:

Marginal product (MP) = Change in total output from adding one extra unit of labour

Average product (AP) = Total output divided by the total units of labour employed

In the example below, a business hires extra units of labour to produce a higher quantity of wheat.

Units of Labour Employed	Total Physical Product (tonnes of wheat)	Marginal Product (tonnes of wheat)	Average Product (tonnes of wheat)
0	0	N/a	N/a
1	3	3	3
2	10	7	5
3	24	14	8
4	36	12	9
5	40	4	8
6	42	2	7
7	42	0	6

Diminishing returns occurs when the **marginal product of labour starts to fall**. In the example above, extra labour is added to a fixed supply of land when a farming business is harvesting wheat. The marginal product is maximized when the 4th worker is employed. Thereafter the output from new workers is falling although output continues to rise until the seventh worker is employed.

Explaining the law of diminishing returns

- The **law of diminishing returns** occurs because factors of production such as labour and capital inputs are **not perfect substitutes** for each other.
- This means that resources used in producing one type of product are not as efficient when switched to the production of another good.
- For example, workers employed in producing glass for use in the construction industry may not be as efficient if they have to be re-employed in producing cement or kitchen units.
- We say that factors of production such as labour and capital can be "**occupationally immobile"** i.e. they can be switched from one use to another, but with a loss of productivity.

There is normally an **inverse relationship** between the productivity of the factors of production and the **unit costs** of production for a business. When productivity is low, the unit costs will be higher. It follows that if a business can achieve better efficiency, there can be a benefit from lower costs and higher profits.

Costs of Production

- Costs are **expenses faced by a business** when producing a good or service
- Every business faces costs and these must be recouped if a business is to make a profit. In the short run a firm will have **fixed** and **variable costs** of production.

(1) Fixed Costs

Fixed costs **do not vary directly with the level of output**. Examples of fixed costs include:

1. Rent paid on buildings and business insurance premiums
2. The depreciation in the value of capital equipment due to age
3. The costs of staff salaries
4. Interest charges on borrowed money
5. The costs of purchasing new capital equipment

(2) Variable Costs

Variable costs **vary directly with output**. Examples of variable costs for a business include the costs of raw materials, labour costs and other components used directly in the production process.

Falling Fixed Costs Per Unit as Output Rises

- The greater the total volume of units produced, the lower will be the fixed cost per unit as the fixed costs are spread over a higher number of units.

- This is one reason why **mass-production** can bring down significantly the unit costs for consumers – because the fixed costs are being reduced continuously as output expands.
- In our example below, a business is assumed to have fixed costs of £30,000 per month regardless of the level of output produced. The table shows total fixed costs and average fixed costs (calculated by dividing total fixed costs by output).

Output (000s)	Total Fixed Costs (£000s)	Average Fixed Cost (AFC)
0	30	
1	30	30
2	30	15
3	30	10
4	30	7.5
5	30	6
6	30	5

Calculating Total Cost

Output Units	Total Fixed Cost TFC (£s)	Total Variable Cost TVC (£s)	Total Cost TC (£s)	Average Total Cost ATC (£ per unit)	Marginal Cost MC (£)
0	100	0	100		
20	100	40	140	7.0	2.0
40	100	60	160	4.0	1.0
60	100	74	174	2.9	0.7
80	100	84	184	2.3	0.5
100	100	90	190	1.9	0.3
120	100	104	204	1.7	0.7
140	100	138	238	1.7	1.7
160	100	188	288	1.8	2.5
180	100	260	360	2.0	3.6

- **Average Total Cost** (ATC) is the **cost per unit of output produced**. ATC = TC divided by output
- **Marginal cost** (MC) is the change in total costs from the production of one extra unit of output

Economies and Diseconomies of Scale

Long Run Production

- In the long run all costs are variable and the scale of production can change (no fixed inputs)
- We make no distinction between fixed and variable costs in the long run because all factors of production can be varied

What are Economies of Scale?

- Economies of scale are the **cost advantages** that a business exploits by **expanding the scale of production**
- The effect is to **reduce the long run average costs of production**.
- These lower costs are an improvement in **productive efficiency** and can benefit consumers in the form of lower prices. But they give a business a competitive advantage too!

Numerical example of economies of scale – falling long run average cost as output increases

Long Run Output (units per month)	Total Costs (£s)	Long Run Average Cost (£s per unit)
1,000	8,500	8.5
2,000	15,000	7.5
5,000	36,000	7.2
10,000	65,000	6.5
20,000	120,000	6.0
50,000	280,000	5.6
100,000	490,000	4.9
500,000	2,300,000	4.6

- There are many **different types of economy of scale** and depending on the particular characteristics of an industry, some are more important than others.
- The answer is that scale economies have brought down the unit costs of production and feeding through to lower prices for consumers.

Internal Economies of Scale

Internal economies of scale arise from **the growth of the business itself.** Examples include:

1. **Technical economies of scale**:
    a. Large-scale businesses can afford to invest in **expensive and specialist capital machinery**. For example, a supermarket chain such as Tesco or Sainsbury can invest in technology that improves stock control. It might not, however, be viable or cost-efficient for a small corner shop to buy this technology.
    b. **Specialization of the workforce**: Larger businesses split complex production processes into separate tasks to boost productivity. The **division of labour** in mass production of motor vehicles and in manufacturing electronic products is an example.
    c. **The law of increased dimensions**. This is linked to the **cubic law** where doubling the height and width of a tanker or building leads to a more than proportionate increase in the cubic capacity – this is an important scale economy in distribution and transport industries and also in travel and leisure sectors.

2. **Marketing economies of scale and monopsony power**: A large firm can spread its advertising and marketing budget over a large output and it can purchase its inputs in bulk at negotiated discounted prices if it has **monopsony (buying) power** in the market. A good example would be the ability of the electricity generators to negotiate lower prices when negotiating coal and gas supply contracts. The big food retailers have monopsony power when purchasing supplies from farmers.
3. **Managerial economies of scale**: This is a form of division of labour. Large-scale manufacturers employ specialists to supervise production systems and oversee human resources.
4. **Financial economies of scale**: Larger firms are usually rated by financial markets to be more 'credit worthy' and they therefore have access to credit facilities at more favourable rates of interest. In contrast, smaller firms often face higher rates of interest on overdrafts and loans. Businesses quoted on the stock market can normally raise fresh money (i.e. extra financial capital) more cheaply through the issue of equities. They are also likely to pay a lower rate of interest on new company bonds issued through the capital markets.
5. **Network economies of scale**: *This is a demand-side economy of scale.* Some networks and services have huge potential for economies of scale. That is, as they are more widely used they become more valuable to the business that provides them. The classic examples are the expansion of a common language and a common currency. We can identify networks economies in areas such as **online auctions**, **air transport networks**. Network economies are best explained by saying that the **marginal cost of adding one more user** to the network is close to zero, but the resulting benefits may be huge because each new user to the network can then interact, trade with **all** of the existing members or parts of the network.

Technical economies i.e. benefits of containerization

Purchasing economies e.g. bulk buy purchases

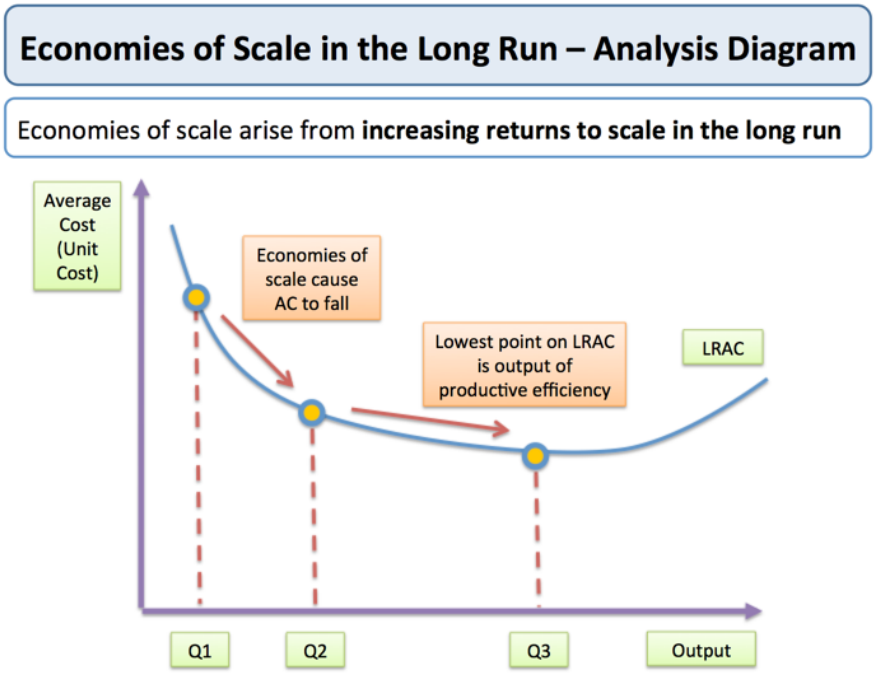
Managerial economies – using specialized staff

Financial economies e.g. lower interest rates on loans

Risk-bearing economies from diversification

Network economies – build networks of suppliers / customers

Illustrating Economies of Scale – the long run average cost curve



External Economies of Scale
External economies of scale involve changes outside of the business i.e. they result from the expansion of the entire industry of which the business is a member. They lower unit costs for many / all firms inside the market

Agglomeration Economies
Agglomeration economies are important. Businesses in similar industries cluster together and attract an influx of skilled talent that then provides human capital to expanding businesses.

Examples of External Economies of Scale

University Research

Transport Networks

Relocation of Suppliers

Influx of human capital – skilled workers

Diseconomies of Scale
A firm may eventually experience a rise in average costs caused by diseconomies of scale. **Diseconomies of scale** a firm might be caused by:

1. **Control** – monitoring the productivity and the quality of output from thousands of employees in big corporations is imperfect and costly.
2. **Co-operation** - workers in large firms may feel a sense of alienation and subsequent loss of morale. If they do not consider themselves to be an integral part of the business, their productivity may fall leading to wastage of factor inputs and higher costs. A fall in productivity means that workers may be less productively efficient in larger firms.

3. **Loss of control over costs** – big businesses may lose control over fixed costs such as expensive head offices, management expenses and marketing costs. There is also a risk that very expensive capital projects involving new technology may prove ineffective and leave the business with too much under-utilized capital.

Diseconomies of scale mean that

- A business has moved beyond their optimum size
- Businesses are suffering from productive inefficiency
- Higher unit costs will reduce total profits
- They may also have to charge higher prices in order to cover their increased costs
- Lost competitiveness could lead to declining market share and also a fall in their share price

Examples of diseconomies of scale

Regulatory Costs

Office Politics / Industrial Relations

Risk Aversion

Waste / Inefficiency in large organisations

Evaluation: Do economies of scale always improve the welfare of consumers?
In general economies of scale are important for both consumers and businesses. The main advantages of economies of scale are that

1. Unit costs are lower in the long run helping to bring down prices for consumers in real terms and making many products affordable for people at all income levels
2. Economies of scale lead to a rise in business profits which helps to fund investment and innovation
3. Businesses benefitting from economies of scale will be more competitive in global markets leading to improved export performance which ultimately helps the Macroeconomy through higher levels of exports, jobs and living standards

However there are some downsides to businesses exploiting economies of scale:

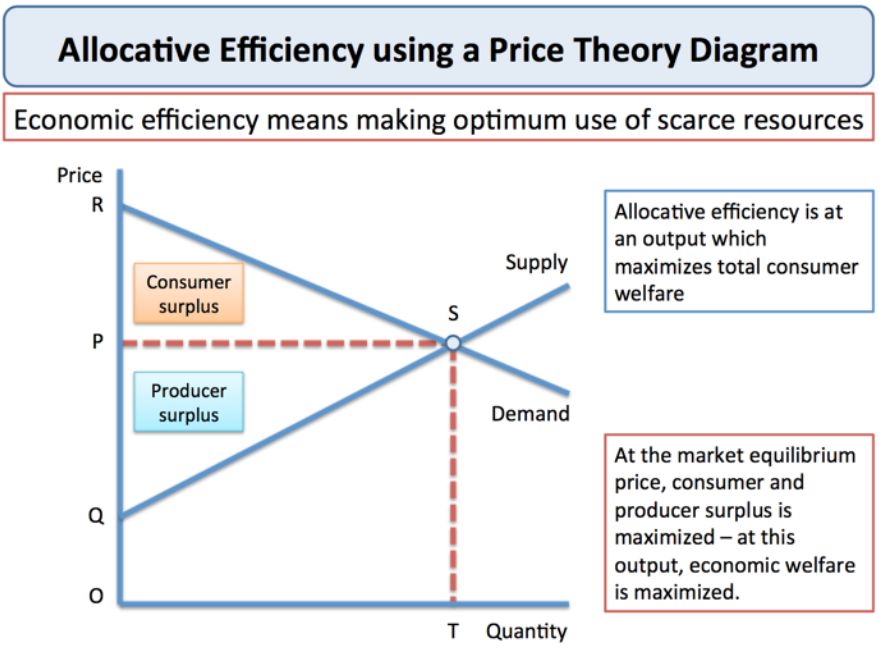
- **Standardization of products:** Mass production might lead to a **standardization of products** – limiting the amount of consumer choice.
- **Lack of market demand:** Market demand may be insufficient for economies of scale to be fully exploited leaving businesses with a lot of spare capacity.
- **Developing monopoly power:** Businesses may use economies of scale to build up monopoly power and this might lead to higher prices, a reduction in consumer welfare and a loss of allocative efficiency.

Economic Efficiency

- Efficiency is about a society making optimal use of their scarce resources to help satisfy our ever-changing wants & needs
- There are several meanings of efficiency but they all link to how well a market system allocates our scarce resources to satisfy consumers
- Normally the market mechanism is good at allocating these inputs, but there are occasions when the market can fail

Allocative efficiency

- Allocative efficiency is concerned with whether we are producing the goods and services that match our **changing needs and preferences** and which we place the greatest **value** on
- Allocative efficiency is reached when no one can be made better off without making someone else worse off. This is also known as **Pareto efficiency**



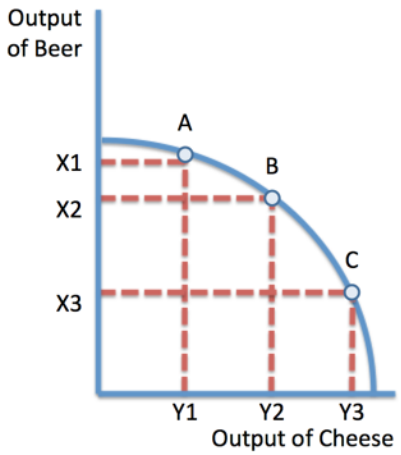
- **Allocative efficiency** occurs when the value that consumers place on a good or service (reflected in the price they are willing and able to pay) equals the cost of the resources used up in production.
- The condition required for allocative efficiency is that **price = marginal cost of supply.**
- We will see when we study the economics of **monopoly** that when businesses have 'pricing power' in their own markets, they may increase their profit margins to squeeze extra profit from consumers (*they are turning consumer surplus into producer surplus*). This has an effect on allocative efficiency for if a monopoly supplier can select a price well above the costs of supply, consumers will suffer a reduction in their welfare. Have you ever felt ripped off buying sandwiches from a motorway service station? The producer has become better off but someone else has become worse off.

Using the production possibility frontier to show allocative efficiency

Allocative Efficiency

- Allocative efficiency is reached when **no one can be made better off without making someone else worse off**. This is also known as **Pareto efficiency**
- Allocative efficiency occurs when the value that consumers place on a good or service (reflected in the price they are willing and able to pay) equals the cost of the factor resources used up in production.
- The main condition required for allocative efficiency in a given market is that **market price = marginal cost of supply**

All points that lie on the PPF are allocatively efficient because we cannot produce more of one product without affecting the amount of all other products available.



- **Pareto** defined allocative efficiency as a position *"where no one could be made better off without making someone else at least as worth off."*
- This can be illustrated using a **production possibility frontier** – all points that lie on the PPF are allocatively efficient because we cannot produce more of one product without affecting the amount of all other products available
- If an economy is operating within the PPF there will be an under-utilisation of resources causing output of goods and services to be lower than is feasible.
- In this sense unemployment is a waste of scare resources; indeed the hours lost through jobless workers can never be recovered – unemployment can be costly from both an economic and social viewpoint.
- If every market in the economy is a competitive free market, the resulting equilibrium throughout the economy will be Pareto-efficient.

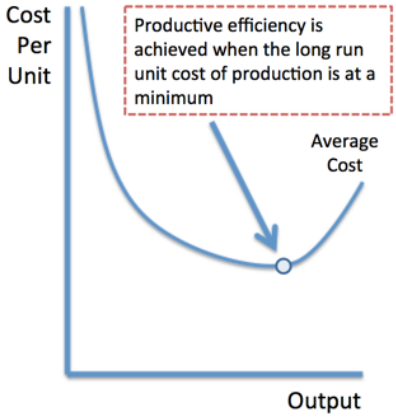
Productive Efficiency

- Productive efficiency is achieved when the output is produced at **minimum average total cost**
- Productive efficiency exists when businesses **minimise wastage of resources**

Productive Efficiency

A firm is productively efficient when it is operating at **the lowest point on its average cost curve** i.e. unit costs have been minimised

- Productive efficiency exists when producers **minimize the wastage of resources**
- Productive efficiency also relates to when an economy is **on their production possibility frontier**
- An economy is productively efficient if it can produce more of one good only by producing less of another.



Dynamic Efficiency

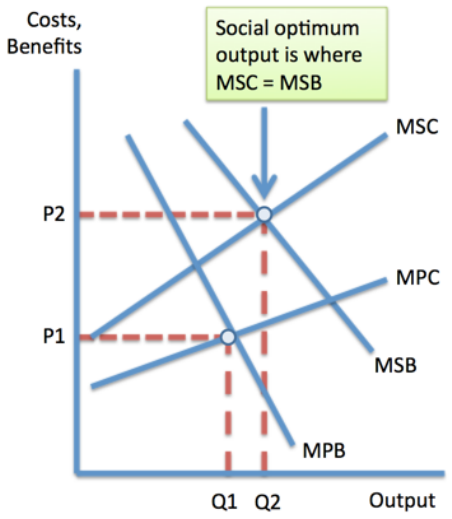
- Dynamic efficiency occurs **over time** and it focuses on changes in the amount of consumer choice available in markets together with the quality of goods and services available.
- A key concept linked to dynamic efficiency is **innovation:**
- Innovation is putting a new idea or approach into action. Innovation is 'the commercially successful exploitation of ideas'
- **Product innovation**
  - Small and frequent subtle changes to the characteristics and performance of a good or a service
- **Process innovation**
  - Changes to the way in which production takes place or is organised
  - Changes in business models and pricing strategies
- Innovation has demand and supply-side effects in markets and the economy as a whole

Social Efficiency

- The socially efficient level of output and or consumption occurs when **marginal social benefit = marginal social cost**. At this point we have maximized social welfare.
- The existence of negative and positive externalities means that the private optimum level of consumption or production often differs from the social optimum leading to some form of market failure and a loss of social welfare.
- The price mechanism does not always take into account social costs and benefits of production

Social Efficiency

- The socially efficient level of output and/or consumption occurs when **marginal social benefit (MSB) = marginal social cost (MSC)**
- The existence of **negative and positive externalities** means that the private level of consumption or production differs from social optimum
- The free market price mechanism <u>does not always take into account</u> social costs and benefits



Market failure and a loss of economic efficiency

When markets fail there is a loss of economic and social efficiency and this provides a case for some form of government intervention. Markets fail for a number of reasons among them information failures, the presence of externalities, monopoly power and the market under-providing public and merit goods.

Key causes of market failure include:

Negative externalities

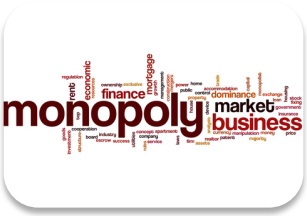
Positive externalities

Public goods

Merit goods

De-merit goods

Information failures



Monopolies

Immobility of factor inputs

Competition and Monopoly in Markets

What is a market structure?

A **market structure** describes the characteristics of a market that can affect the behaviour of businesses and also affect the welfare of consumers. Some of the main aspects of market structure are listed below:

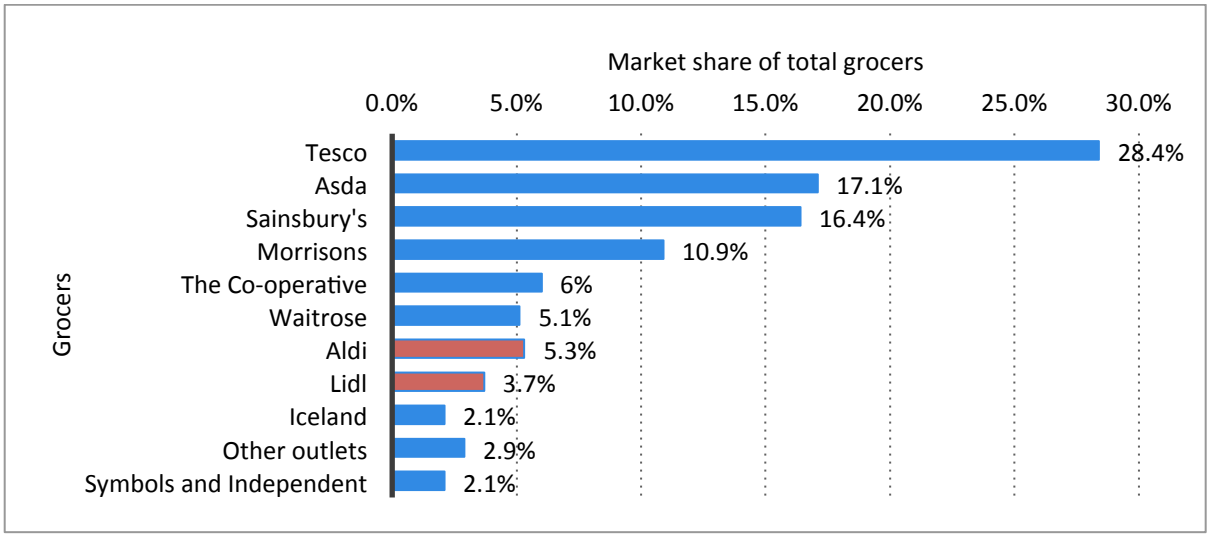
- The **number of firms** in the market and the **market share** of the largest firms
- The nature of **production costs** e.g. the ability of businesses to exploit **economies of scale**
- The extent of **product differentiation** i.e. to what extent do the businesses try to make their products different from those of competing firms?
- The **price and cross price elasticity of demand** for different products
- The number and the **power of buyers** of the industry's main products
- The **turnover of customers** - this is a measure of the number of consumers who switch suppliers each year and it is affected by the strength of brand loyalty and the effects of marketing.

Competitive markets

Competitive markets are industries where they intensity of competition between suppliers is high

- There are many key characteristics of competitive markets
- Many sellers none of whom has a dominant monopoly position
- Sellers produce slightly differentiated products giving consumers plenty of choice – leading to a high cross-price elasticity of demand
- The barriers to entering the market are low, allowing new firms with new products to come into the market in pursuit of profit
- Each seller has good access to the prevailing industry technologies
- Consumer loyalty to established businesses is fairly weak
- Consumers and sellers have full information about prices so that it easy for buyers to find the seller offering the best value for money
- The more competitive is a market, the more likely that an allocatively efficient outcome is achieved

The chart below shows the market share for the leading grocers in the UK in July 2015. It is widely regarded as an increasingly competitive market even though the leading three businesses together have well over 50 per cent of total grocery sales. Discount retailers such as Aldi and Lidl are increasing their market share.

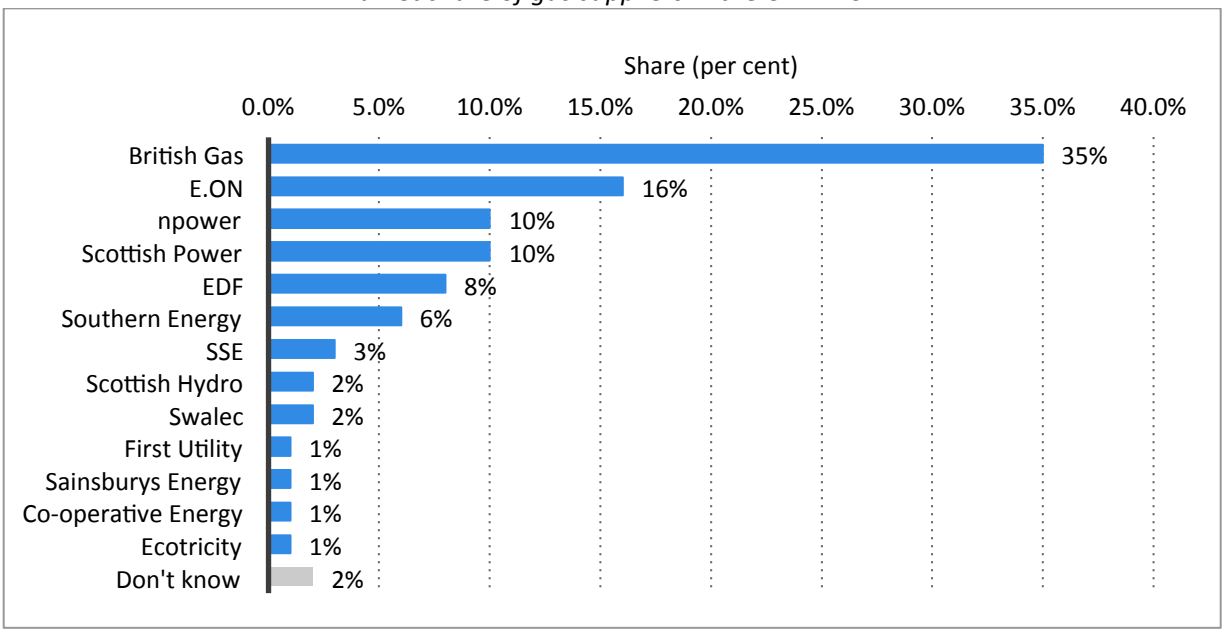


What is a monopoly?

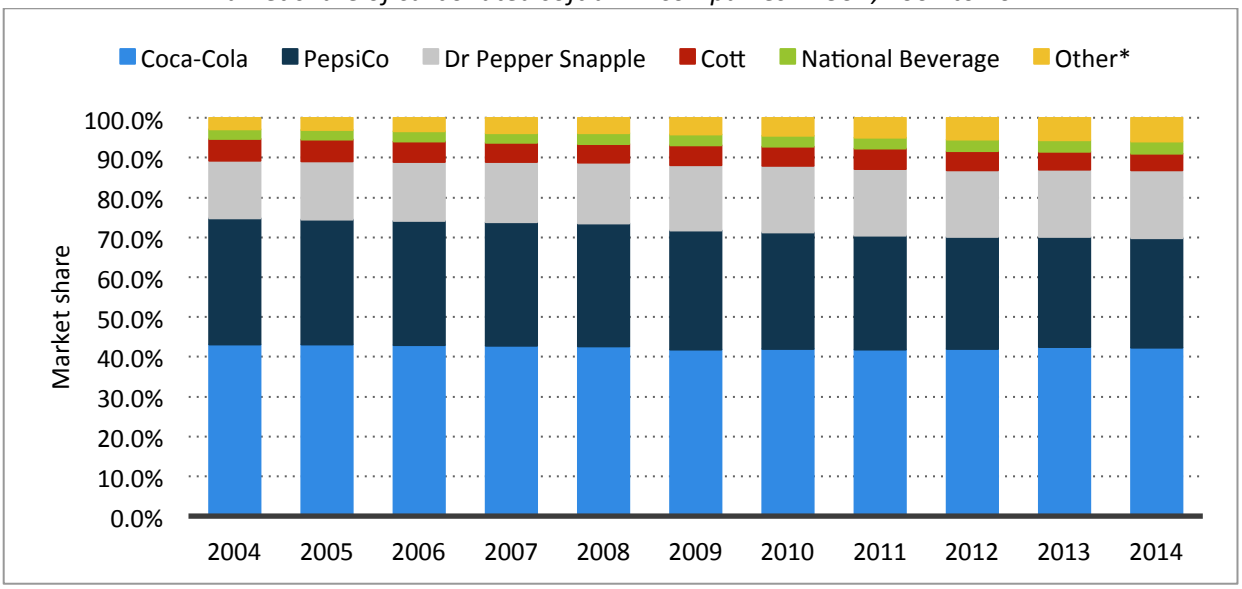
1. **A pure monopolist** in an industry is a **single seller**. It is rare for a firm to have a pure monopoly – except when the industry is state-owned and has a legally protected monopoly.
2. **A working monopoly**: A working monopoly is any firm with greater than 25% of the industries' total sales. In practice, there are many markets where businesses enjoy some degree of monopoly power even if they do not have a twenty-five per cent market share.
3. An **oligopolistic industry** is characterised by the existence of a **few dominant firms**, each has market power and which seeks to protect and improves its position over time.
4. In a **duopoly**, two firms take the majority of demand

A good example of monopoly power is the dominance of the Big Six producers in the gas and electricity supply industry.

Market share of gas suppliers in the UK in 2014

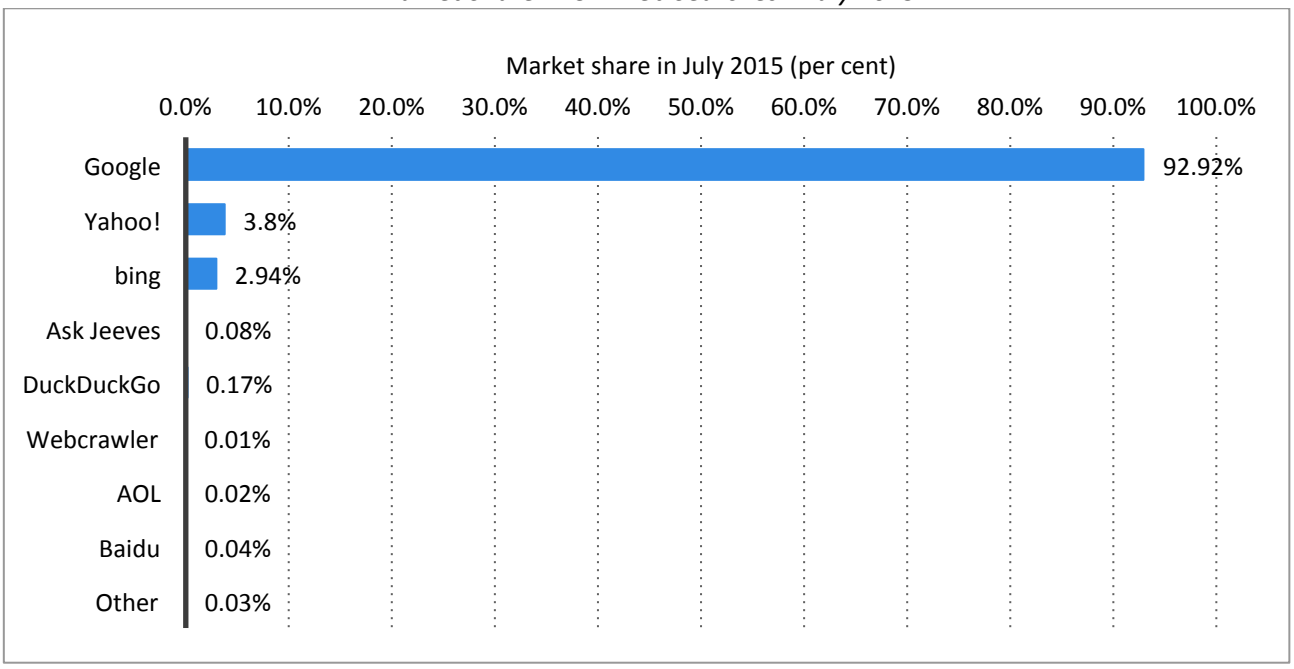


Market share of carbonated soft drink companies in USA, 2004 to 2014



Google has a **near monopoly** in the web search market in the UK. This is shown in the chart below.

Market Share in UK Web Searches – July 2015



How monopolies can develop

Monopoly power can come from the **successful organic (internal) growth** of a business or through **mergers and acquisitions** (also known as the **integration of firms**).

Close to a pure monopoly – but some competition e.g. from taxis

Working monopoly – but also an oligopoly because of the dominance of the leading grocers

Costa is the dominant UK coffee firm in a competitive oligopoly

Pepsi and Coca Cola dominate in a duopoly

Horizontal Integration

This is where two firms join at the same stage of production in one industry. For example two car manufacturers may decide to merge, or a leading bank successfully takes-over another bank.

Vertical Integration

This is where a firm integrates with businesses at different stages of production e.g. by buying its suppliers or controlling the main retail outlets. A good example is the oil industry where leading companies are explorers, producers and refiners of crude oil and have retail networks for the sale of petrol and diesel and other products.

- **Forward vertical integration** occurs when a business merges with another business further forward in the supply chain

- **Backward vertical integration** occurs when a firm merges with another business at a previous stage of the supply chain

The Internal Expansion of a Business
Firms can generate higher sales and increased market share and exploiting possible **economies of scale**. This is internal rather than external growth and therefore tends to be a slower means of expansion contrasted to mergers and acquisitions.

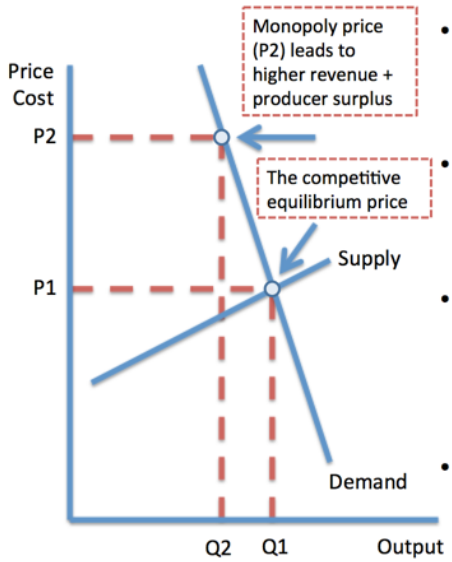
Barriers to Entry
Barriers to entry are the means by which potential competitors are blocked. Monopolies can then enjoy higher profits in the longer-term. There are several different types of entry barrier including the following:

- **Patents:** Patents are **legal property rights** to prevent the entry of rivals. They are generally valid for 12-20 years and give the owner an exclusive right to prevent others from using patented products, inventions, or processes. Owners can sell licences to other businesses to produce versions of their patented product.
- **Advertising and marketing:** Developing **consumer loyalty** by establishing branded products can make successful entry into the market by new firms much more expensive. Advertising can also cause an outward shift of the demand curve and make demand less sensitive to price
- **Brand proliferation:** In many industries **multi-product firms** engaging in brand proliferation can give a false appearance of competition. This is common in markets such as detergents, confectionery and household goods – it is **non-price competition**.

Monopoly, market failure and government intervention
Should the government intervene to break up or control the monopoly power of firms in market?

- Profits at the expense of consumers: The conventional argument against market power is that monopolists can earn abnormal (supernormal) profits at the expense of efficiency and the welfare of consumers and society.
- The monopoly price is assumed to be higher than both marginal cost leading to a loss of allocative efficiency and a failure of the market. The monopolist is extracting a price from consumers that is above the cost of resources used in making the product and, consumers' needs and wants are not being satisfied, as the product is being under-consumed.
- Higher monopoly prices can have regressive effects on lower income households, for example utility businesses exploiting their market power may make essential goods and services less affordable for relatively poorer families.
- The absence of genuine market competition may lead to production inefficiencies and X-inefficiencies such as wasteful production and advertising spending
- Higher prices can limit the final output and lead to fewer economies of scale being exploited
- Protected markets means that there is less drive to innovate
- Monopolistic firms may get too big leading to diseconomies of scale (rising long run average cost)
- The higher average cost if there are inefficiencies in production means that the firm is not making optimum use of scarce resources. Under these conditions, there may be a case for government intervention for example through competition policy or market deregulation to make an industry more contestable.

Does Monopoly Power lead to Market Failure?



- Main case against a monopoly is that it makes higher profits at the expense of a **loss of allocative efficiency**.
- The monopolist will seek to extract a price from consumers above the cost of resources used in making the product.
- Higher prices mean that consumers' needs and wants are not being satisfied, as the **product is being under-consumed**.
- Higher prices cause **a loss of consumer surplus & welfare** and will disproportionately affect **lower income families.**

Higher costs – loss of productive efficiency:

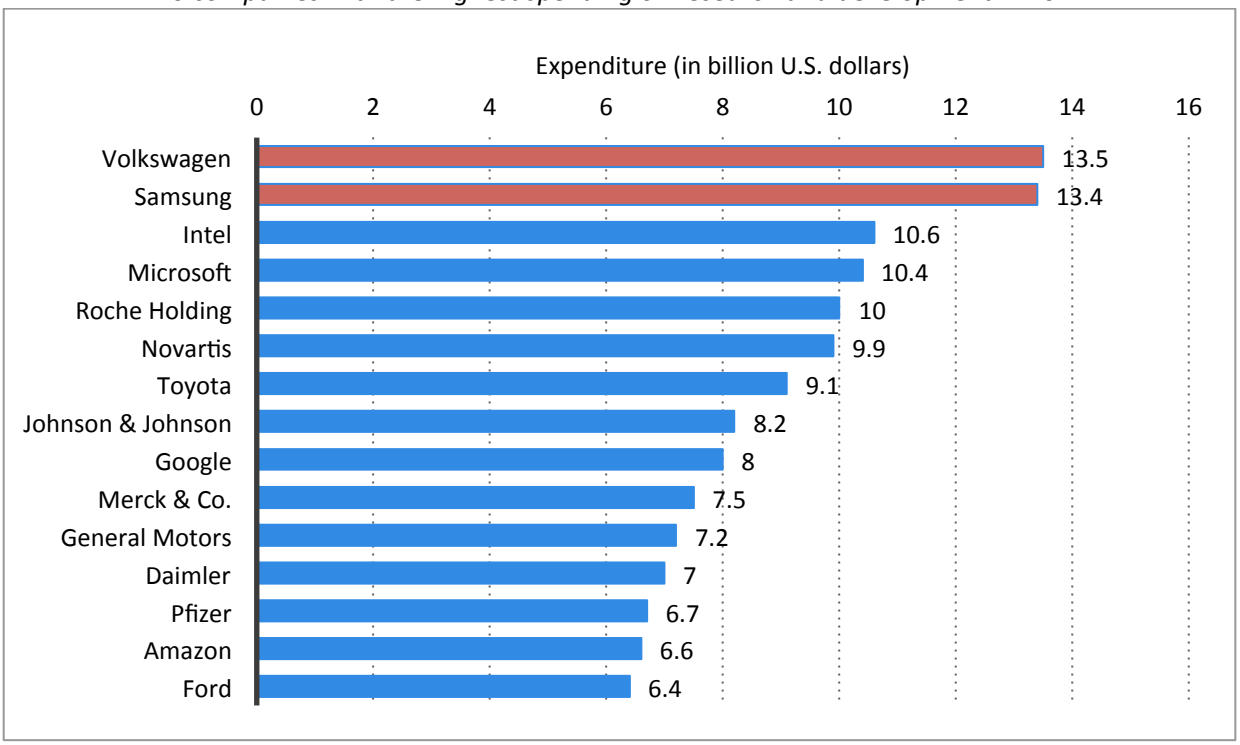
- Another possible cost of monopoly power is that businesses may allow the lack of real competition to cause a **rise in costs** and a **loss of productive efficiency**.
- When competition is tough, businesses must keep firm control of their costs because otherwise, they risk losing market share.
- Some economists go further and say that monopolists may be even less efficient because, if they believe that they have a protected market, they may be less inclined to spend money on research and improved management.
- These inefficiencies can lead to a waste of scarce resources.

Evaluation – Potential Economic Benefits of Monopoly

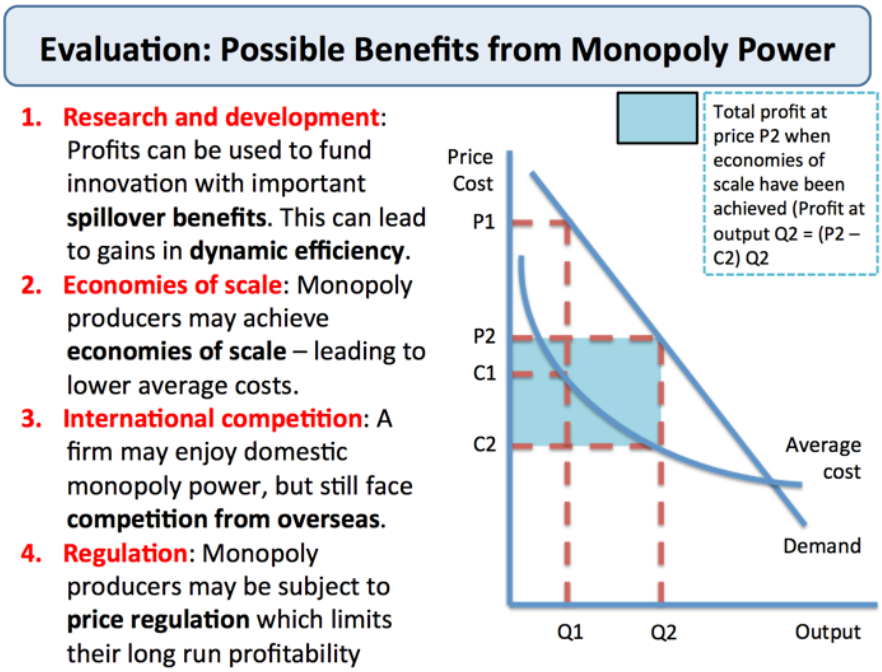
The possible benefits of monopoly power suggest that the government and the competition authorities should be careful about intervening directly in markets and try to break up a monopoly.

1. **Research and development spending**: Huge corporations enjoying big profits are well placed to fund capital investment and research and development projects. The **positive spillover effects** of research can be seen in more innovation. This is particularly the case in industries such as telecommunications and pharmaceuticals. This can lead to gains in dynamic efficiency and social benefits.
2. **Exploitation of economies of scale**: Because monopoly producers often supply on a large scale, they may achieve economies of scale – leading to a fall in average costs.
3. **Monopolies and international competitiveness**: The British economy needs multinational companies operating on a scale large enough to compete in global markets. A firm may enjoy domestic monopoly power, but still face competition in overseas markets.

20 companies with the highest spending on research and development in 2014



Analysis diagram to show the possible benefits from monopoly power in markets



Negative Externalities

What are externalities?

- Externalities are **third party effects** arising from **production and consumption** of goods and services for which **no appropriate compensation is paid**.
- **Externalities occur outside of the market** i.e. they affect people not directly involved in the production and/or consumption of a good or service. They are also known as **spillover effects**.
- Economic activity creates **spill over benefits** and **spill over costs** – with negative externalities we focus on the spill over costs

Negative Externalities

- Negative externalities occur when production and/or consumption impose **external costs on third parties** outside of the market for which no appropriate compensation is paid.

Example: Externalities from Quarrying

External costs are costs external to an exchange. They are negative **third party spillovers effects** and lead to extra cost which the price mechanism ignores. Externalities from quarrying stone might include:

- Noise pollution from lorries and air pollution from the dust
- A fall in nearby property prices
- Damage to wildlife

The Importance of Property Rights

- **Property rights** confer **legal control or ownership**
- For markets to operate efficiently, property rights must be protected – perhaps through regulation
- Put another way, if an asset is un-owned, no one has an incentive to protect it from abuse. The right to own property is essential in a market-based system
- Failure to protect property rights may lead to what is known as the **Tragedy of the Commons** - examples include the over use of common land and the long-term decline of fish stocks caused by over-fishing which leads to long term permanent damage to the stock of natural resources.

The difference bewteen private and social costs

- Private costs are the costs faced by the producer or consumer directly involved in a transaction.
- The existence of externalities creates a divergence between **private and social costs** of production and the private and social benefits of consumption.
- **Social Cost** = **Private Cost + External Cost**
- When negative production externalities exist, **social costs exceed private cost.** This leads to over-production and market failure if producers do not take into account the externalities.

External costs from production

Production externalities are generated and received in supplying goods and services - examples include noise and atmospheric pollution from factories and discharges of waste.

External costs from consumption

- Consumption externalities are **generated and received in consumption** – e.g. pollution from driving cars and motorbikes and externalities created by smoking and alcohol abuse and also the noise pollution created by loud music being played in built-up areas.
- Negative consumption externalities lead to a situation where the **social benefit of consumption is less than the private benefit.**

Marginal private cost (MPC)

- Cost to the producing firm of producing an additional unit of output

Marginal external cost (MEC)

- Cost to third parties from the production of an additional unit of output

Marginal social cost (MSC)

- Total cost to society of producing an extra unit of output. MSC = MPC + MEC

Marginal private benefit (MPB)

- Benefit to the consumer of consuming an additional unit of output

Marginal external benefit (MEB)

- Benefit to third parties from the consumption of extra unit of output

Marginal social benefit (MSB)

- Total benefit to society from consuming an extra unit, MSB = MPB + MEB

Valuing Externalities

A key aspect of all externalities is the difficulty of assigning values

1. **Shadow pricing:** e.g. the external cost of road congestion can be calculated by multiplying the number of hours lost by the average wage e.g. 1m lost working hours x £12 hourly wage = £12m
2. **Compensation:** estimate the cost of 'putting right' an externality e.g. include the cost of installing double-glazing in houses affected by increased road noise from a new motorway. If 200 houses are affected each with £5,000 double glazing cost, increased road noise is estimated at £1m
3. **Revealed preference:** how much people are willing to pay to avoid an externality e.g. if 200 householders are willing to pay £2,000 each to avoid noise, the externality is valued at £0.4m

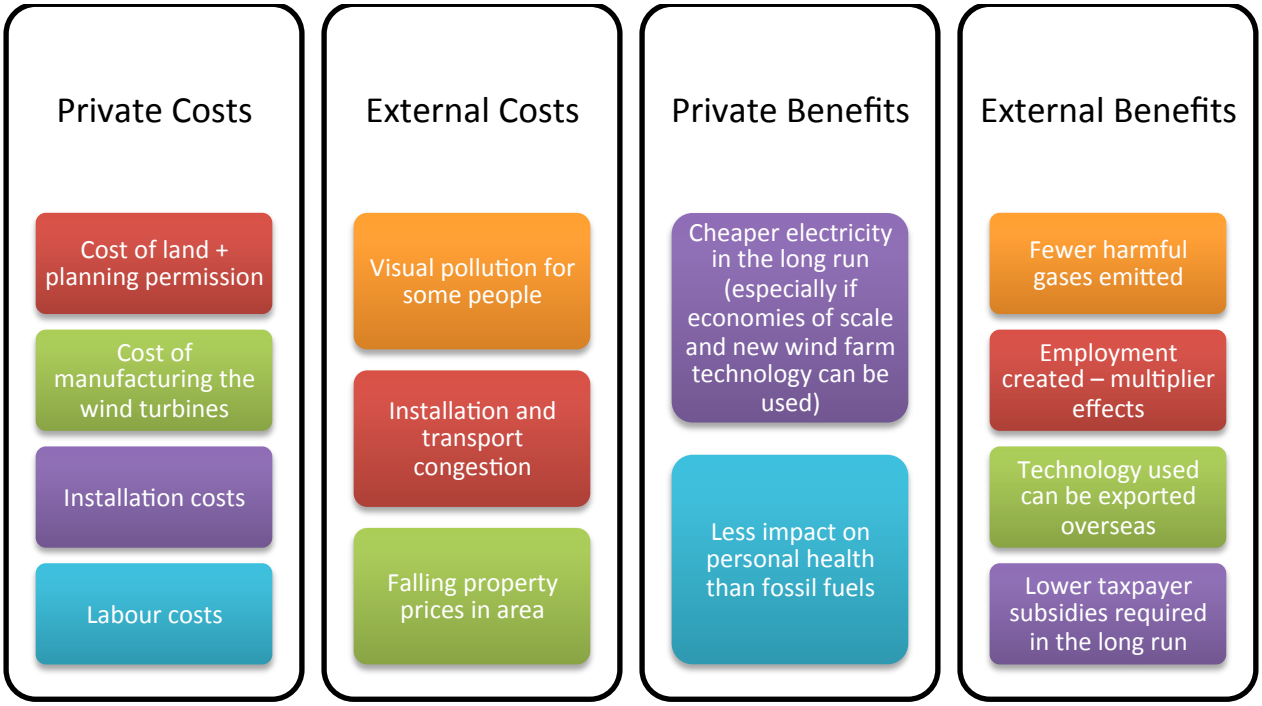
Calculating Social Costs and Benefits – A Worked Example

A government is considering four investment projects. It has the resources to finance and implement **only one** of these projects:

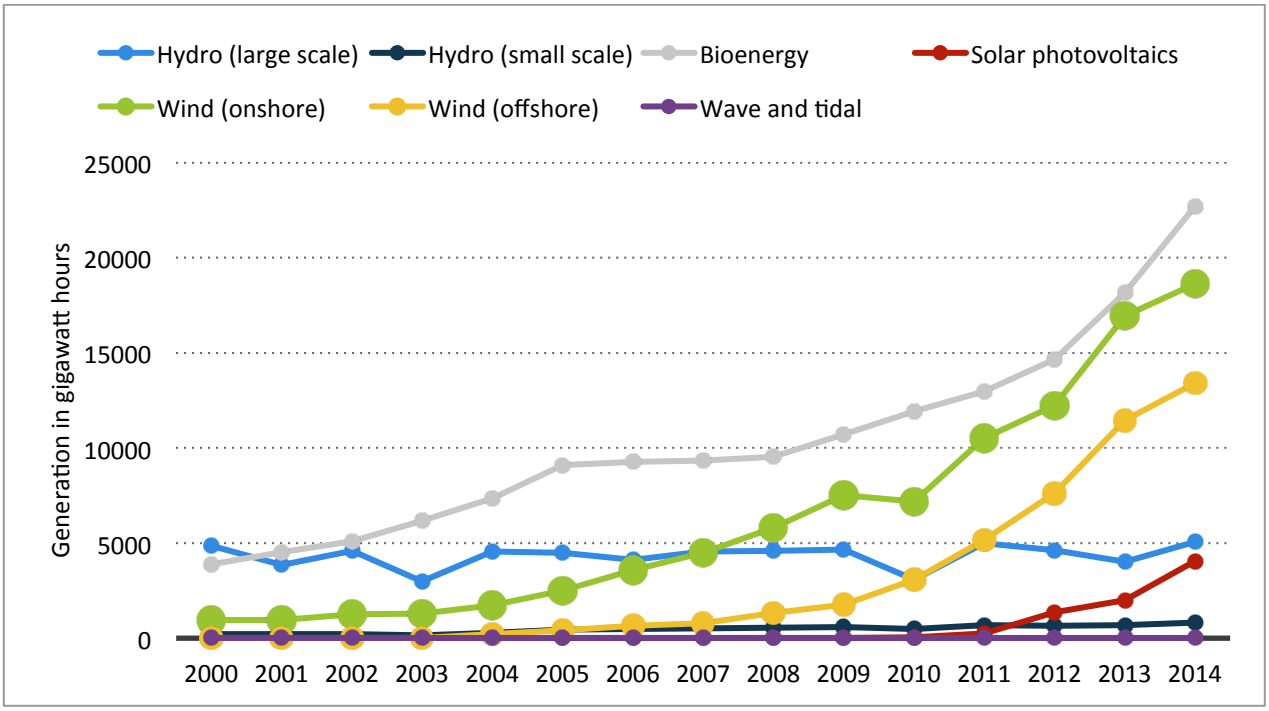
	New city motorway	New schools	Airport extension	New hospitals
Private benefits	50	135	130	90
Private costs	120	80	100	65
Positive externalities	90	55	35	120
Negative externalities	60	20	60	45
Net private benefit	-70	+55	+30	+35
Net social benefit	**-40**	**+90**	**+5**	**+100**

In this example, the largest net social benefit is highest for building new hospitals. Net social benefit may be taken into account by a government when deciding which project offers the best potential return for society

External Costs and Benefits from Wind Farms



Trends in UK Energy Supply from Renewable Sources



Market Failure from Negative Externalities in Production

- Marginal cost or marginal benefit is the change in total cost or benefits that results from an increase in production or consumption by one unit
- The firm's private supply curve is the private marginal cost curve (PMC)
- If there are negative externalities, we must add the **external costs** to the firm's supply curve to find the **marginal social cost curve (MSC)**
- If the market fails to include these external costs, the private equilibrium output is Q1 and the price P1 where **marginal private cost = marginal private benefit**.
- The **socially efficient output** would be Q2 with a higher price P2. At this price level, the external costs have been taken into account. We have not eliminated the pollution – but at least the market has recognised them and **priced them into the price of the product**.

Examples of negative production externalities

Air pollution from factories

Pollution from fertilizers

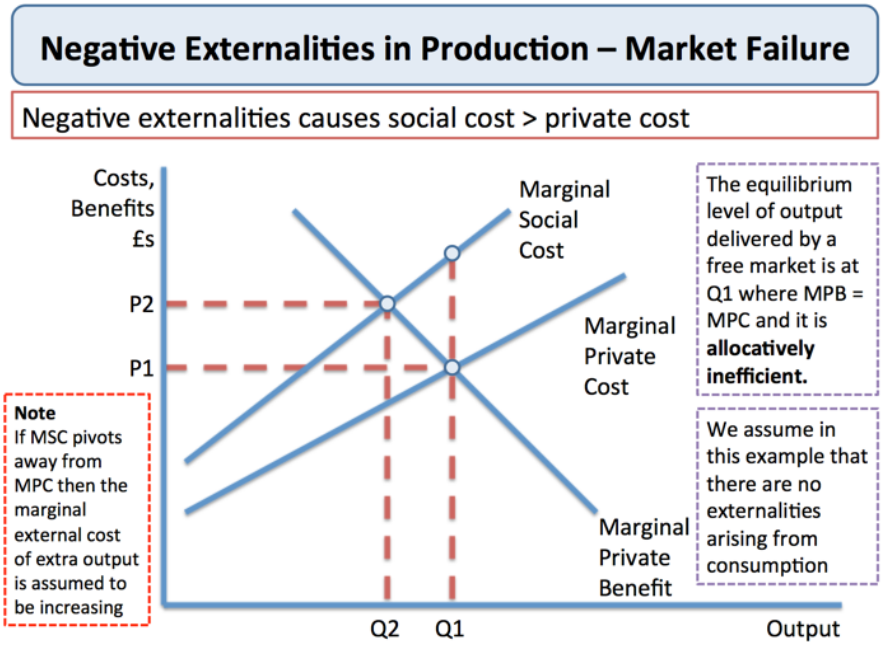
Industrial waste

Noise pollution

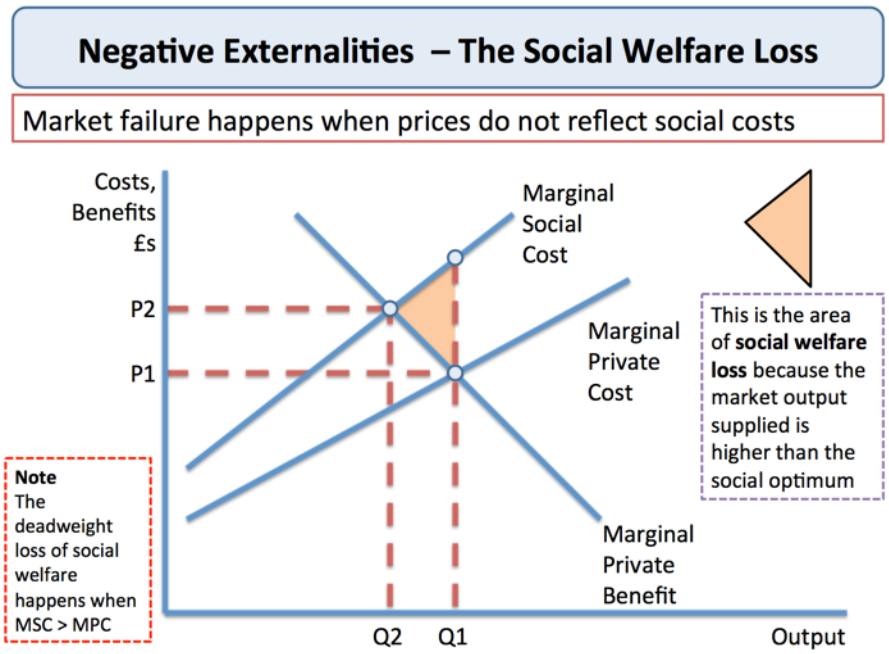
Collapsing fish stocks

Methane emissions

Negative Externalities Market Failure Diagram



You can develop this diagram further to explain how externalities lead to a deadweight loss of social welfare this is shown in the graphic below



Negative externalities from consumption

Negative consumption externalities are spill over costs generated and received in the consumption of goods and services. Some examples are shown in the graphic below.

Vehicle pollution

Household waste

Noise pollution from neighbours

Air pollution from smokers

Traffic congestion

Gambling addiction

Litter from tourists

Spillover costs from obesity

Government intervention with negative externalities

Pollution Taxes

- One approach is to impose a tax. This is known as **"making the polluter pay"**
- A pollution tax increases the marginal private cost either for the consumer or the producer (depending on who is being taxed) causing a fall in demand and hopefully a reduction in the level of production
- Some economists argue that revenue from pollution taxes should be 'ring-fenced' and allocated to projects that protect or enhance the environment.
- For example, money raised from a congestion charge might be allocated towards improving mass transport services
- Revenue from higher taxes on cigarettes might be used to fund better health care programmes.

British Columbia has used a Carbon Tax for many years

China has raised smoking taxes

Emissions Trading Scheme in the EU has operated since 2005

There is a proposed congestion charge for New Delhi

Carbon Trading

- The EU Carbon Emissions Trading Scheme is cap-and-trade scheme for carbon dioxide
- It sets a decreasing cap for CO2 from energy intensive sectors, and allocates or auctions emissions allowances that can be traded on the open market.
- Businesses need to buy enough emissions allowances – the higher the price, the greater the incentive to cut pollution
- Aviation has just been included in the scheme
- The consensus is that a carbon allowance price of at least €30 a tonne is needed to drive investment in low or zero emission technology. But the EU carbon price has rarely reached this level. Indeed in recent years, an excess supply of permits has led to the market price of carbon permits collapsing to below €10 per tonne

Analysis of how carbon trading is supposed to work in theory

- Under the European Union's emission trading scheme (ETS), industries that emit a lot of carbon into the atmosphere are issued with a **quota of carbon permits** and companies that want more must buy spare permits from cleaner companies
- ETS is a market created for buying and selling carbon permits / use of price mechanism to internalise external costs
- One allowance / permit represents one tonne of C02 equivalent
- A cap is set on emissions – this creates the **scarcity** required for the market. At the end of each year businesses are required to ensure they have enough allowances to account for their installation's

actual emissions. There are heavy fines for those without such permits – but this system needs to be enforced.

- The aim of carbon trading is **to create a market in pollution permits and put a price on carbon**. In this way, policy can help internalize environmental costs of firms' production and encourage lower emissions to tackle climate change
- In a **cap and trade system**, the number of available permits would gradually decline. As the price of the permits rises, so the economics of investing in cleaner technologies will change. The hope is that businesses will look for ways of reducing c02 emissions in the most efficient way possible
- Firms have an incentive to **invest in clean technology** / then sell excess permits to other firms / or bank some of their surplus permits for future years
- Heavy polluting firms are disadvantaged by experiencing higher production costs from buying extra permits/ whereas the cleaner firms are at an advantage with relatively lower production costs from selling surplus permits
- In theory a carbon trading market encourages a shift towards lower emissions in the economy and a nudge towards a cleaner environment. In practice the system has been heavily criticised because the over-supply of permits has caused the price of carbon permits to collapse.

Regulations to tackle externalities

There are many examples of the government introducing regulations / laws in an attempt to change the behaviour of consumers and businesses and reduce negative externalities. These include:

- Health and Safety at Work Act covering all businesses.
- Renewables Obligation Certificates to encourage the supply of renewable energy (+ penalties for not meeting targets)
- Local councils using by-laws preventing public consumption of alcohol.
- Consumer protection legislation e.g. against dangerous goods
- Laws such as the ban on smoking in public places from July 2007
- The European Union has introduced directives on how durables such as cars, batteries, fridges freezers should be disposed of
- The EU also imposes increasingly tough rules on carbon emissions from vehicles which all EU manufacturers must meet
- Speed limits on roads and weight limits for lorries
- Quotas on how much fishing can take place in EU waters
- Bans on sale of certain substances / minimum age of legal sale
- Lowering alcohol limit for drivers – reduced by Scotland in 2014

Evaluating Interventions to Address Negative Externalities

Problems with Environmental Taxes

Pollution taxes can lead to government failure:

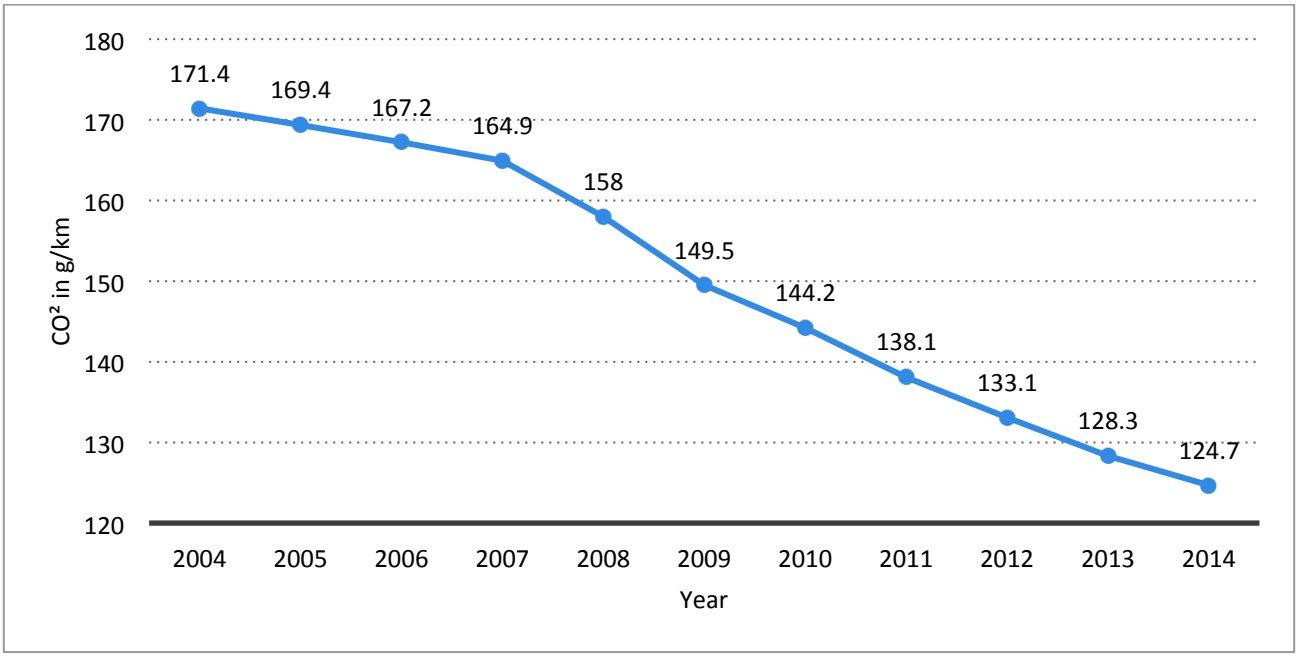
1. Assigning the right level of taxation: There are problems in setting the right tax so that private cost will exactly equate with the social cost
2. Consumer welfare effects: Producers may pass on a tax to the consumers if the demand for the good is inelastic and, as result, the tax may only have a small effect in reducing demand. Taxes on some de-merit goods (for example cigarettes) may have a regressive effect on lower-income consumers and lead to a widening of inequalities in the distribution of income.
3. Employment and investment consequences: If pollution taxes are raised in one country, producers may shift to countries with lower taxes. This will not reduce global pollution, and create problems such as structural unemployment and a loss of international competitiveness / worsening of the trade balance.

Evaluating the impact of industry regulations

The case for regulating negative externalities	Costs / disadvantages of adding extra regulation of industries
Regulations act as a spur for business innovation e.g. to cut the level of carbon emissions	High cost of enforcement / administration of laws / regulations
Regulations may be more effective if demand is unresponsive to price changes	Regulations can lead to unwelcome unintended consequences / Govt failure
Regulations can be gradually toughened each year – this will help stimulate capital investment	The cost of meeting regulations can discourage small businesses and lower competition in markets

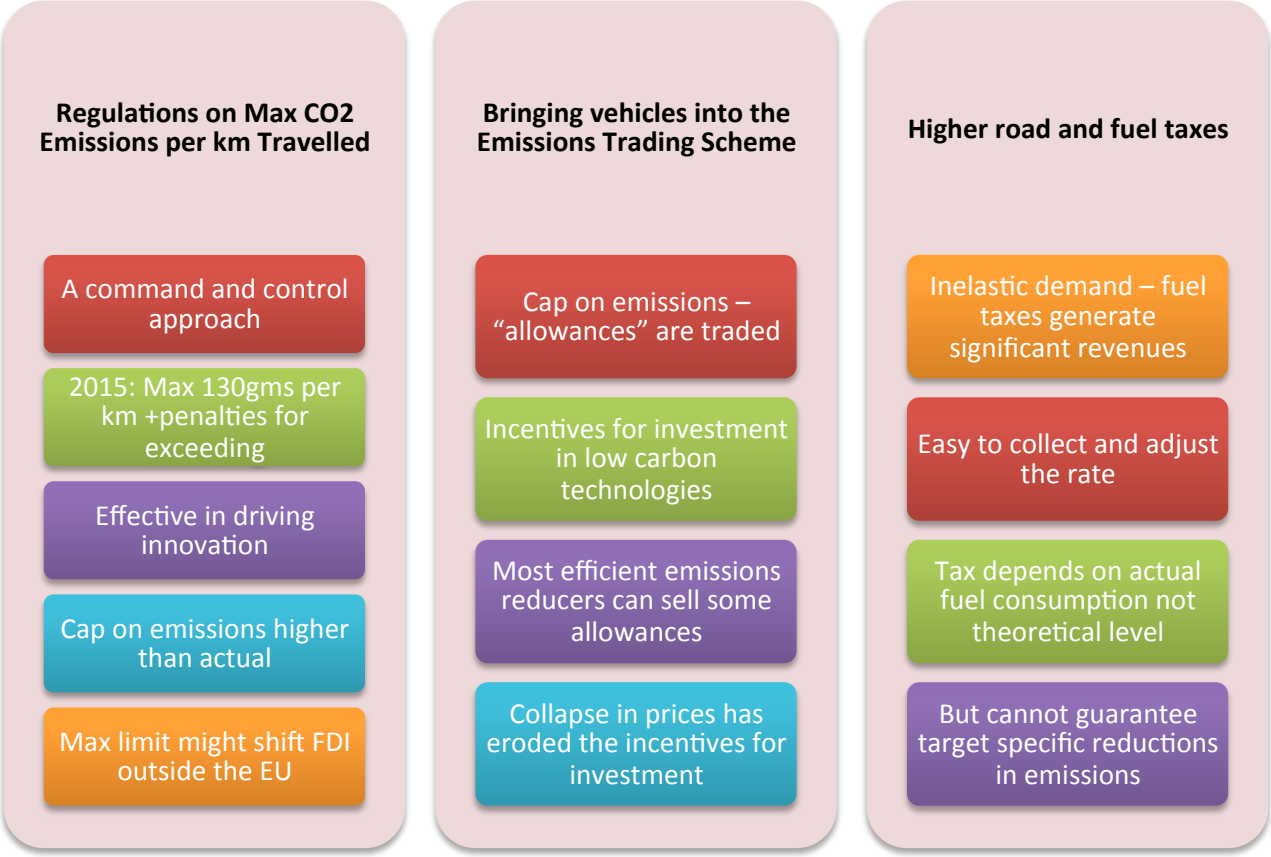
Externalities from C02 emissions from cars – progress made in the European Union

Average carbon dioxide emissions from new cars in the UK between 2004 and 2014 (in grams per kilometre)



The EU has adopted a number of approaches to achieving sustainable and significant reductions in C02 emissions from vehicles and the chart show progress has been made with emissions falling from 171 C02 emissions per kilometre travelled in 2004 to 125 in 2014.

Three broad approaches have been used involving a mix of market interventions including mandatory regulations and tax and subsidy incentives.



Positive Externalities

What are positive externalities?

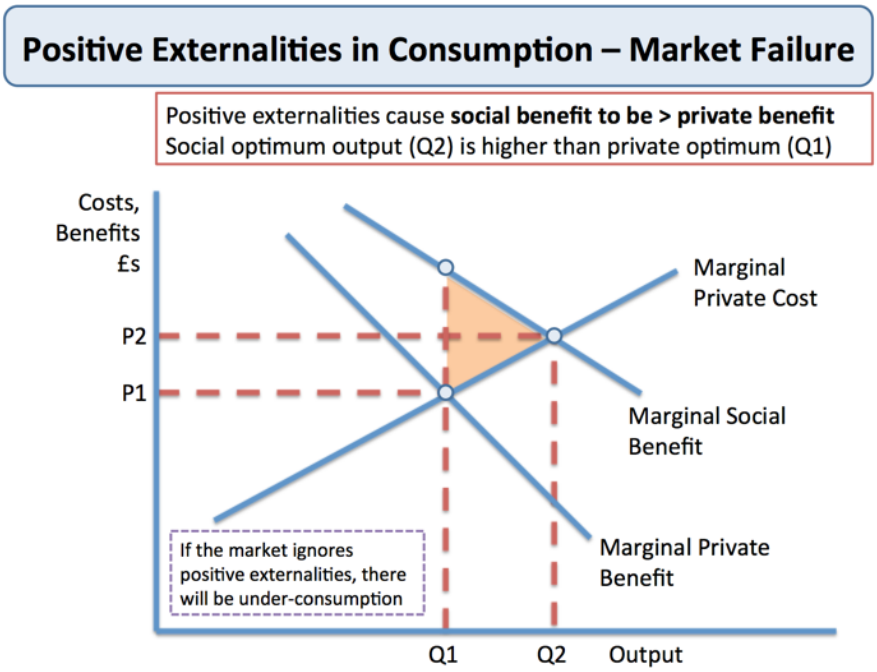
- Positive externalities occur when production and/or consumption create external benefits on third parties outside of the market
- Positive externalities create 3rd party spill over benefits
- The result is that the social benefit of production/consumption is greater than the private benefit
- External benefits might be in the form of
- Lower costs for other parties
- Increased revenues / profits for other parties
- Increased utility / satisfaction for other parties
- Positive externalities are associated with merit goods and services
- As with negative externalities, discussion of what counts as a positive externality and the value attached to it, will nearly always involve a value judgement.

Positive externalities in production and consumption

Positive production externalities	Positive consumption externalities
• Flood defence projects that benefit the whole community	• Healthcare / Childcare / flu and other vaccines made available to the population
• Projects to reduce deforestation especially in developing nations	• Education / Learning / Community Work
• Apps that promote “sharing” of scarce resources such as cars	• Pest control / gardening
• Research and development - spillovers for other businesses	• Usage of mass transport services instead of private motoring
• Bee-keeping and pollination	• Youth clubs and apprenticeships

Positive externalities and market failure

- Where positive externalities exist, the good or service may be **under-consumed** or **under-provided** since the **free market may fail to value them correctly** or take them into account when pricing the product.
- If there are **external benefits** the market delivers an output below the quantity that maximises social welfare.
- There is a case for government intervention in the market designed to increase consumption towards so as to increase social welfare.



Positive externalities – the decline of public libraries

Library usage in the UK has decreased over the years. During the most recent year measured, 288 million visits were made to public libraries, down from a decade high of 347 million visits in the 2006. An estimated 36 per cent of individuals in England visited a library in 2013, down from 48 per cent in 2005.

External Benefits from Public Libraries

- Community hub – help to address external costs of loneliness
- Free access to knowledge and public information and advice
- Increased labour mobility – e.g. access to job search facilities
- Positive spillovers from free facilities for people to study, work and meet
- People in poorer communities more likely to visit and use libraries

Factors behind declining usage of libraries

- Cuts in local authority funding
- Cheaper book prices from internet book retailers
- Rise of e-books
- Growth of internet access – people using the web for their own research

Public Goods and Private Goods

Public goods cause market failure due to the problem of missing markets. Public goods are also known as **collective consumption goods**.

Private Goods
A **private good** or service has three main characteristics:

1. **Excludable: Pay-per-view sporting events** are private goods because buyers can be excluded from enjoying the product if they are not willing and able to pay for it. Excludability gives the **seller the chance to make a profit**. When goods are excludable, the owners can exercise **property rights**.
2. **Rival in consumption**: If you order a pizza from Dominos, that pizza is no longer available to someone else. Driving a car on a road uses up road space that is no longer available at that time to another motorist. With a private good, one person's consumption of a product reduces the amount left for others to consume and benefit from - because **scarce resources are used up in supplying the product.**
3. **Rejectable**: If you don't like the soup on the school menu, you can use your money to buy something else! You can choose not to travel on Virgin Rail and go instead by coach, or you can choose not to buy a season ticket for your local soccer club and instead use the money to finance a subscription to a health club. The consumer can reject private goods and services if their **needs and preferences** or their budget changes.

Flood Defence Spending and Public Goods

Some 5.2 million properties are at risk of flooding in England. Annual flood damage costs are in the region of £1.1 billion. These costs could rise to as much as £27 billion by 2080. The risks of flooding arise from a number of factors:

(1) Climate change, which could lead to rising sea levels and changes in rainfall
(2) Ageing drainage and flood defence infrastructure
(3) More buildings in flood-prone areas
(4) More paving, which increases the volume of water running off the ground

In the past, major flood defence projects have been funded from the main Government budget. But cuts in state pending mean that local councils are likely to have to find the finances for new flood defence schemes.

People living in areas of flood risk are reluctant to pay for flood protection themselves or take out extra insurance.

Source: UK Parliament Briefing (2013)

Key Characteristics of Public Goods
The characteristics of pure public goods are the as follows:

1. **Non-excludability:** The benefits derived from pure public goods cannot be confined solely to those who have paid for it. Non-payers can enjoy the benefits of consumption at no financial cost – economists call this the **'free-rider'** problem.
2. **Non-rival consumption:** Consumption by one consumer does not restrict consumption by other consumers – in other words the **marginal cost of supplying** a public good to an extra person is zero. If it is supplied to one person, it is available to all.
3. **Non-rejectable:** The collective supply of a public good for all means that people cannot reject it. A good example is a nuclear defence system or flood defence projects affecting an entire community.

Public goods and market failure

- Private sector markets may fail to supply in part or in whole the optimum quantity of public goods
- Pure public goods are **not normally provided by the private sector** because they would be unable to supply them for a profit.
- It is up to the government to decide what output of public goods is appropriate for society.
- To do this, it must **estimate the net social benefits** from making public goods available.

The Free Rider Problem

- Because public goods are non-excludable it is difficult to charge people for benefitting form a good or service once it is provided
- The free rider problem leads to under-provision of a good and thus causes market failure

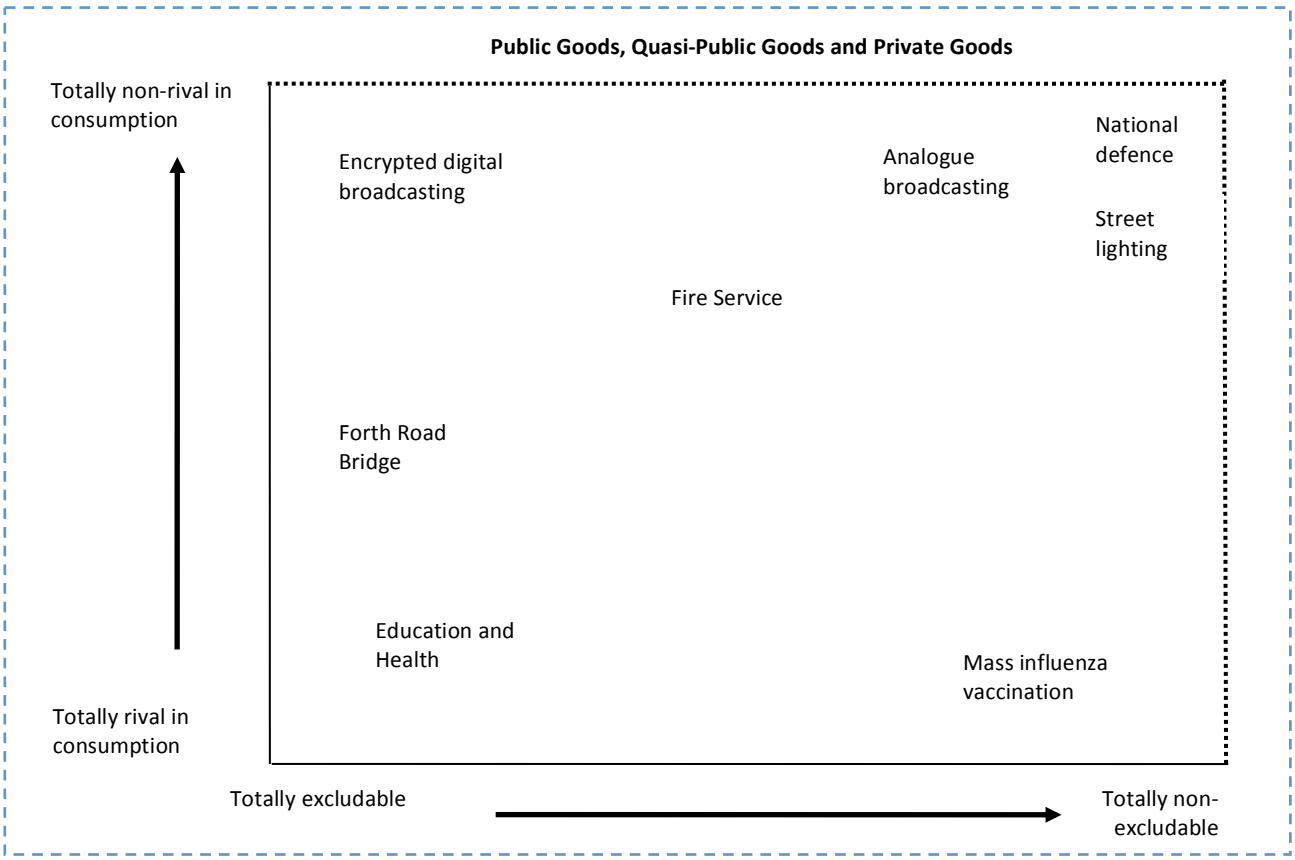
Quasi-Public Goods

A quasi-public good is a **near-public good** i.e. it has many but not all the characteristics of a public good. Quasi-public goods are:

1. **Semi-non-rival:** up to a point, extra consumers using a park, beach or roads do not reduce the space available for others. Eventually beaches become crowded, as do parks and other leisure facilities. Open access Wi-Fi networks become crowded slowing down download speeds for all other users.
2. **Semi-non-excludable:** it is possible but often difficult or expensive to exclude non-paying consumers. E.g. fencing a park or beach and charging an entrance fee; building toll booths to charge for road usage on congested routes and bridges

Typology of Public Goods

This diagram breaks down different goods and services according to the degree of excludability and also whether they are rival or non-rival. Pure public goods appear in the top right of the diagram.

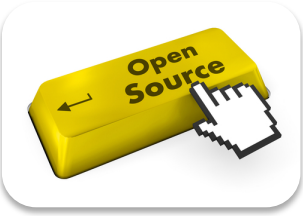


The Changing Nature of Public Goods

- Advances in technology are causing a blurring of the distinction between public and private goods. For example, in some cases, encryption allows suppliers to exclude non-payers – although the product remains non-rival.
- Technological progress also reduces the cost of smart metering used in road pricing – this makes roads more of a private (excludable) good. The open source / creative commons movement has made much information public good in nature

Encryption devices

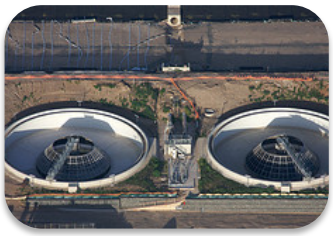
Smart Electronic Road Pricing



Open Source Software

Live Streaming of Events

Examples of public goods



Sanitation infrastructure

Flood defence / tidal barrage

Crime control for a community

Reduced risk of disease from vaccinations

Freely available knowledge e.g. online learning

Public service broadcasting

Case for government intervention with public goods

- The non-rival nature of consumption provides a strong case for the government to replace the market to provide and pay for public goods
- Many public goods are provided free at the point of use and then funded by taxation or a charge such as the BBC's licence fee
- State provision may help to prevent under-provision and under-consumption of public goods so that social welfare is improved
- If the government provides public goods they may be able to do so more efficiently because of economies of scale
- Providing essential public goods helps affordability and access to important services for lower income households and therefore help to address inequalities of income
- If the government becomes a monopoly provider, there is a danger of a lack of efficiency arising from a lack of competition

Global Public Goods
Global public goods benefit every country, irrespective of which ones provide them – they have become more important recently

- Security from war, violence, and crime
- The rule of law, property rights, and contract enforcement
- Eradication of smallpox, Ebola and other diseases
- Non use / proliferation of nuclear weapons
- Agreements/measures towards protection of the ozone layer

Public Bads
A public bad has negative effects (externalities) on people and their communities leading to a significant loss of social welfare. Examples of public bads include:

- Spread of infectious diseases such as Ebola
- Unauthorized / illegal surveillance by the state
- Modern slavery / human trafficking
- Environmental threats to the global commons
- Gender and other forms of discrimination in labour markets
- Disposal of household and commercial waste
- Web viruses / denial of service attacks
- High rates of global inequalities of income and wealth
- Endemic corruption within organisations and societies
- Externalities from banking crises / financial mismanagement

Public goods and externalities
An infrastructure project often has a public good aspect and generates external benefits and costs both during & after construction has taken place. Cross Rail is our example here.

Type	Costs	Benefits
Private	• Construction costs • Operating costs • Cost of capital (interest on loans) • Potential health and safety costs / insurance liability	• Lower transport costs for businesses • Time savings for travellers and businesses • Potential innovation spill-overs and export potential in and around London
External	• Externalities from construction • Landscape issues • Increased noise / congestion in and around new stations	• Regeneration in potentially deprived communities • Potential re-skilling of workforce employed • Lower CO_2 and other emissions

Merit and De-Merit Products

What are merit goods?

- Merit goods are goods and services the government feels that people will under-consume, and which might be subsidised or provided free at the point of use.
- Both the state and the private sector provide merit goods.
- With merit goods individuals may not act in their own interest because of imperfect information – i.e. they do not fully understand the private benefits of their consumption. Information failure is an important aspect of the merit goods issue.
- Unlike pure public goods, merit goods can be rival, excludable and rejectable.
- Consumption of merit goods is often argued to generate positive externalities - where the social benefit from consumption exceeds the private benefit.
- A merit good is a product that society values and judges that people should have regardless of their ability to pay.
- Good examples of merit goods include health services, contraception, education, work training programmes, public libraries and museums, Citizen's Advice Bureaux and inoculations for children

Health programmes

Early years education
e.g. nursery provision

Subsidised Bike Schemes

Public libraries /
community spaces

Museums and Galleries

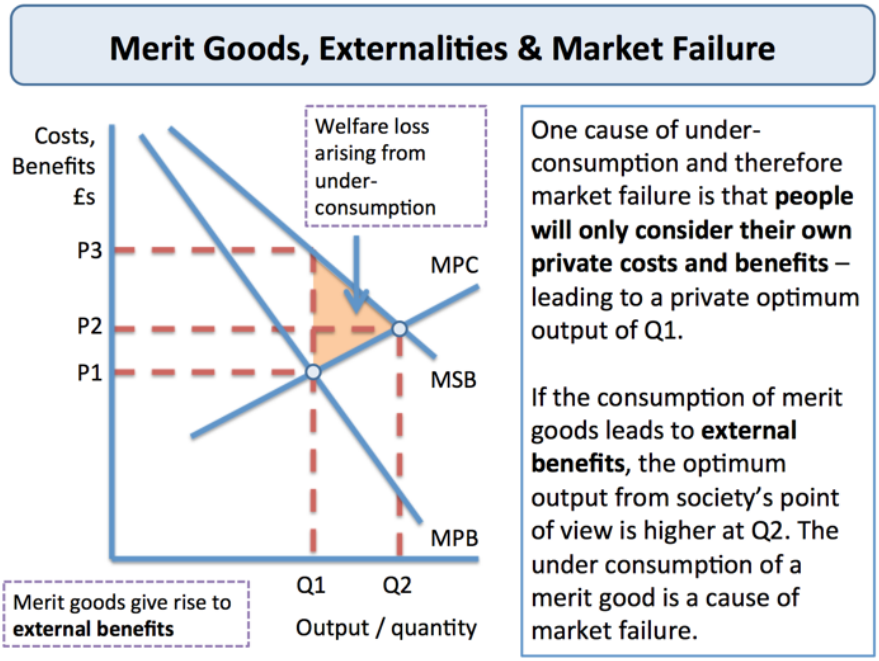
Free school meals /
nutritional advice

Education as a merit good

- Parents may be unaware of the longer-term benefits their children might derive from education.
- Education is a **long-term investment decision**. The private costs must be paid now but the private benefits (including higher earnings potential over one's working life) take time to happen. Education provides **external benefits** including **rising incomes** and **productivity** for current and future generations and an increase in **occupational mobility** to help to **reduce unemployment**.
- Increased spending on education should also provide a stimulus for **higher-level research** that can add to the **long run trend rate of growth**. Other external benefits might include the encouragement of a more enlightened and cultured society. Providing that the education system provides a sufficiently good education across all regions and sections of society, increased education and training spending should also open up more **equality of opportunity**.

Notice here that we are talking about the sorts of goods and service that society **judges** to be in our best welfare. Judgements involve **subjective opinions** – and we cannot escape from making **value judgements** when we are discussing merit goods.

Merit Goods and Market Failure

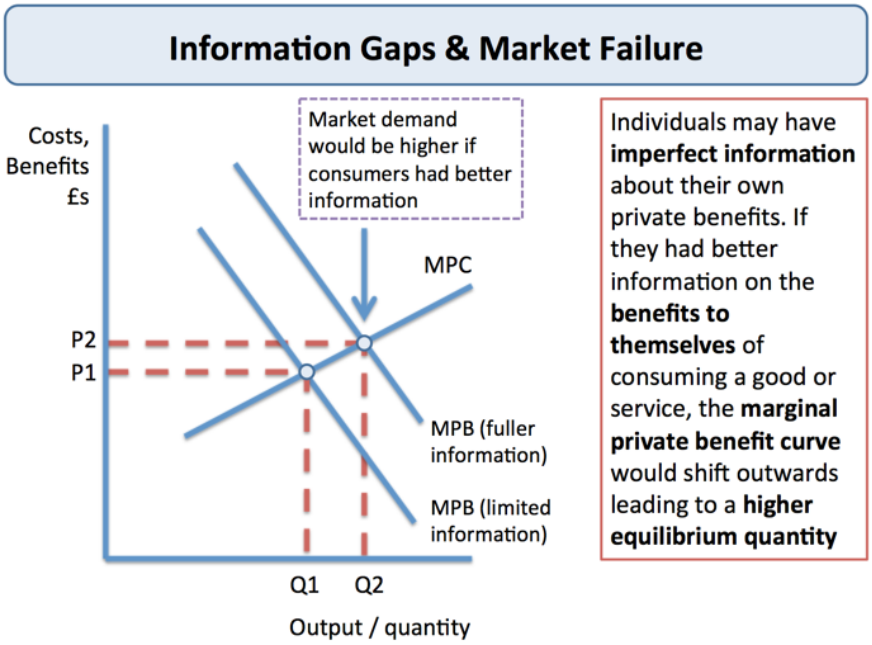


Why does the government provide merit goods and services?

- To encourage consumption so that positive externalities of merit goods can be achieved for example free inoculation against infectious diseases
- To overcome the information failures linked to merit goods
- On grounds of **equity** – because the government believes that consumption should not be based solely on the grounds of ability to pay for a good or service

Merit Goods and Information Failure

Individuals may have imperfect information about their own private benefits. If they had better information on the benefits to themselves of consuming a good or service, the marginal private benefit curve would shift outwards leading to a higher equilibrium quantity.



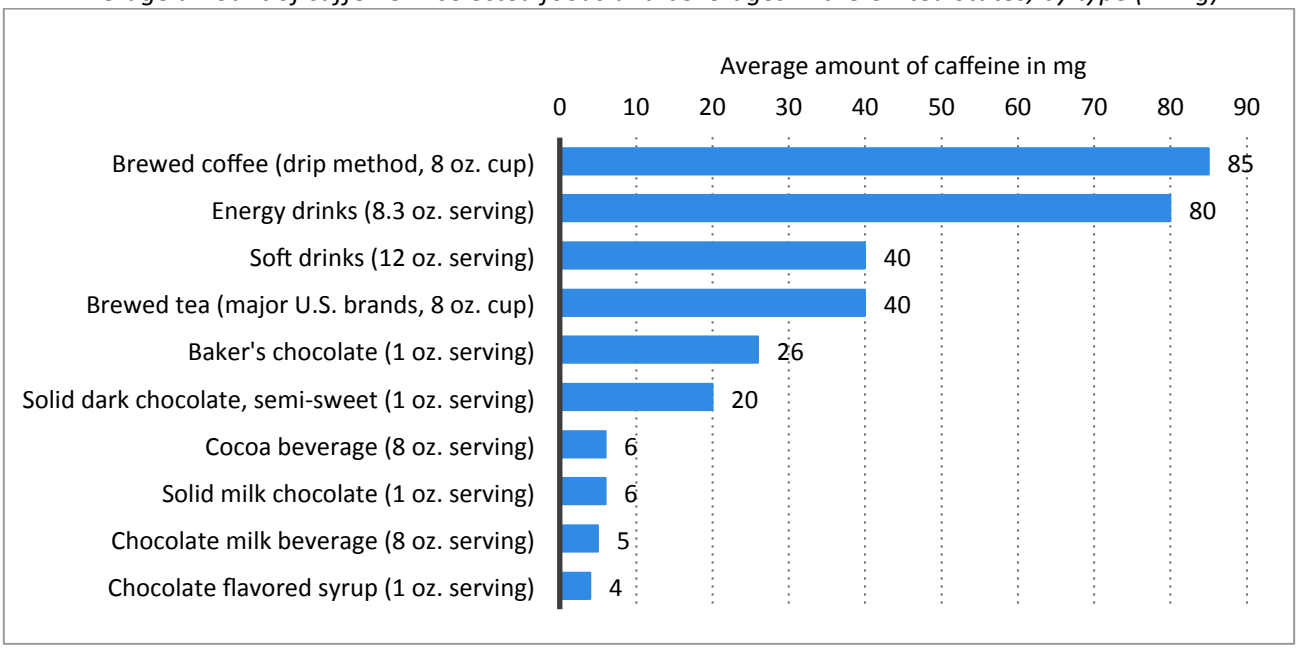
Comparing and contrasting merit goods with pure public goods – a key summary

Merit Goods	Pure Public Goods
• Provided by both the public and private sector	• Normally funded & provided by the government
• Positive marginal cost to supply to extra users	• Marginal cost of supply close to zero – if provided to one, it is provided to all
• Limited in supply – high opportunity cost	• Largely unconstrained in supply
• Rival – consumption reduces availability for other	• Non-rival – one person's consumption does not reduce availability for others
• Excludable	• Non-excludable giving rise to the free rider
• Rejectable by those unwilling to pay	• Non rejectable - usually funded by general taxes

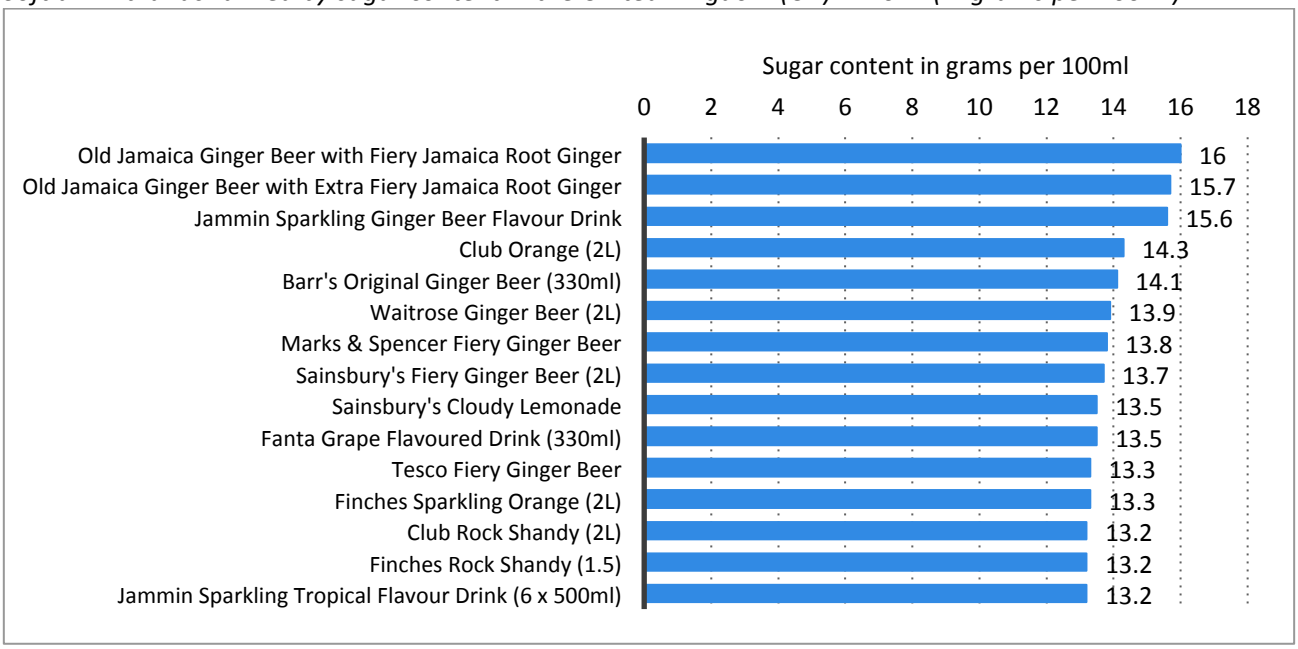
Demerit goods

- De-merit goods are thought to be 'bad' for you
- Consumption can lead to negative externalities i.e. the social cost of consumption exceed the private cost
- Consumers may be unaware of the negative externalities that these goods create – they have information failure about long-term damage to their own health.
- The government may decide to intervene in the market for de-merit goods and impose taxes on producers or consumers.
- Many economists argue that taxation is an ineffective and inequitable way of curbing the consumption of drugs and gambling particularly for those affected by addiction.
- Banning through regulation may reduce demand, but risks creating secondary markets
- Key point: Arguments about what is a de-merit good involves making value judgements

Average amount of caffeine in selected foods and beverages in the United States, by type (in mg)



Soft drink brands ranked by sugar content in the United Kingdom (UK) in 2014 (in grams per 100ml)

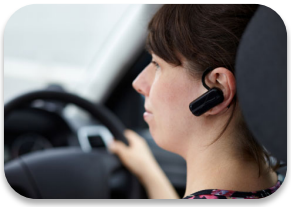


Examples of de-merit goods

High Caffeine Energy Drinks

High-fat, high-sugar & high-salt foods

Violent films and games



Hands-free mobile phones in vehicles

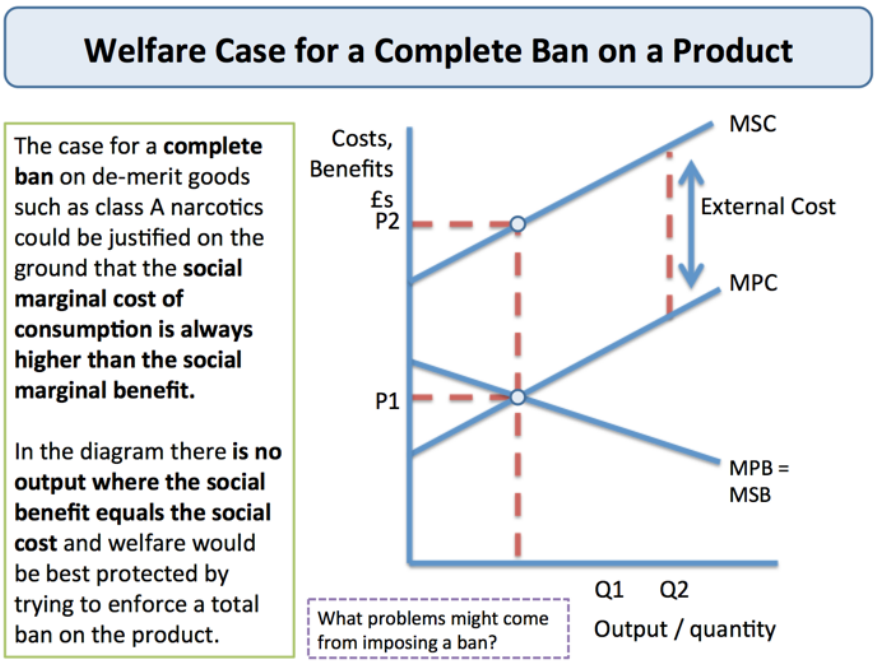
Alcohol fraud and binge drinking

Tobacco products

Market failure with demerit goods

- The free market may fail to take into account the negative externalities of consumption because the social cost exceeds the private cost.
- Consumers too may experience imperfect information about the long term costs to themselves of consuming products deemed to be de-merit goods

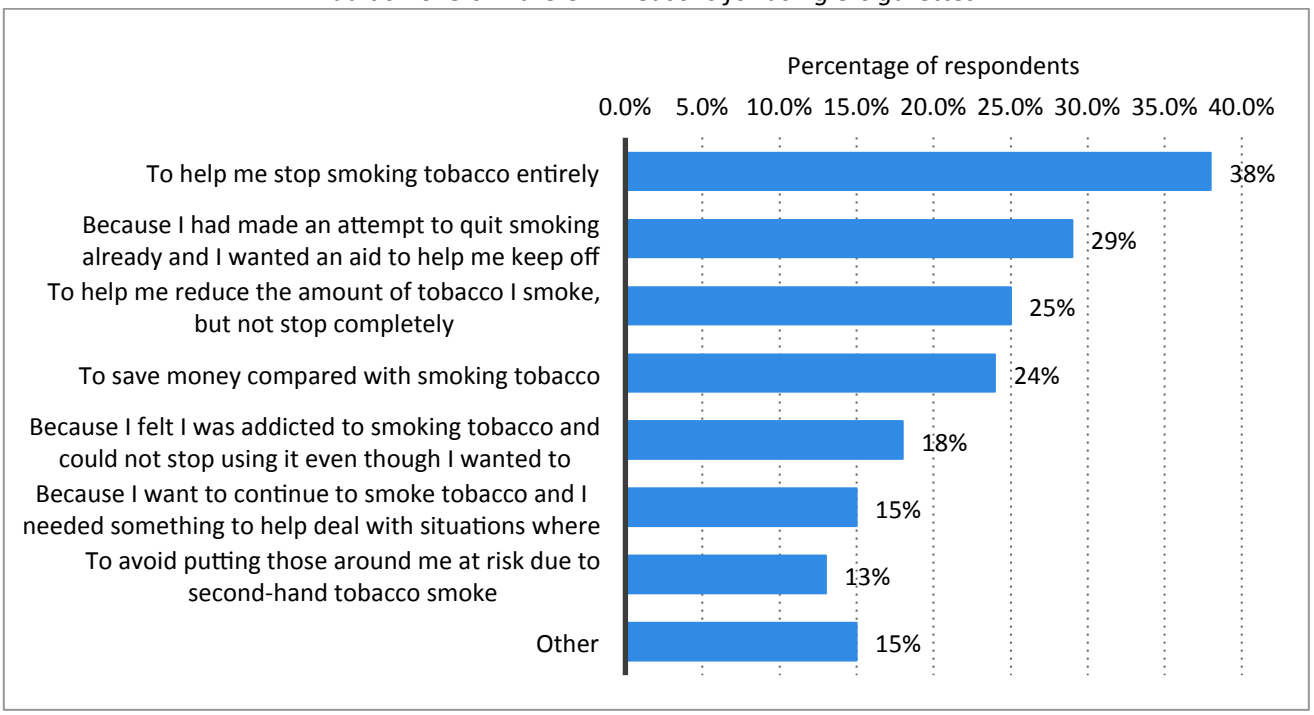
Welfare Case for a Complete Ban on a Product



E-Cigarettes – a merit or a de-merit good?

In the UK, 16% of the population use e-cigarettes. However, only 0.14% uses e-cigarettes having never smoked before. The majority of users of e-cigarettes are current smokers or people who have given up smoking

Adult smokers in the UK - Reasons for using e-cigarettes



Private Costs of E-Cigarette Consumption	External Costs of E-Cigarette Consumption
Cost of starter e-cig packs	Vapor from e-cigs is dangerous
Cost of liquid-nicotine cartridges	Gateway for young people to smoke

Private Benefits of E-Cigarette Consumption	External Benefits of E-Cigarette Consumption
Utility from a nicotine hit	E-cigarettes help smokers quit
Less social isolation	Reduced health costs to society

Factor Immobility

One cause of market failure is the **immobility of factors of production**. There are two main types of factor immobility, **occupational** and **geographical** immobility.

Occupational Immobility

- Occupational immobility occurs when there are **barriers to the mobility of factors of production between different sectors of the economy** leading to these factors remaining unemployed, or being used in ways that are not efficient.
- Some capital inputs are occupationally mobile – a computer can be put to use in many different industries. And commercial buildings such as shops and offices can be altered to provide a base for many businesses. However some units of capital are specific to the industry they have been designed for – a printing press or a nuclear power station for example!
- People often experience occupational immobility. For example, workers made redundant in the steel industry or in heavy engineering may find it difficult to find a new job. They may have **specific skills** that are not necessarily needed in growing industries which causes a **mismatch** between the skills on offer from the unemployed and those required by employers looking for workers.
- This problem is called **structural unemployment.** Clearly this leads to a waste of scarce resources and represents market failure.

Geographical Immobility

Geographical immobility refers to barriers people moving from one area to another to find work. There are good reasons why geographical immobility might exist:

- Family and social ties
- The financial costs involved in moving home including the costs of selling a house and removal expenses.
- Huge regional variations in house prices leading to a shortage of affordable housing in many areas
- The high cost of renting property
- Differences in the general cost of living between regions and also between countries
- Migration controls e.g. a cap on inward migration
- Cultural and language barriers

Policies to Improve the Mobility of Labour

To reduce occupational immobility:

- Invest in training schemes for the unemployed to boost their **human capital** to equip them with new skills and skills that can be transferred from one occupation to another.
- Subsidise the provision of **vocational training** by private sector firms to raise the skills level

To reduce geographical immobility:

- **Reforms to the housing market** designed to improve the supply and reduce the price of rented properties and to increase the supply of affordable properties.
- **Specific subsidies** for people moving into areas where there are shortages of labour – for example teachers and workers in the National Health Services
- **Relaxation of migration caps**

Information Failures in Markets

- **Information failure** occurs when people have inaccurate, incomplete, uncertain or misunderstood data and so make potentially 'wrong' choices.
- From pensions to computer games consoles, from investing in the stock market to ignorance about the consequences of borrowing and debt, all of us suffer from one or more information failures.
- The key issue is whether the information failure is trivial or whether it has a big effect on individuals, their families and society as a whole.
- There may be a case for the government to intervene in a market in some way if information failures become serious and persistent.

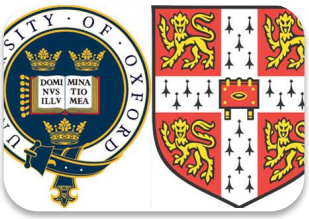
Causes of information failure
Imperfect information can be caused by

- **Misunderstanding the true costs or benefits of a product:** E.g. the side effects of using tanning salons or painkillers
- **Uncertainty about costs and benefits** e.g. should younger workers be buying into **pension schemes** when we can only guess at conditions in 40 years time?
- **Complex information** when buying specialist products
- **Inaccurate or misleading information** - persuasive advertising may 'oversell' the benefits of a product leading to more consumption than is optimal. Spam mail can be a cause of misinformation for consumers.
- **Addiction** e.g. drug addicts may be unable to stop consumption of harmful substances
- **Lack of awareness** – a good example here is that of tuition fees in Britain – many parents and students find the system of university finance difficult to understand

Examples of information failure
In nearly every market we find examples of information gaps

Risks from using tanning salons

Addiction to painkillers & other drugs


Gaining entry to elite degree courses

Complexity of pension schemes

Uncertain quality of second hand products

Knowledge of the nutritional content of foods

Cowboy builders or other "rip-off merchants"

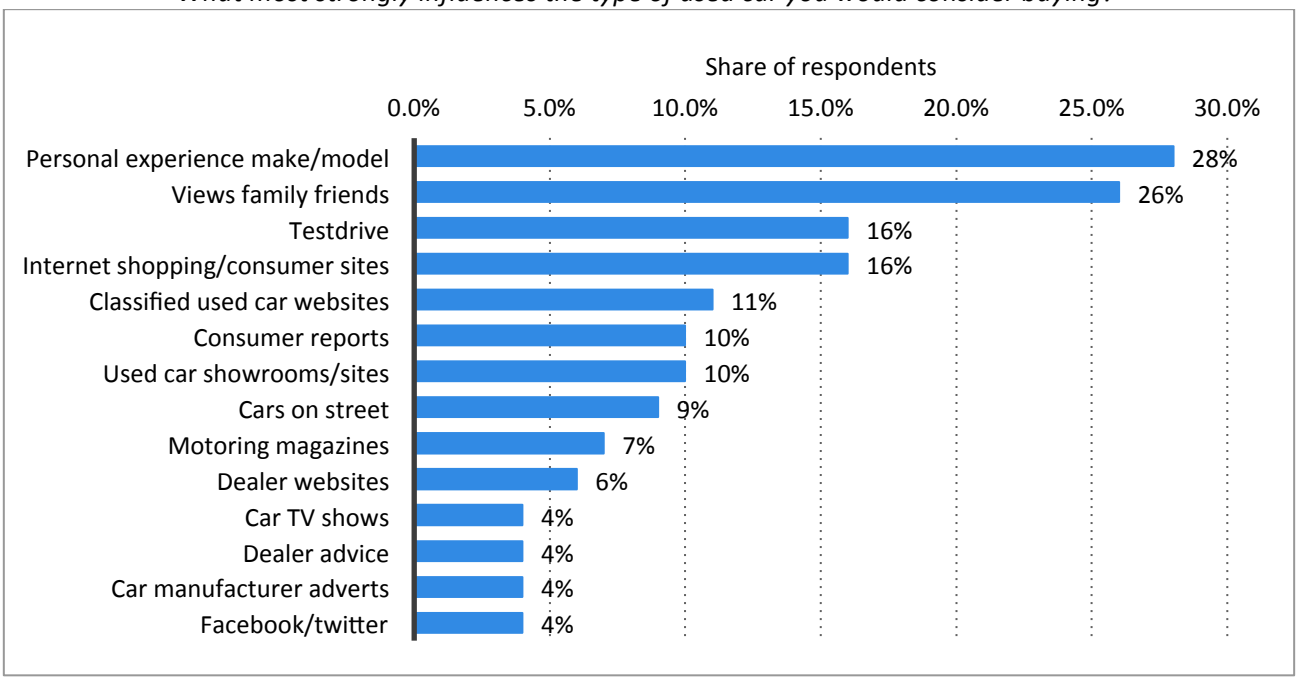
Tourist Bazaars or buying and selling antiques

Asymmetric Information

- For markets to work, there needs to be **symmetric information** i.e. consumers and producers have the same level of knowledge about the products, and they know everything there is to know about them and the effects of consuming them
- Asymmetric information is when there is an imbalance in information between buyer and seller which can distort choices

The used-car market
The used car market has plenty of asymmetric information because potential buyers of a vehicle know less than the seller about the car's quality.

What most strongly influences the type of used car you would consider buying?



Moral Hazard and Adverse Selection
These are two aspects of asymmetric information in insurance markets

Moral Hazard
- Moral hazard occurs when insured consumers are likely to take greater risks, knowing that a claim will be paid for by their cover
- The consumer knows more about his/her intended actions than the producer (insurer)

Adverse Selection
- Health insurance: those most likely to purchase health insurance are those who are most likely to use it, i.e. smokers/drinkers/those with underlying health issues
- The insurance company knows this and so raises the average price of insurance cover
- This prices healthy consumers out of the market, and can mean that only high risk individuals gain insurance

Introduction to Government Intervention

Laissez faire economics

- In a **free market system**, governments take the view that markets are best suited to allocating scarce resources and allow the market forces of supply and demand to set prices.
- The role of the government is mainly to protect property rights, uphold the rule of law and maintain the value of the currency.
- Competitive markets often deliver improvements in allocative, productive and dynamic efficiency
- But there are occasions when they fail – providing a case for intervention.

Intervention in the market

The main reasons for policy intervention are:

- To correct for **market failure**
- To achieve a more **equitable distribution of income and wealth**
- To improve the **performance of the economy**

Key summary

Type of Market Failure	Consequence of Market Failure	Example of Government Intervention
Factor immobility	Structural unemployment	State investment in education and training
Public goods	Failure of market to provide pure public goods, free rider problem	Government funded public goods for collective consumption
Demerit goods	Over consumption of products with negative externalities	Information campaigns, minimum age for consumption
Merit goods	Under consumption of products with positive externalities	Subsidies, information on private benefits
Imperfect information	Damaging consequences for consumers from poor choices	Statutory information / labeling
High relative poverty	Low income families suffer social exclusion, negative externalities	Taxation and welfare to redistribute income and wealth
Monopoly power in a market	Higher prices for consumers causes loss of allocative efficiency	Competition policy, measures to encourage new firms into a market

Direct State Provision of Goods and Services

- What is best provided by the market?
- What might be more appropriately provided by the government sector of the economy?

Privatisation

Privatisation means the transfer of assets from the public (government) sector to the private sector.

- In the UK the process has led to a sizeable reduction in the size of the public sector. State-owned enterprises now contribute less than 2% of GDP and less than 1.5% of total employment.
- Privatisation has become a key micro reform in the transition economies of Eastern Europe.
- Over the last few years privatisation in the UK economy has given way to a new wave of nationalisation including some high profile banks, building societies and transport services. Nationalisation has also happened in other Western European countries

Fiscal Policy Intervention

Fiscal policy can be used to alter the **level of demand** for different products and also the **pattern of demand** within the economy.

- **Indirect taxes** can be used to raise the price of de-merit goods and products with negative externalities designed to increase the opportunity cost of consumption and thereby reduce consumer demand towards a socially optimal level
- **Subsidies** to consumers will lower the price of merit goods. They are designed to boost consumption and output of products with positive externalities – remember that a subsidy causes an increase in market supply and leads to a lower equilibrium price
- **Tax relief:** The government may offer financial assistance such as **tax credits** for business investment in research and development. Or a reduction in **corporation tax** (a tax on company profits) designed to promote new capital investment and extra employment
- **Changes to taxation and welfare payments** can be used to influence the overall distribution of income and wealth – for example higher direct tax rates on rich households or an increase in the value of welfare benefits for the poor to make the tax and benefit system more progressive

Government Intervention and Stakeholders

- A **stakeholder** is any person or organization that has an interest in a specific project or policy decision.
- As an economist, whenever you are required to discuss the costs and benefits of an example of government intervention it is worth asking yourself "who are the major stakeholders in this issue?"
- The decisions of government, businesses and other organisations inevitably affect groups within society. Increasingly, many businesses are taking into account the effects of their actions not just on the value that such decisions create for shareholders – but also to a broader range of stakeholder groups.
- Typically stakeholder issues come into play on major infrastructural projects where a cost benefit analysis might be undertaken to assess the likely social costs and benefits – it is important to bring as many stakeholders into the picture as possible – many people might be affected

Examples of stakeholders you might think of bringing into a discussion

1. Employees of a business / organisation (who may / may not be members of a union)
2. Communities where a business is located or affected *directly* by a decision
3. Suppliers to a particular business (e.g. back down the supply chain)
4. Shareholders and other investors / financiers
5. Creditors (people owed money)
6. Government (and through them – taxpayers)
7. Trade unions (and the workers they represent)
8. Professional associations
9. NGOs and other advocacy groups (i.e. World Bank, IMF, Pressure Groups)
10. Prospective employees
11. Prospective customers
12. Local communities
13. National communities
14. International community
15. Competitors within a market

Evaluation on Government Intervention

a) **Value judgements:** Be aware of the use of 'value judgements' in discussions about government intervention – many people want a particular intervention because of their own vested interests.

b) **Changing prices to change incentives and behaviour:** Many interventions work though the price mechanism by changing the relative prices / relative costs of day-to-day decisions

    a. E.g. raising the price of fuel to curb consumption

    b. Offering a subsidy to bio-fuel producers

    c. Using tariffs to change the relative prices of imports in a domestic economy

c) **Social science:** Economics is a social science and the effects of intervention cannot be calibrated / forecast with great accuracy – people's behaviour is subject to change – remember the 'law of unintended consequences'!

d) **Combinations of policies**: One single intervention is unlikely to produce a solution to deep-rooted economic and social problems – try to build a variety of policy options into your discussion e.g. policies that work on market demand and market supply

e) **The power of markets**: Is government intervention always necessary? Market forces can be really powerful in finding profitable solutions to problems – don't underestimate the importance of innovation and invention – government's rarely have all of the answers and the new economics of mass collaboration offers powerful insights into the impact that collusive behaviour can have e.g. in fast-tracking ideas linked to reducing carbon emissions

f) **Costs and benefits**: You cannot go far wrong in an evaluation question by trying to identify and then discuss the costs and benefits of government intervention – some of which only become apparent over long time periods

g) **The 'law of unintended consequences'**: Government intervention does not always work in the way in which it was intended or the way in which economic theory predicts it should. Part of the fascination of studying Economics is that the "law of unintended consequences" often comes into play – events can affect a particular policy, and consumers and businesses rarely behave precisely in the way in which the government might want!

Judging the Effects of Intervention – A Revision Check List

To help your evaluation of government intervention – it may be helpful to consider these questions:

1. **Efficiency of a policy**: i.e. does a particular intervention lead to a better use of scarce resources? E.g. does it improve allocative, productive and dynamic efficiency? For example - would introducing indirect taxes on high fat foods be an efficient way of reducing some of the external costs linked to the growing problem of obesity?

2. **Effectiveness of a policy**: i.e. which policy is most likely to meet a specific economic or social objective? For example which policies are likely to be effective in reducing road congestion?

3. **Equity effects of intervention:** i.e. is a policy thought of as fair or does one group in society gain more than another? For example, would it be equitable for the government to increase the top rate of income tax to 50 per cent in to make the distribution of income more equal?

4. **Sustainability of a policy**: i.e. does a policy reduce the ability of future generations to engage in economic activity? Inter-generational equity is an important issue in many current policy topics for example decisions on which sources of energy we rely on in future years.

Indirect Taxation

What is an indirect tax?

- An **indirect tax** is imposed on producers (suppliers) by the government. Examples include duties on cigarettes, alcohol and fuel and also VAT. A carbon tax is also an indirect tax.
- VAT is a tax placed on the expenditure / a tax set as a percentage of the price of a good)
- A tax increases the costs of production causing an **inward shift in the supply curve**
- The vertical distance between the pre-tax and the post-tax supply curve shows the tax per unit
- With an indirect tax, the supplier may be able to pass on some or all of this tax onto the consumer through a higher price
- This is known as **shifting the burden** of the tax and the ability of businesses to do this depends on the price elasticity of demand and supply

The effects of a tax on producers using demand and supply schedules

The table below shows the demand and supply schedules for a good

Price (£)	Quantity Demanded	Quantity Supplied (Pre-tax)	Quantity supplied (Post-tax)
10	20	1280	600
9	60	1000	400
8	150	850	150
7	260	600	50
6	400	400	
5	600	150	
4	900	50	

1	What is the initial equilibrium price and quantity?	Price = £6 Quantity = 400
2	The government imposes a tax of £3 per unit. The new supply schedule is shown in the right hand column of the table – less is now supplied at each and every market price	
3	Find the new equilibrium price after the tax has been imposed	New price =£8
4	Calculate the total tax revenue going to the government	Tax revenue = £450
5	How have consumers been affected by this tax? There has been a fall in quantity traded and a rise in the price paid by consumers – this leads to a fall in economic welfare as measured by consumer surplus	

Specific and ad valorem taxes

- A specific tax is a set tax per unit e.g. a £5 tax per unit sold.
- An ad valorem tax is a percentage tax e.g. 20% on the unit price.

Main indirect taxes in the UK

- The main UK indirect tax is VAT - generating £110bn annual tax
- Fuel duties generate £27bn and tobacco taxes £10bn each year
- Taxes such as air passenger duty bring in £3bn of tax each year

VAT

Landfill Tax

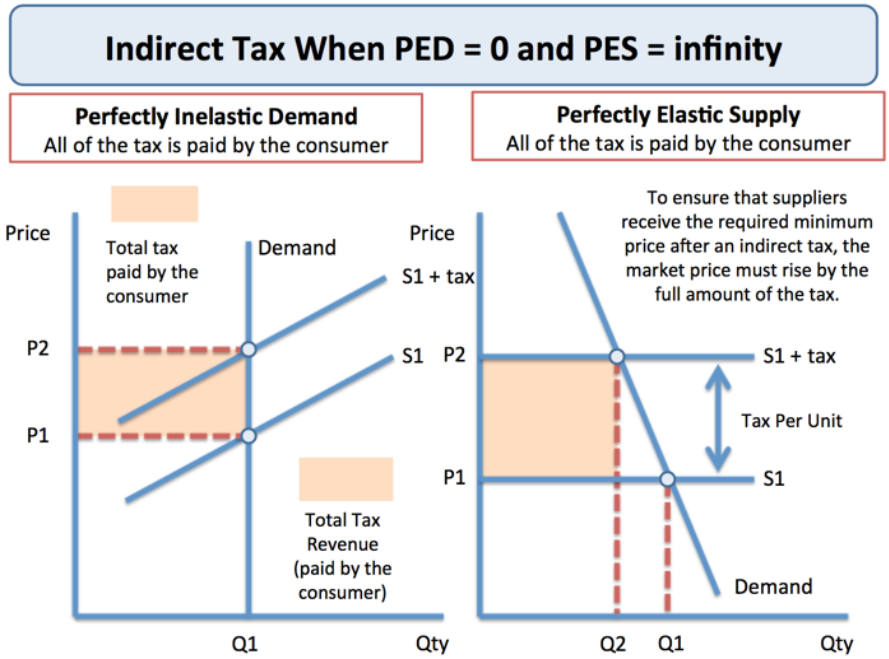
Fuel Duties

Alcohol Duties

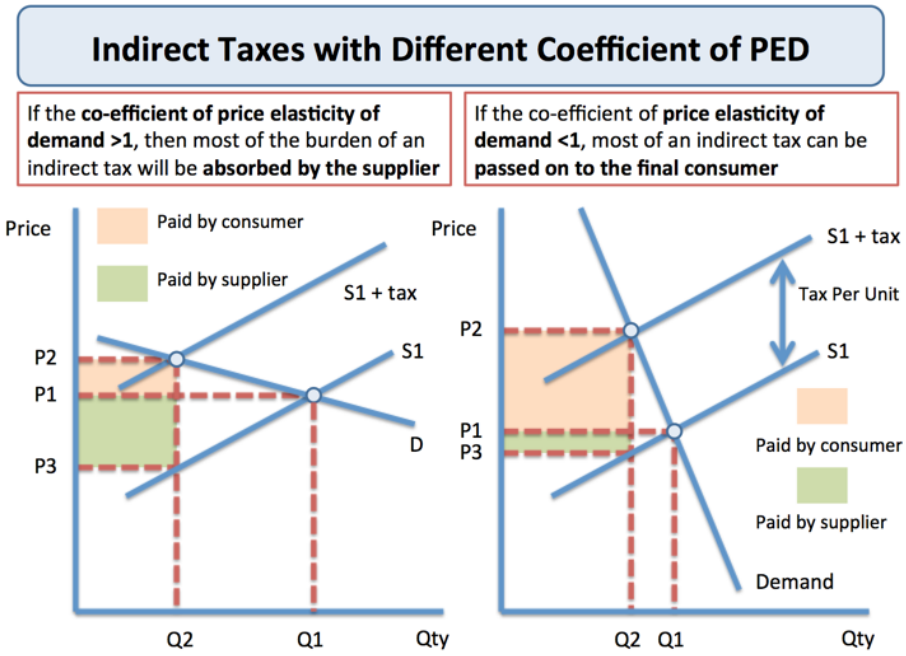
Tobacco Duties

Air Passenger Duty

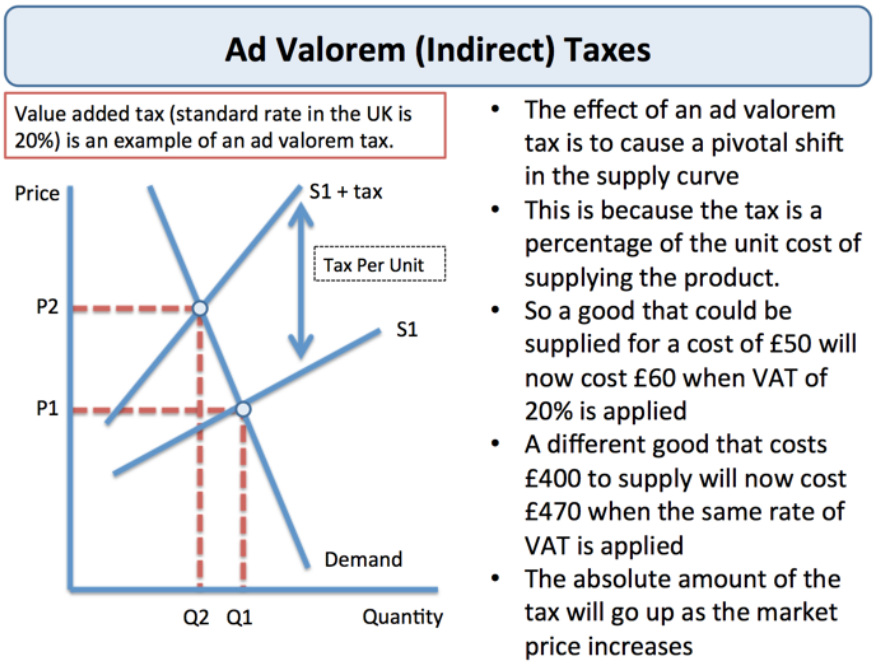
Analysis of indirect taxes using demand and supply diagrams



The burden of an indirect tax depends on the coefficient of price elasticity of demand and supply



Ad valorem taxes



Evaluating the effects of indirect taxes

Effectiveness of a tax and unintended consequences

- Effect of a tax depends in part on coefficient of elasticity of demand
- Problems in setting the tax rate at the right level to achieve aims
- Are there unintended consequences from a tax?

How much tax revenue is raised? How is it used?

- Does an indirect tax generate substantial tax revenues?
- How is the tax revenue used – perhaps for particular projects?

What is the impact on businesses / competitiveness?

- Might there be a possible loss of jobs and/or capital investment?
- Will an indirect tax negatively affect competitiveness and trade?

Consequences for equity / the distribution of income

- Who are the main winners and losers?
- Does a tax have a regressive effect on lower income groups?

Problems with using taxes as a way of correcting for externalities and market failure

The aim of an indirect tax is to make the polluter pay and so **internalise the externality**. However implementing taxes is problematic:

1. **Setting the 'right' tax rate** e.g. if the monetary value of a negative externality is hard to measure
2. **Cost of collection**: e.g. road charging requires expensive infrastructure e.g. IT system of billing
3. **Inelastic demand**: higher petrol prices via higher indirect taxes has little effect on demand for fuel, likewise, would a tax on sugar get people to cut their consumption of high-sugar products?
4. **Redistribution effects**: Indirect taxes are regressive and affect low-income household most.
5. **Increased costs**: Higher indirect taxes may cause inflation affecting consumers who did not pollute and international competitiveness if taxes are higher in one country than another

(Source: Richard Young, Transport Economics Q&A, and Tutor2u, August 2013)

Producer Subsidies

What are subsidies?

- A **subsidy** is a payment by the government to suppliers that **reduce their costs of production** and encourages them to increase output
- State subsidises are financed from general taxation or by borrowing
- The subsidy causes the firm's **supply curve to shift to the right**
- The amount spent on the subsidy is equal to the subsidy per unit multiplied by total output
- A **direct subsidy** to the consumer has the effect of boosting demand i.e. an outward shift of demand

Different Types of Producer Subsidy

1. **A guaranteed payment on the factor cost of a product** – e.g. a guaranteed minimum price offered to farmers such as under the old-style Common Agricultural Policy (CAP).
2. **An input subsidy** that subsidises the cost of inputs used in production – e.g. an employment subsidy for taking on more workers.
3. **Government grants to cover losses made by a business** – e.g. a grant given to cover losses in the railway industry or a loss-making airline.
4. **Bail**-outs e.g. for financial organisations in the wake of the credit crunch
5. **Financial assistance (loans and grants)** for businesses setting up in areas of high unemployment – e.g. as part of a regional policy designed to boost employment

Examples of government subsidies

Biofuel subsidies for farmers

Solar Panel "Feed-In Tariffs"

Apprenticeship Schemes

Aid to businesses making losses

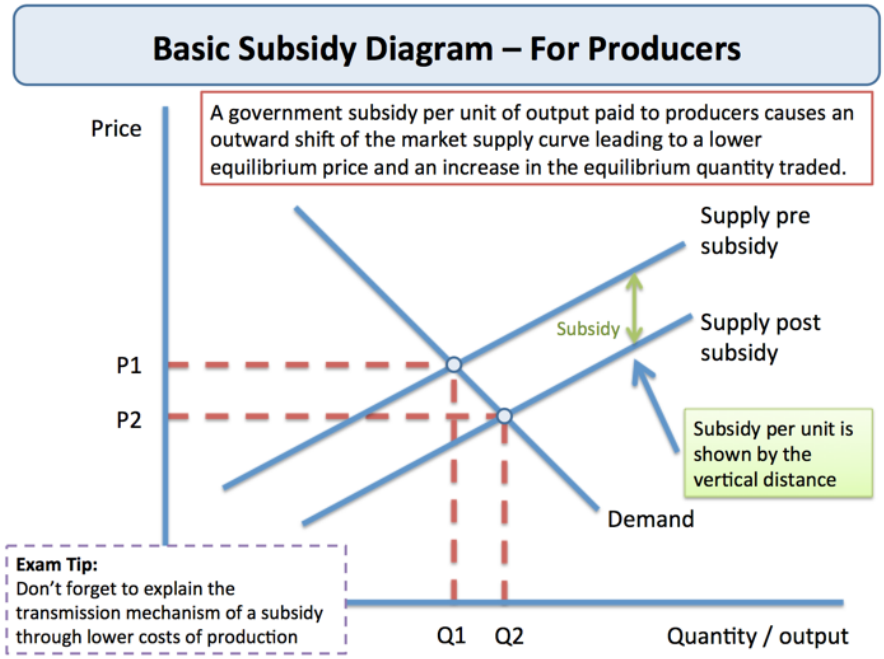
Subsidies for wind farm investment

Food / fuel subsidies for consumers

Child Care for working families

Subsidies to the rail industry

Analysis of a government subsidy using supply and demand diagrams

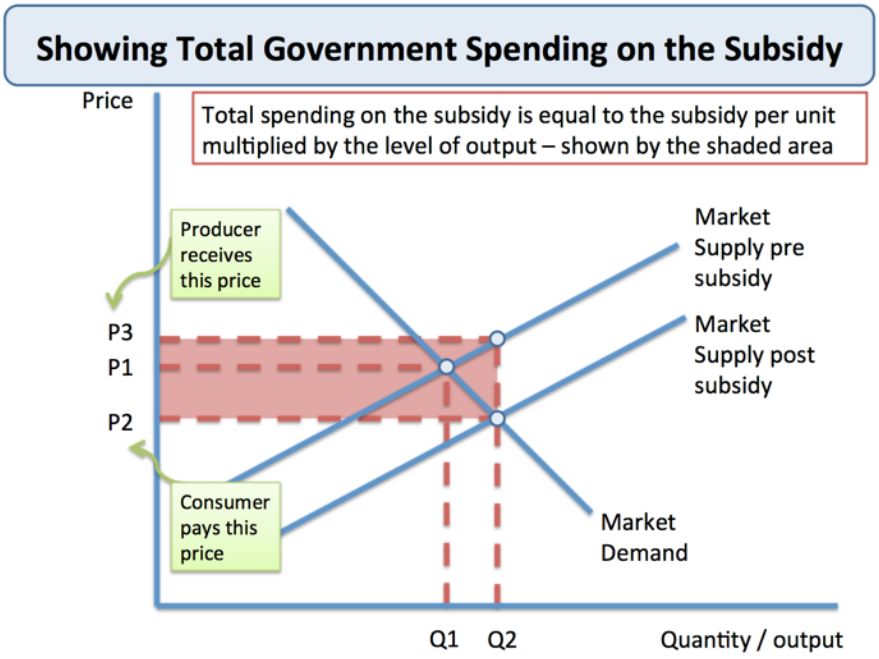


How much will the government spend on a subsidy?

The amount of subsidy depends on the scale of the subsidy and the level of output

The effect of subsidy on market prices for consumers

- To what extent will a subsidy feed through to lower prices for consumers?
- This depends on **price elasticity of demand**. The more inelastic the demand curve the greater the consumer's gain from a subsidy.
- When demand is perfectly inelastic (i.e. PED=zero) the consumer gains most of the benefit from the subsidy since the subsidy is passed onto the consumer through a lower price.
- When demand is relatively elastic (i.e. the coefficient of Ped > 1) the main effect of the subsidy is to increase the equilibrium quantity traded rather than lead to a much lower market price.



Economic and Social Justifications for Subsidies

Subsidies are a form of intervention. They are introduced for a number of economic, social & political reasons

Help poorer families e.g. food and child care costs

Encourage output and investment in fledgling sectors

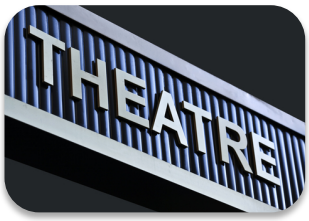
Protect jobs in loss-making industries e.g. hit by recession

Make some health care treatments more affordable

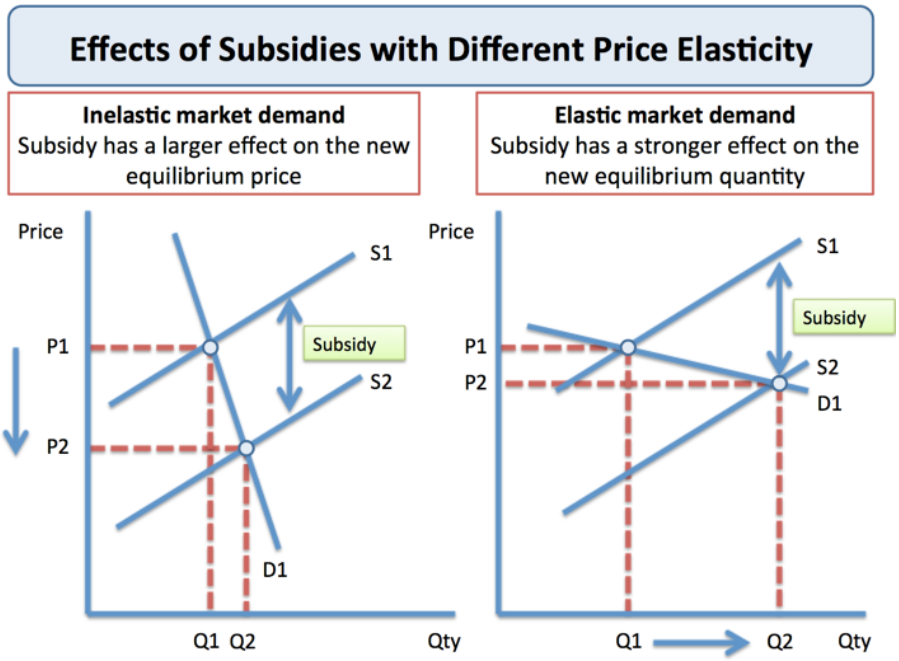
Reduce the cost of training & employing workers

Achieve a more equitable income distribution

Reduce some of the external costs of transport



Encourage arts and other cultural services



Evaluating the effectiveness of a government subsidy

Are the subsidies effective in meeting their aims?

- Will they achieve the desired stimulus to demand / consumption?
- Is a subsidy sufficient? Might other incentives be needed?

Will a subsidy affect productivity / efficiency?

- Subsidies for investment and research can bring positive spillovers
- But firms may become dependent on state aid / financial assistance

How much does the subsidy cost and who benefits?

- Is a subsidy part self-financing? Will it create more tax revenue?
- Or does a subsidy create an expensive extra burden for taxpayers?

Does the subsidy help to correct a market failure?

- For example – do more people find work with child care subsidies?
- Or does a subsidy lead to undesired / unintended consequences?

Maximum Prices / Price Ceiling

What are maximum prices?

- The government or an industry regulator can set a **maximum price** to prevent the market price from rising above a certain level.
- One aim of this might be to prevent the monopolistic exploitation of consumers
- To be effective, **a maximum price has to be set <u>below the free market price</u>**.
- One example might be when shortage of foodstuffs threatens large rises in the free market price.
- Other examples include rent controls on properties – for example the system of rent controls in Manhattan in the United States.
- Price capping also happens when the competition authorities judge that consumers are being exploited by businesses using their monopoly power. For example, the EU has introduced price caps for roaming charges on consumers made by the mobile phone service providers
- A maximum price seeks to control the price – but also involves a normative judgement on behalf of the government about what that price ***should*** be.
- An example of a maximum price is shown in the next diagram.
- The normal equilibrium price is shown at Pe – but the government imposes a maximum price of Pmax. This price ceiling creates **excess demand** equal to quantity Q2-Q2 because the price has been held below the equilibrium.
- A price ceiling set above the free market equilibrium price would have no effect whatsoever on the market – because for a price floor to be effective, it must be set below the normal market-clearing price.

Topical examples of maximum prices / price capping

Housing Rent Controls

Energy Price Caps to control fuel bills

Caps on CEO Pay / Bonuses

Cap on Mobile Roaming Charges

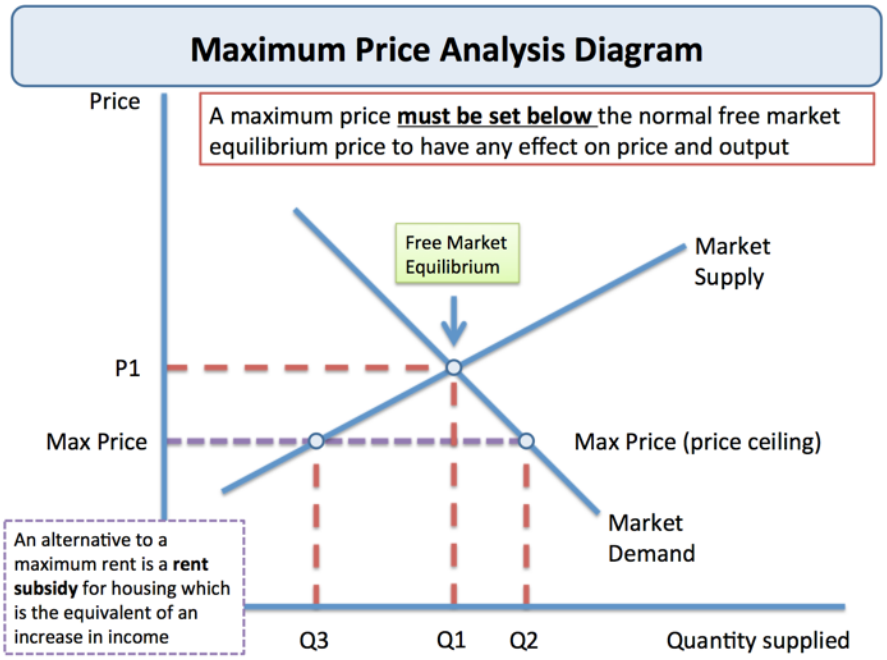
Price capping for water companies

Cap on interest rates charged by pay-day lenders

Cap on annual charges to occupational pension plans

Currency peg e.g. Hong Kong / US dollar

Basic analysis of a maximum price in a market



Black Markets

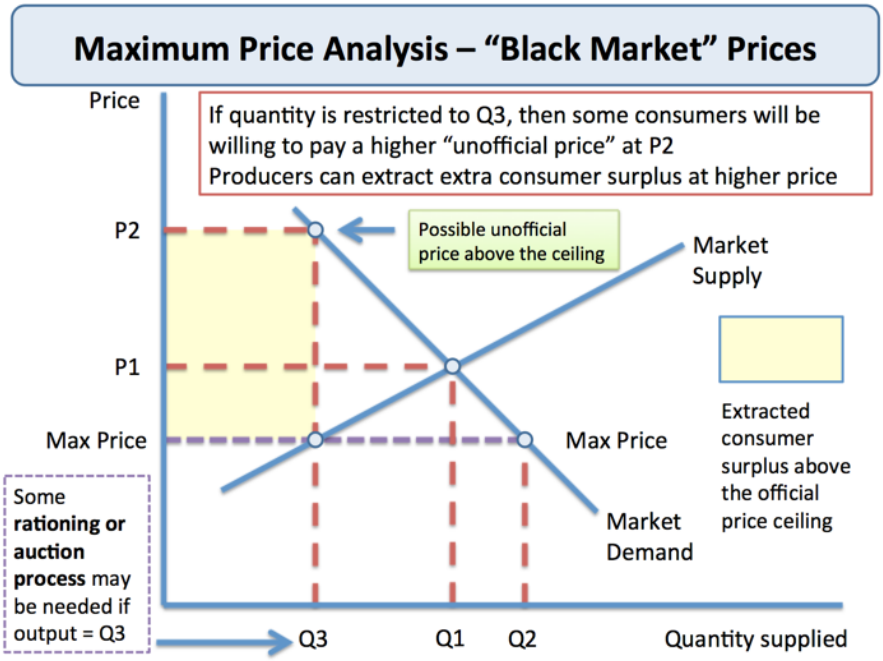
A **black market** (or shadow market) is an illegal market in which the market price is higher than a legally imposed price ceiling. Black markets develop where there is **excess demand**. Some consumers are prepared to pay higher prices in black markets in order to get the goods or services they want.

With a shortage, higher **prices are a rationing device**.

- Good examples of black markets include tickets for major sporting events, rock concerts and black markets for children's toys and designer products that are in scarce supply.
- There is also evidence of black markets in the illegal distribution and sale of computer software products where pirated copies can often dwarf sales of legally produced software.

Rationing when there is a market shortage

- Rationing when there is a maximum price might also be achieved by allocating the good on a **'first come, first served' basis** – e.g. queues of consumers. Suppliers might also allocate the scarce goods by distributing only to **preferred customers**. Both of these ways of rationing goods might be considered as **inequitable** (unfair) – because it is likely that eventually those who might have the greatest need for a commodity are unlikely to have their needs met.
- Another problem arising from the maintenance of a maximum price is that in the long run, suppliers might respond to a maximum price by reducing their supply – the supply curve becomes more elastic in the long term.



Evaluating maximum prices in markets

A maximum price involves a normative judgement on behalf of the government about what that price should be

Benefits

- A useful surrogate for competition
- Holds prices down – consumer welfare gains
- Incentives for businesses to cut costs to maintain profits

Downsides

- Reduces profits – less money for capital investment
- May dissuade new entrants
- Firms might raise prices in other ways

Alternatives

- Measures to reduce entry barriers in an industry
- Higher taxes on monopoly profits e.g. a windfall tax

Minimum Price / Price Floor

What is a minimum price?

- A minimum price is a form of government intervention
- To be effective, a minimum price must be set above the normal free-market equilibrium
- If it is set below, then it will have no impact
- In some cases a minimum price takes the form of a guaranteed minimum price at which the government or a purchasing agency will buy the products of farmers
- Examples including price support schemes for farmers in the European Union as part of the Common Agricultural Policy
- China has launched a minimum price support programme for their cotton farmers. Under the scheme, the government purchased cotton from farmers at a set price, building up a massive stockpile.

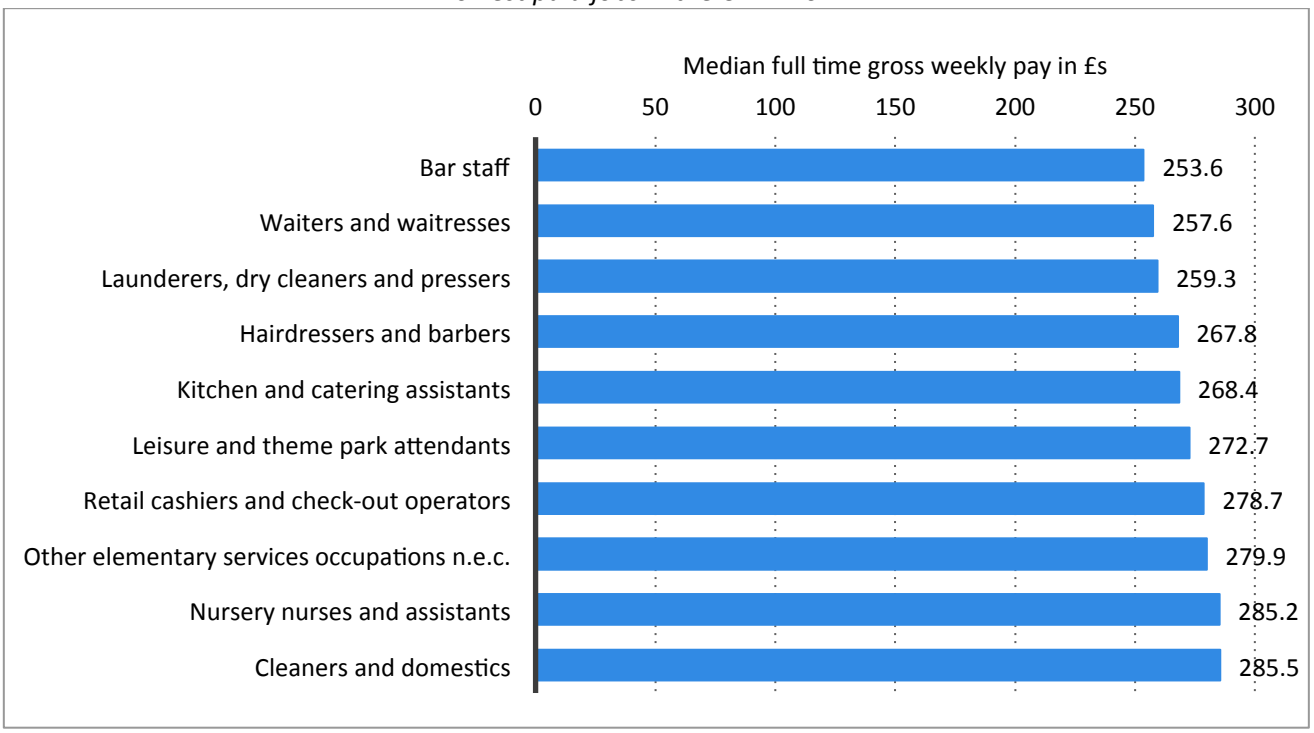
Minimum wages in the labour market and a new National Living Wage

- The UK national minimum wage was introduced as a pay floor in the labour market in 1999. Over the years it has become an established feature of the economy and all political parties support it.
- In July it was announced that a National Living Wage (NLW) is being introduced in the UK for workers aged 25 and above. A premium will be introduced above National Minimum Wage leading to the NLW.
- From April 2016 the NLW will be £7.20: at this point the National Minimum Wage will be £6.70, so the premium will be £0.50. The aim is for the NLW to reach £9, roughly 60% of median earnings, by 2020.

How does a minimum wage work?

- Employers cannot legally undercut the current minimum wage rate per hour. This applies both to full-time and part-time workers

Lowest paid jobs in the UK in 2014



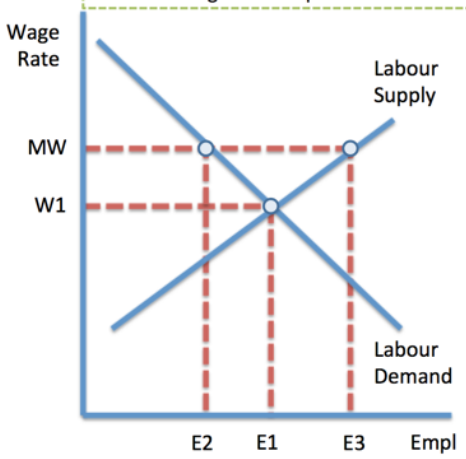
Analysis diagram for a minimum wage

Minimum Wage Analysis Diagram

A minimum wage is a statutory pay floor that cannot be undercut

Value of the UK living wage versus the minimum wage 2011-2014 (£ per hour)		
Year	Living wage	Minimum wage
2011	7.20	6.08
2012	7.45	6.19
2013	7.65	6.31
2014	7.85	6.50

In July 2014, Germany voted to introduce a minimum wage of €8.50ph for the first time



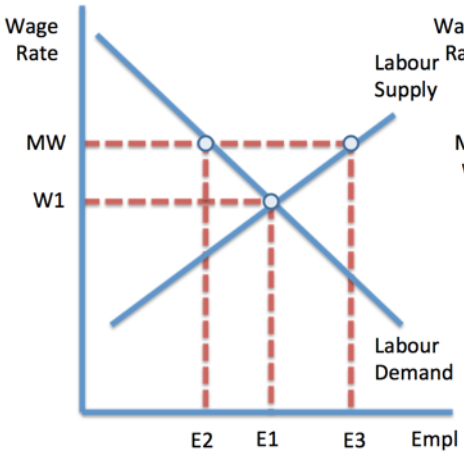
Main aims of the minimum wage

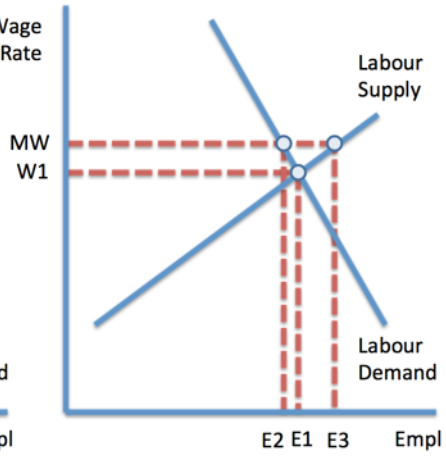
1. **The equity justification**: That every job should offer a fair rate of pay commensurate with the skills and experience of an employee.
2. **Labour market incentives**: The NMW is designed to improve incentives for people to start looking for work – thereby boosting the economy's labour supply.
3. **Labour market discrimination**: The NMW is a tool designed to offset some of the effects of persistent discrimination of many low-paid female workers and younger employees.

Minimum Wage Analysis – Importance of Elasticity

Standard minimum wage diagram suggests that a pay floor will lead to a contraction of employment. **But this depends on** the level at which the minimum wage is set.

If labour demand is inelastic, then a higher minimum wage will cause only a limited contraction on the level of labour demand.

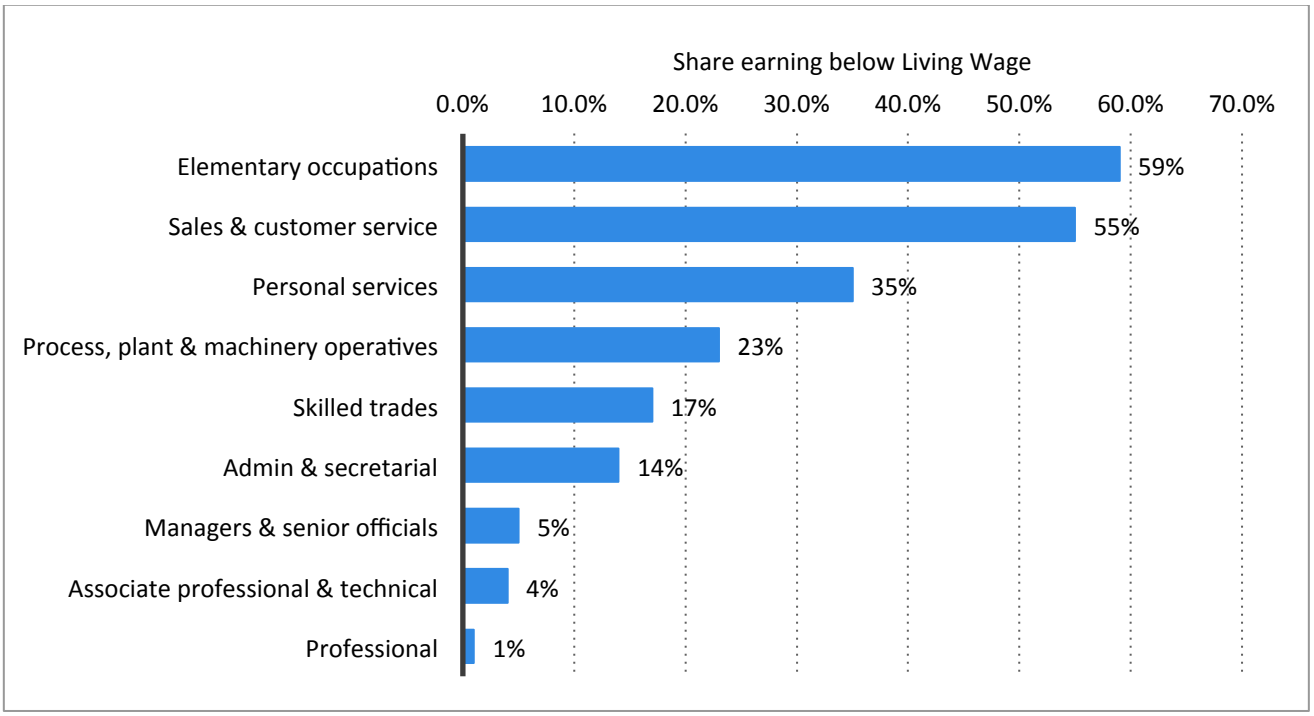




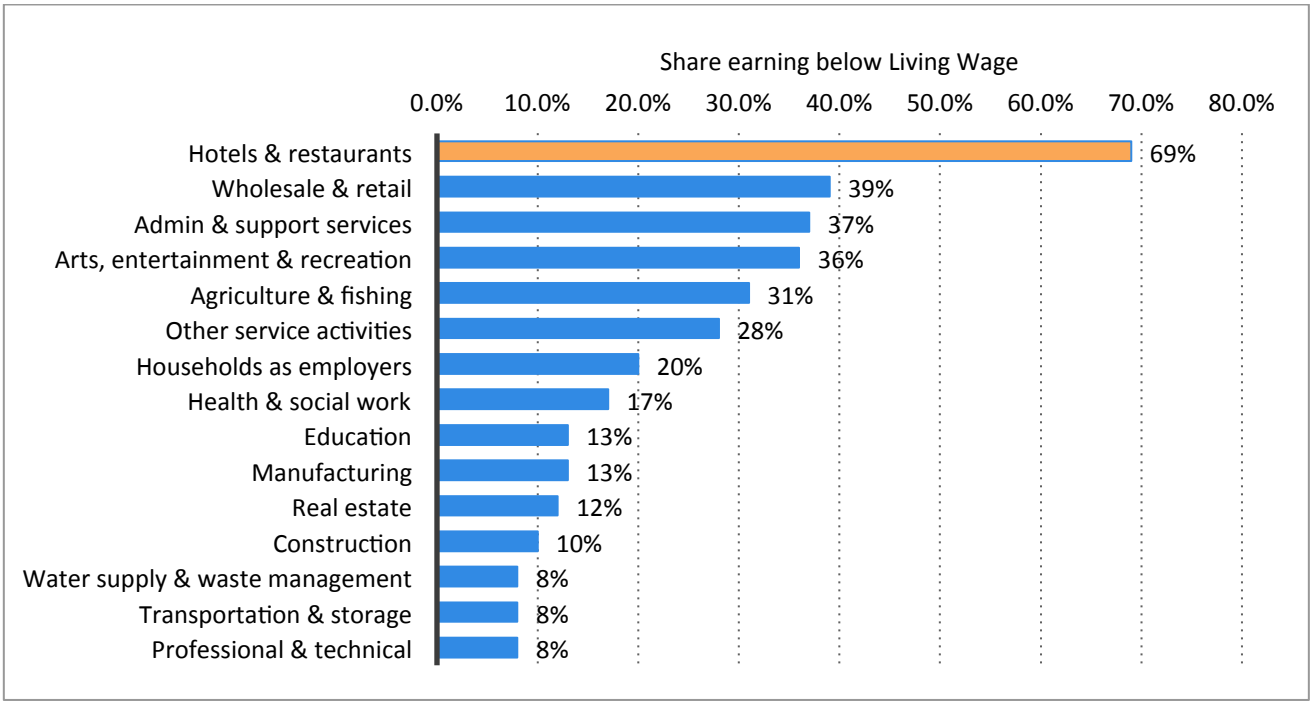
Evaluating the arguments for a minimum wage

Case for a higher level of minimum wage	Arguments against a rise in the minimum wage
• Equity justification: Every job should have fair pay linked with skills/experience of an employee.	• Jobs: Higher minimum wage adds to the costs of employing workers and might cause higher unemployment
• Poverty reduction: A minimum wage boosts the take-home pay of thousands of lower paid workers	• Small businesses: Many smaller businesses struggle to make a profit - risk of a rise in business closures
• Training: It encourages firms to up-skill their workers and can lead to higher labour productivity	• Training: There are better incentives for training than a minimum wage e.g. tax relief on apprenticeships
• Incentives: Will improve incentives for people to look for paid work	• Competitiveness: Might make many UK businesses less competitive in global markets
• Anti-discrimination: A way of tackling discrimination of low-paid female / younger workers	• Inflation: Higher labour costs might cause higher inflation which then lowers real incomes

Share of occupation group earning below the Living Wage in Great Britain in April 2013



Share of industry earning below the Living Wage in Great Britain in April 2013



Alternatives to a minimum wage

Living Wage	An optional alternative to the minimum wage – a growing number of firms are signing up to this
Income Tax Reforms	Cutting the basic rate of income tax or lifting the tax free allowance will boost work incentives
Benefit reforms	Linking benefits to participation on work programmes – politically controversial

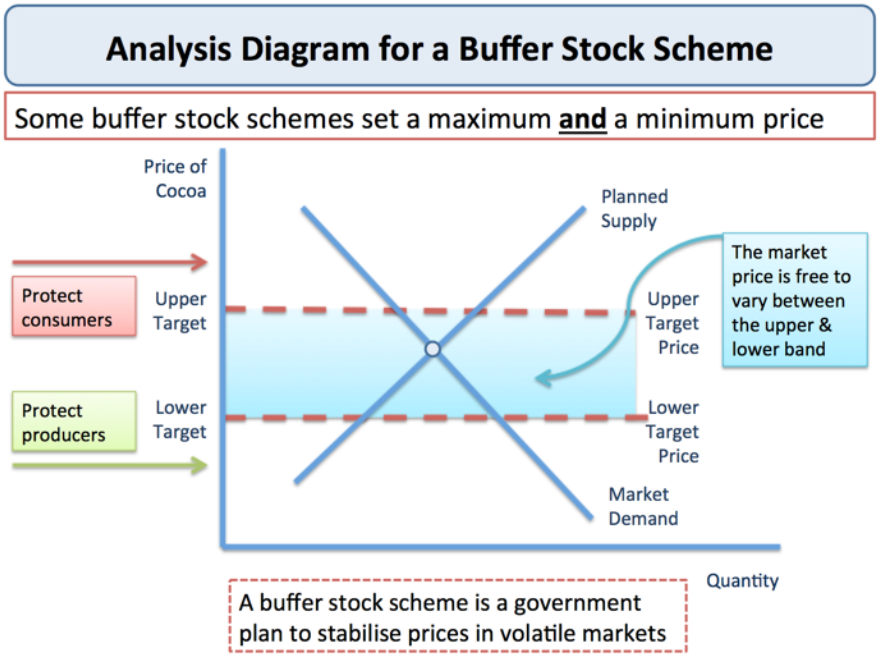
Buffer Stock Schemes

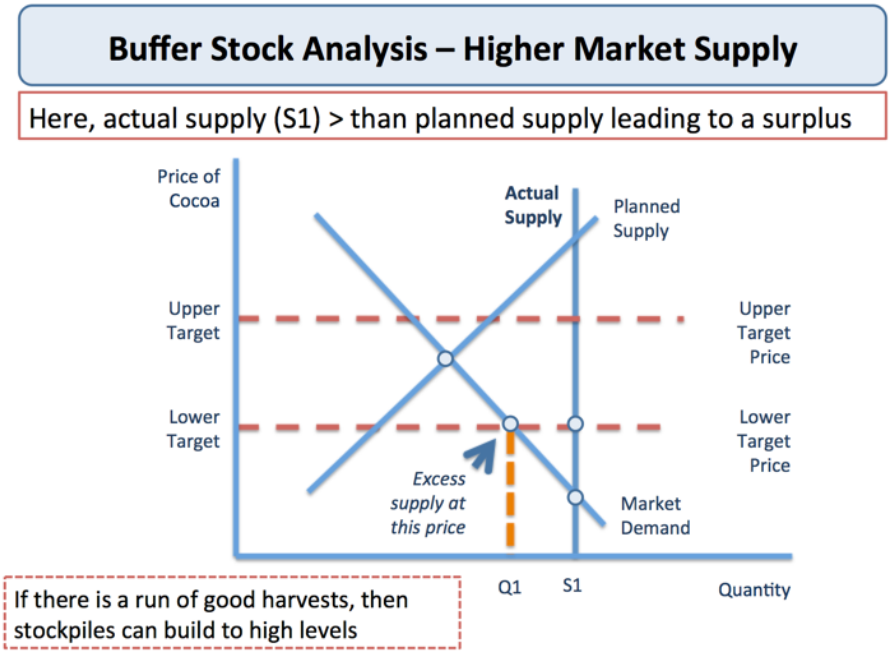
Fluctuating commodity prices

- Prices of products such as wheat, cotton, cocoa, rubber, tea and coffee fluctuate more than prices of manufactured products
- One way to smooth out fluctuations in prices is to operate price support schemes e.g. through the use of buffer stocks
- Buffer stock schemes seek to stabilize the market price of agricultural products by
  - Buying up supplies when harvests are plentiful
  - Selling stocks onto the market when supplies are low
- In theory, buffer stock schemes will be profit making, since they buy up stocks of the product when the price is low and sell them onto the market when the price is high.
- However, they do not work well in practice and many buffer stock schemes have collapsed in the past.
- They can only work effectively for storable commodities

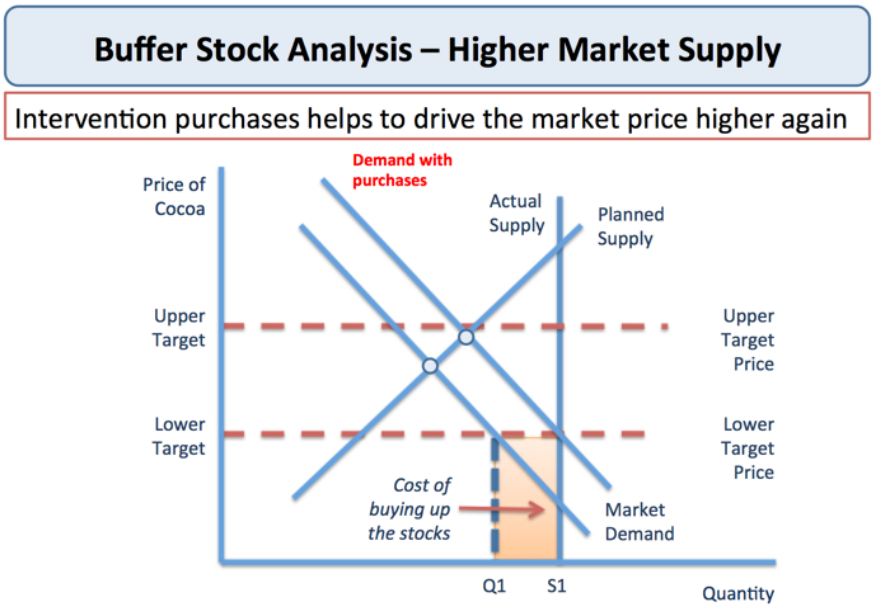
Analysis diagram for a buffer stock scheme

- The diagram below illustrates the operation of a buffer stock scheme
- The government offers a **guaranteed minimum price** (P min) to farmers of wheat
- The **price floor** is set above the normal free market equilibrium price
- Notice that the price elasticity of supply for wheat in the short term is low because of the time it takes for producers to supply new quantities of wheat to the market. (Indeed in the momentary period, we would draw the supply curve as vertical indicating a fixed supply).





Intervention purchases bring the price back towards the target



Advantages of a successful buffer-stock scheme:

1. Stable prices help maintain farmers' incomes and improve the incentive to grow legal crops
2. Stability enables capital investment in agriculture needed to lift agricultural productivity
3. Farming has positive externalities it helps to sustain rural communities
4. Stable prices prevent excess prices for consumers – helping consumer welfare

Problems with buffer stock schemes

- In theory buffer stocks should be profit making, since they buy up stocks of the product when the price is low and sell them when the price is high. However, they do not often work well in practice.
- Clearly, perishable items cannot be stored for long periods of time and can therefore be immediately ruled out of buffer stock schemes.

Other problems are:

1. **Cost of buying excess supply** can cause a buffer stock scheme to run out of cash
2. A guaranteed minimum price might cause **over-production and rising surpluses** which has economic and environmental costs
3. Setting up a buffer stock scheme also requires a **significant amount of start up capital**, since money is needed to buy up the product when prices are low.
4. There are also high administrative and storage costs to be considered.

- The success of a buffer stock scheme however ultimately depends on the ability of those managing a scheme to correctly estimate the average price of the product over a period of time. This estimate is the scheme's target price and obviously determines the maximum and minimum price boundaries.
- But if the target price is significantly above the correct average price then the organization will buy more produce than it is selling and it will eventually run out of money. The price of the product will then crash as the excess stocks built up by the organization are dumped onto the market.
- Conversely if the target price is too low then the organization will often find the price rising above the boundary, it will end up selling more than it is buying and will eventually run out of stocks

Alternatives to buffer stock schemes

- Strong evaluation involves considering alternative policies to stabilize prices and incomes for farmers. In the long term, investment in capital goods such as irrigation and wider access to affordable insurance can be powerful.
- So too are policies to reduce dependency on any one particular crop

Mobile technology to help farmers

Encourage processing / branding by farmers

Improved basic storage facilities + irrigation

Micro insurance policies for poorer farmers

Government Failure

What is Government Failure?

- Even with good intentions governments seldom get their policy application correct. They can tax, control and regulate but the outcome may be a **deepening of the market failure** or even worse a new failure may arise
- Government failure may range from the trivial, when intervention is merely ineffective, but where harm is restricted to the cost of resources used up and wasted by the intervention, to cases where intervention produces new and more serious problems that did not exist before. The consequences of this can take many years to reverse.

Government failure in a non-market economy

- The collapse of the Soviet Union in the late 1980s marked the failure of command economies as a means of allocating resources among competing uses.
- The essence of a command economy was that the state planning mechanism would decide what to produce and how to produce it and for whom to produce.
- Government failure occurred when the central planners produced products that were not wanted by consumers – causing a loss of allocative efficiency, since there was no price mechanism to signal changes in consumer preferences and demand.
- Another failing of the pure command economy was that there was little incentive for workers to raise productivity; poor quality control; and little innovation by firms as no profit motive existed.
- Command economies also suffered massive environmental de-gradation because they did not posses structures for valuing the environment and giving consumers and producers the right incentives to protect their environmental heritage.

Causes of Government Failure

Government intervention can prove to be **ineffective, inequitable and misplaced**.

Political self interest / lobbying

Policy myopia – search for "quick fixes"

Regulatory Capture

Information failures

Disincentive effects

High Enforcement / Compliance Costs

Conflicting Policy Objectives

Damaging effects of red tape

Cause of government failure	Brief explanation of the problem caused	Examples of government failure to consider
Political self interest	Government influenced by influential political lobbying	Farm support policies, the drinks industry, transport lobby
Poor value for money	Low productivity / high waste makes spending less effective	Investment on IT projects in the NHS, poor record of PFI projects
Policy short-termism	Governments often looking for a "quick fix" solution	Road widening to reduce congestion, ASBOs for offenders
Regulatory capture	When Govt agency operates in favour of producers	Self-regulation on alcohol prices, powerful energy lobby
Conflicting objectives	One policy objective might conflict with another	Minimum carbon price could damage UK competitiveness
Bureaucracy & red tape	Costs of enforcement may hurt enterprise & incentives	Costs of meeting health and safety and environmental laws
Unintended consequences	Policies have unanticipated or unintended side-effects	Smoking ban – increased use of outdoor patio heaters

The Law of Unintended Consequences

- Actions of consumers, producers and government—always have effects that are unanticipated or "unintended."
- Well-intentioned legislation often acts against the interests of those it is intended to serve
- People and businesses find ways to circumvent new laws
- Shadow markets develop to undermine an official policy
- Examples of unintended consequences:
    - Bank bail-outs – raises the problem of moral hazard
    - Bio-fuel subsidy –may divert production away from food, cause food price inflation and this then hits the poorest in society
    - Windfall Tax on North Sea oil and gas led to a huge fall in investment and exploration – causing UK imports to rise
    - Import tariffs on steel – hits domestic car and construction firms
    - Targets for treating patients – contributed to a reduction in the quality of care e.g. the Mid-Staffordshire General scandal

Regulatory Failure

The actions of regulators may also bring about government failure

Regulators may limit innovation in fast-growth markets

Capping prices might prevent new firms entering a market

Regulation becomes bureaucratic & costly

May lack the powers to be truly effective in protecting consumers

Regulator might be "behind the curve" with new technologies

Frequent rule changes can stifle business investment

Key points about government failure

1. **Free market economists** are distrustful of intervention. They believe that the **price mechanism** should be given freedom to operate
2. Often we can accuse the government of policy failure only with the **benefit of hindsight**
3. **Limited information** - no government has the resources and information available to it to make fully informed, objective judgements. That is the nature of politics.
4. Government failure is most likely to occur when decisions are made in the **vested interest of special interest groups,** at the expense of other groups (the result is a **loss of equity**)

Behavioural Economics

What is behavioural economics?

- Behavioural Economics tries to mix insights from Psychology with Economics, and looks at problems through the eye of a "Human", rather than an "Econ".
- It uses insights from psychology to explain why people make apparently irrational decisions such as why people eat too much, take too little exercise, or do not save enough for retirement.
- An "Econ" is said to be infinitely rational and immensely intelligent, an emotionless being who can do cost-benefit analyses at will, and is never (ever) wrong.
- Most of us are not infinitely rational, but face "bounded rationality", with people adopting simple, intuitive "rules of thumb" instead of calculating optimal solutions for every decision they make.

Challenging rational and fully-informed choices

- Typically we assume that, when making decisions people aim to maximise their own welfare.
- They have a limited income and they allocate money in a way to give them maximum satisfaction.
- In reality, when making decisions, consumers rarely behave in a well-informed and rational way!

Bounded Rationality

- Most consumers do not have sufficient information to make fully informed judgements
- The increasing complexity of products also makes life difficult
- Bounded rationality suggests that consumers opt to satisfice rather than maximise
- They will use rules of thumb and approximations when active in different markets

A bewildering range of cleaning products!

Many people do not understand pensions

There are search costs in seeking out all available information

Lots of people rely on rules of thumb when making choices

Heuristics

- Heuristics are best described as mental shortcuts or rules of thumb for decision-making to help people make a quick, satisfactory, but perhaps not perfect, answer to a complex question.
- Heuristics can actually be an optimal way for people to respond in occasions where we lack information or time. People learn from experience and develop many different heuristics over time
- Optimal behaviour is not the same as maximizing behaviour

Diving a pizza using 1/n

5 a day principle

Search behaviour online

I just want a burger like last time!

Default Bias

- People prefer to carry on behaving as they have always done.
- Repeat purchases often become automatic because default choices don't involve any mental effort
- Examples:
  - Your choice of daily breakfast cereal / razor / sandwich preference
  - Political preferences in elections e.g. preferring the status quo

Most of use choose the same breakfast!

Our menu choices at places such as Nando's are predictable

A default opt-in (or auto enrollment) can have a powerful effect

Choice Architecture

- Choice architecture describes how the decisions we make are affected by the layout / sequencing / range of choices that are available
- For example getting students to eat more helpfully might involve altering the design of the restaurant
- Smart building designs might make it more attractive / easier to take the stairs rather than use a lift!

Getting people to use the salad bar

Traffic flow & speed is influenced by road architecture

How can we encourage people to avoid the lift?

How best to get people to use hand sanitizers more frequently?

Social Norms

- Our day-to-day behaviour is influenced strongly by prevailing social norms or social customs
- Social norms become accepted by the majority of a given community of people
- Examples:
    - The changing social stigma of drink driving and speeding
    - Observing white lines in car parks
    - Queuing behaviour in shops
    - Impact on people's behaviour of smoking bans in public places
    - Making seat-belts compulsory – this appears to have created new habits / conventions which became self-sustaining
    - Social norms about "giving" e.g. for charitable fund-raising

Respecting seat belt laws

Social norms when queuing

Not smoking in public places

Social norms at the pub such as buying a round of drinks

Herd Behaviour

- We are herd animals and often make decisions based on who is around us & the choices they make
- Examples:
    - Choosing items off a menu in a restaurant
    - Herd behaviour in financial markets
    - Binge drinkers going on holiday with each other

Herd behaviour is often seen in financial markets

Amazon Prime – people don't want to miss out on a deal

Ratings systems for hotels, books, general products

Anchoring

Value is often set by anchors or imprints in our minds we use as mental reference points.

- Some anchors establish in our mind a low price, others help to establish a higher basic price that we should be prepared to pay
- Examples:
  - "Big Price Drop" campaigns by supermarkets
- Refereeing decisions might be anchored by the size (and noise!) of home crowd
- Price anchors used in menus at restaurants and in coffee shops

Offer price for houses on sale is an anchor for potential buyers

Pricing of new products such as the Apple Watch

McDonalds has a lower anchor price than Starbucks

Priming

- Our behaviour by cues that work subconsciously and prime us to behave / choose in certain ways
- Examples:
  - Playing of certain types of music in a shopping mall
  - Subliminal cues in films / TV adverts
  - Students signing an honor-code at university

How effective is subliminal advertising?

Labelling a product as premium affects our expectations!

Is there less plagiarism with an honour code at university?

Framing

- Framing a question or offering in a different way often generates a new response by changing the comparison set it is viewed in
- Examples:
  - Framing of privacy settings on social networks
  - Presumed consent for human organ donations
  - Framing of referendum questions

Asymmetric framing

- Involves including an obviously inferior 3rd choice or a hyper-expensive 3rd option rather than a simple expensive/cheap choice can guide consumers to more expensively-priced items

90% fat free or 10% fat? Which is most effective?

The framing of the Greek referendum ballot paper may have been important

Availability bias

- The availability bias happens we people often judge the likelihood of an event, or frequency of its occurrence by the ease with which examples and instances come to mind.
- Most consumers are very poor at risk assessments – for example they over-estimate the likelihood of attacks by sharks or list accidents. Smokers may see one elderly heavy smoker and exaggerate the likely healthy life expectancy of this group.

The majority of people are poor at estimating probability

After an air crash, more people take the train

Seeing an older heavy smoker in the media may cause availability bias

Commitment and Choices

- The more public our position, the less willing we are to change it
- We feel more strongly about activities in which we have already made a commitment
- Examples:
    - Committing yourself to a diet using an online app
    - Commitment signals using an expensive gift
    - Buying self-assembly furniture and completing it

Pre-commitment can cement a choice

We are more likely to value the self assembly furniture we buy!

Commitment apps are becoming more popular!

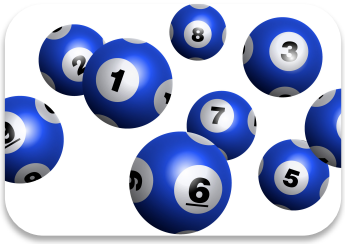
Behavioural nudges

Behavioural nudges are an alternative to using taxes and subsidies to influence choices

Organ Donation and importance of form design

Cash incentives to stop smoking

"Chunking" to increase drug treatment completion



Lotteries to encourage weight loss or cut speeding on roads

Using simple checklists in hospitals to reduce number of x-rays

Choice architecture to encourage healthy eating

Examples of behavioural nudges

Eliminating or restricting choices

- Banning smoking in public places
- Banning takeaways close to schools / laws on using tanning salons

Financial disincentives to take a particular course of action

- Higher taxes on cigarettes / fuel / congestion charge
- Vouchers for healthy behaviour choices

Influencing Choice

- Provision of information – e.g. calorie counts on menus
- Changes to environment – e.g. designing buildings with fewer lifts
- Changes to default – e.g. making salad a default side option instead of chips
- Use of norms – e.g. providing information about what others are doing

Critical Evaluation: Are Behavioural Nudges Effective?

Here are some of the criticisms levelled at behavioural economics interventions

1. Behavioural economics may encourage government's to become too paternalistic in their policies attempting to nudge behaviour
2. Behavioural economics focuses too heavily on people's vulnerability to fall for fallacies and their psychological biases – it can give the impression that consumers are dumb
3. In fact consumers using well-practiced rules of thumb might be operating in a rational way
4. There are limits to nudge theory – it may be useful in changing minor behaviours but not in deep rooted psychological problems such as alcoholism and street violence

Key Term Glossary

Ability to pay	Where taxes should be set according to how well a person can afford to pay
Ad valorem tax	An indirect tax based on a percentage of the sales price of a good or service
Adam Smith	One of the founding fathers of modern economics. His most famous work was the Wealth of Nations (1776) - a study of the progress of nations where people act according to their own self-interest - which improves the public good. Smith's discussion of the advantages of division of labour remains a potent idea in Economics.
Adverse selection	Where the expected value of a transaction is known more accurately by the buyer or the seller due to an asymmetry of information; e.g. health insurance
Alcohol duties	Excise duties on alcohol are a form of indirect tax and are chargeable on beer, wine and spirits according to their volume and/or alcoholic content
Alienation	A sociological term to describe the estrangement many workers feel from their work, which may reduce their motivation and productivity.
Allocative efficiency	Allocative efficiency occurs when the value that consumers place on a good or service (reflected in the price they are willing and able to pay) equals the cost of the resources used up in production
Asking price	The price at which a security, commodity or currency is offered for sale on the market - generally the lowest price the seller will accept
Asymmetric information	When somebody knows more than somebody else in the market. Such asymmetric information can make it difficult for the two people to do business together
Automation	Production technique that uses capital machinery / technology to replace or enhance human labour and bring about a rise in productivity
Average cost	Total cost divided by the number of units of the commodity produced
Average fixed cost	Average fixed costs are total fixed costs divided by the number of units of output, that is, fixed cost per unit of output
Barriers to entry	Factors making it expensive for new firms to enter a market. Examples include the effect of patents; brand loyalty among consumers; the high costs of buying capital equipment and the need to win licences to operate in certain markets
Barter	The practice of exchanging one good or service for another, without using money
Basic problem	There are infinite wants but finite resources with which to satisfy them
Behavioural economics	Branch of economics that studies the impact of psychological and social factors on economic decision making
Black market	An illegal market in which the market price is higher than a legally imposed price ceiling. Black markets can develop where there is excess demand for a commodity
Bottlenecks	Any factor that causes production to be delayed or stopped – this may reduce the price elasticity of supply of a product
Brand	Distinctive product created by the use of a logo, symbol, name, design or packaging
Buffer stock	Buffer stock schemes seek to stabilize the market price of agricultural products by buying up supplies of the product when harvests are plentiful and selling stocks of the product onto the market when supplies are low

Bulk-buying	The purchase by one organisation of large quantities of a product or raw material, which often results in a lower price because of their market power and because it is cheaper to deal with one customer and the deliveries can be on a larger scale.
Buyer's market	A market that favours buyers because supply is plentiful relative to demand and therefore prices are relatively low. The opposite of a seller's market
By-product	Something produced as a consequence of producing another good or service
Capacity utilisation	The extent to which a business is making full use of existing factor resources e.g. 80% capacity utilisation means that 20% of capacity is not being used (spare)
Capacity-building	Efforts to develop human skills or infrastructures within a community or organisation
Capital goods	Producer or capital goods such as plant (factories) and machinery and equipment are useful not in themselves but for the goods and services they can help produce in the future. Distinguished from "financial capital", meaning funds which are available to finance the production or acquisition of real capital
Capital-intensive	A production technique which uses a high proportion of capital to labour
Capitalist economy	An economic system organised along capitalist lines uses market-determined prices to guide our choices about the production and distribution of goods. One key role for the state is to maintain the rule of law and protect private property
Carbon credits	An allowance to a business to generate a specific level of emissions – may be traded in a carbon market
Cartel	A cartel is a formal agreement among firms. Cartel members may agree on prices, total industry output, market shares, and allocation of customers, allocation of territories, bid rigging, establishment of common sales agencies, and the division of profits or combination of these. Cartels are illegal under UK and European competition laws
Ceteris paribus	To simplify analysis, economists isolate the relationship between two variables by assuming ceteris paribus - all other influencing factors are held constant
Cigarette duties	UK taxes on cigarettes = 16.5% retail price + £154.95 per thousand cigarettes.
Collusion	Collusion is any explicit or implicit agreement between suppliers in a market to avoid competition. The main aim of this is to reduce market uncertainty and achieve a level of joint profits similar to that which might be achieved by a pure monopolist
Command and control	Laws and regulation backed up by inspection and penalties for non-compliance
Command economy	Economic system where resources are allocated by the government
Common resources	Goods or services that have characteristics of rivalry in consumption and non-excludability - grazing land or fish stocks are examples. The over-exploitation of common resources can lead to the "tragedy of the commons"
Competition policy	Government policy directed at encouraging competition in the private sector: e.g. the investigation of takeovers or restrictive practices
Competitive market	A market where no single firm has a dominant position and where the consumer has plenty of choice. There are few barriers to the entry of new firms
Competitive supply	Alternative products a firm could make with its resources. E.g. a farmer can plant potatoes or carrots. An electronics factory can produce Blu-ray players or tablets

Complements	Two complements are said to be in joint demand
Composite demand	Where goods or services have more than one use so that an increase in the demand for one product leads to a fall in supply of the other.
Congestion charging	A direct charge for use of roads in a defined zone e.g. central London
Conspicuous consumption	Conspicuous consumption is consumption designed to impress others rather than something that is wanted for its own sake
Constraints	Limits to what we can afford to consume – we have to operate within budgets, and make choices from those sets that are feasible/affordable
Consumer durable	A good such as a washing machine or a digital camera that lasts a period of time, during which the consumer can continue getting utility from it
Consumer sovereignty	Consumer sovereignty exists when the economic system allows scarce resources to be allocated to producing goods and services that reflect the wishes of consumers. Sovereignty can be distorted by the effects of persuasive advertising
Consumer surplus	Consumer surplus is the difference between the total amount that consumers are willing and able to pay for a good or service (indicated by the demand curve) and the total amount that they actually pay (the market price)
Consumption	The act of buying and using goods and services to satisfy wants
Contestable market	Market with no entry barriers - firms can enter or leave without significant cost
Cost Benefit Analysis	CBA is a decision making tool which compares the social costs and social benefits of a project, over time, to establish a net present value
Costs	Costs faced by a business when producing a good or service for a market
Cross price elasticity of demand	Responsiveness of demand for good X following a change in the price of good Y (a related good). With cross price elasticity we make a distinction between substitute products and complementary goods and services
Cyclical demand	Demand that change in a regular way over time depending on the part of the economic (business) cycle that a country is in or the time of year
Deadweight loss	The loss in producer and consumer surplus due to an inefficient level of production perhaps resulting from market failure or government failure
Demand	Quantity of a good or service that consumers are willing and able to buy at a given price in a given time period
Demand curve	A demand curve shows the relationship between the price of an item and the quantity demanded over a period of time. For normal goods, more of a product will be demanded as the price falls
De-merit goods	The consumption of de-merit goods can lead to negative externalities which causes a fall in social welfare. The government normally seeks to reduce consumption of de-merit goods. Consumers may be unaware of the negative externalities that these goods create - they have imperfect information
Deregulation	The removal of legally enforced rules that restrict or ban specified activities
Derived demand	Derived demand occurs when the demand for a particular product depends on the demand for another product or activity
Diminishing returns	As more of a variable factor (e.g. labour) is added to a fixed factor (e.g. capital) a firm will reach a point where it has a disproportionate quantity of labour to capital and so the marginal product of labour will fall, thus raising marginal costs

Diseconomies of scale	Disadvantages to the firm, in the form of higher unit costs, from increasing their size of operation
Disequilibrium	A situation where there is a state of imbalance and so a tendency for change
Diversification	The reduction of risk achieved by replacing a single risk with a larger number of smaller unrelated risks
Division of labour	The specialization of labour in specific tasks, intended to increase productivity
Dominant monopoly	A firm with 40% or higher market share
Economic agents	Decision makers e.g. consumers and producers
Economic efficiency	Economic efficiency is about making the best or optimum use of scarce resources among competing ends so that economic and social welfare is maximised over time
Economic growth	An increase in the productive potential of the country – shown by an outward shift of the production possibility frontier
Economy of scale	Benefits, in the form of lower unit costs, from increasing the size of operation.
Economy of scope	Economies of scope occur where it is cheaper to produce a range of products
Effective demand	Demand in economics must be effective. Only when a consumers' desire to buy a product is backed up by an ability to pay for it do we speak of demand
Elastic demand	Demand for which price elasticity is greater than 1
Elastic supply	Where the price elasticity of supply is greater than +1
Elasticity of supply	Price elasticity of supply measures the relationship between change in quantity supplied and a change in price
Emission tax	A charge made to firms that pollute the environment based on the quantity of pollution they emit i.e. the volume of CO2 emissions
Entrepreneur	An entrepreneur is an individual who seeks to supply products to a market for a rate of return (i.e. a profit). Entrepreneurs will usually invest their own financial capital in a business and take on the risks associated with a business investment.
Equilibrium	Equilibrium means 'at rest' or 'a state of balance' - i.e. a situation where there is no tendency for change. The concept is used in both microeconomics (e.g. equilibrium prices in a market) and also in macroeconomics (e.g. national income or GDP)
Equity	Fairness; a view on the 'rightness' of an issue based on opinion rather than fact - requires a value judgement
Excess demand	The difference between the quantity supplied and the higher quantity demanded when price is set below the equilibrium price. This will result in queuing and an upward pressure on price
Excess supply	When supply is greater than demand and there are unsold goods in the market. Surpluses put downward pressure on the market price
Excise duties	Excise duties are indirect taxes levied on our spending on goods and services such as cigarettes, fuel and alcohol. There are also duties on air travel, car insurance
Excludability	The property of a good whereby a person can be prevented from using it
External cost	External costs are those costs faced by a third party for which no appropriate compensation is forthcoming

External growth	When a company increases its sales and profits by buying other companies, rather than from its own operations
Externalities	Externalities are third party effects arising from production and consumption of goods and services for which no appropriate compensation is paid
Extreme poverty	A severe and persistent deprivation of basic human needs
Factor incomes	Factor incomes are the rewards to factors of production. Labour receives wages and salaries, land earns rent, capital earns interest and enterprise earns profit
Finite resources	There are only a finite number of workers, machines, acres of land and reserves of oil and other natural resources on the earth. By producing more for an ever-increasing population, we may destroy the natural resources of the planet
Firm	An organisation that hires and organises resources to make products
First mover advantage	The first company to introduce a new product to market, has the opportunity to extract the greatest long term benefit from the product introduction
Fixed costs	Costs that do not vary directly with the level of output. Examples of fixed costs include: rent and business rates, the depreciation in the value of capital equipment (plant and machinery) due to age and marketing and advertising costs
Flexible pricing	A firm varies price by customer to maximise revenue.
Flexible working	A workforce that is multi-skilled and able to work variable hours in response to changing demand
Free market	In a free market, the forces of supply and demand alone determine price and output without any government intervention. Free markets are totally unregulated
Freemium	A business model, especially on the Internet, whereby basic services are provided free of charge while more advanced (premium) features must be paid for
Geographical immobility	People may also experience geographical immobility – meaning that there are barriers to them moving from one area to another to find work
Gini Coefficient	The Gini coefficient measures the extent to which the distribution of income (or consumption expenditures) among individuals or households within an economy deviates from a perfectly equal distribution. The coefficient ranges from 0 - meaning perfect equality - to 1- meaning complete inequality
Globalisation	A process by which economies and cultures have been drawn together through a global network of trade, investment, capital flows, and rapid spread of technology
Goods	Tangible, physical products e.g. cars and computers
Government failure	Policies that cause a deeper market failure. Government failure may range from the trivial, when intervention is merely ineffective, to cases where intervention produces new and more serious problems that did not exist before
Government spending	Government spending is by central and local government on goods and services
Health rationing	Health rationing occurs when the demand for health care services outstrips the available resources leading to waiting lists and delays for health treatment
Hedging	The process of protecting oneself against risk
Horizontal equity	Horizontal equity requires equals to be treated equally e.g. people in the same income group should be taxed at the same percentage rate

Horizontal integration	Where two firms join at the same stage of production in one industry. For example two car manufacturers may decide to merge
Incentives	Incentives matter! For competitive markets to work efficiently economic agents (i.e. consumers and producers) must respond to price signals in the market
Incidence of a tax	How the final burden of a tax is shared out. If demand for a good is elastic and a tax is imposed then the tax will fall mainly on the producer as they will be unable to put prices up without losing a lot of demand
Income	Income represents a flow of earnings from using factors of production to generate an output of goods and services. For example wages and salaries.
Income elasticity of demand	Measures the relationship between a change in quantity demanded and a change in real income. The formula for income elasticity is: percentage change in quantity demanded divided by the percentage change in income
Income gap	A measure of the gap between the incomes of various groups shown by plotting the average incomes of the between the lowest and highest decile (10% grouping)
Incumbent firm	An incumbent is a business already operating in and established in a market
Independent goods	Two products that have no price-quantity demanded relationship: XED=0
Indirect tax	An indirect tax is imposed on producers (suppliers) by the government. Examples include excise duties on cigarettes, alcohol and fuel and also value added tax
Inefficiency	When the best use of resources is not being made
Inelastic demand	When the price elasticity of demand is less than 1
Inelastic supply	When the price elasticity of supply is less than +1
Inferior good	When demand for a product falls as real incomes increases
Information failure	Information failure occurs when people have inaccurate, incomplete, uncertain or misunderstood data and so make potentially 'wrong' choices
Infrastructure	The stock of capital used to support the economic system
Innovation	The commercial development of exploiting new or improved goods and services
Inputs	Labour, capital and other resources used in the production of goods and services
Intellectual property	Intellectual property (IP) is the legal property rights over creations of the mind, both artistic and commercial, and the corresponding fields of law. Common types of intellectual property include copyrights, trademarks, patents, and trade secrets
Internalised	Internalising is where any spills over effects from economic activity are absorbed by the consumer or firm themselves. This may arise for example, where a pollution tax has been charged on the good that makes them pay the external costs themselves
Inventories	Unsold products, finished and unfinished, and the raw materials used to make them
Invisible hand	Adam Smith - one of the founding fathers of modern economics, described how the invisible or hidden hand of the market operated in a competitive market through the pursuit of self-interest to allocate resources in society's best interest
Joint supply	Joint supply describes a situation where an increase or decrease in the supply of one good leads to an increase or decrease in supply of another by-product e.g. a contraction in supply of lamb will reduce the supply of wool

Just in time	Production that produces goods to order and where businesses hold few stocks
Land	Quantity and quality of natural resources available in an economy
Latent demand	Latent demand exists when there is willingness to purchase a good or service, but where the consumer lacks the purchasing power to be able to afford the product
Law of demand	The law of demand is that there is an inverse relationship between the price of a good and demand
Living Wage	The living wage is an hourly rate of pay set annually by reference to the basic cost of living in the UK and London. Unlike the National Minimum Wage, employers may choose to pay the living wage on a voluntary basis.
Local monopoly	A monopoly limited to a specific geographical area
Long run	The time period when firms can adjust all factors used in production
Manufacturing	Manufacturing is the use of machines, tools and labour to make things for use or sale.
Marginal benefit	Additional benefits received by those consuming or producing one extra product
Marginal cost	Marginal cost is defined as the change in total costs resulting from increasing output by one unit. Marginal costs relate to variable costs only
Marginal revenue	The increase in revenue resulting from an additional unit of output
Market equilibrium	Equilibrium means a state of equality between demand and supply. Without a shift in demand and/or supply there will be no change in market price. Prices where demand and supply are out of balance are termed points of disequilibrium
Market failure	Market failure exists when the competitive outcome of markets is not efficient from the point of view of the economy as a whole. This is usually because the benefits that the market confers on individuals or firms carrying out a particular activity diverge from the benefits to society as a whole
Market incentives	Market signals that motivate economic actors to change their behaviour (perhaps in the direction of greater economic efficiency)
Market power	Market power refers to the ability of a firm to influence or control the terms and condition on which goods are bought and sold. Monopolies can influence price by varying their output because consumers have limited choice of rival products
Market shortage	Where demand exceeds supply at a given price
Market supply	Market supply is the total amount of an item producers are willing and able to sell at different prices, over a given period of time egg one month.
Maximum price	A legally imposed maximum price in a market that suppliers cannot exceed. To be effective a maximum price has to be set below the free market price
Merit good	A merit good is a product that society values and judges that everyone should have regardless of whether an individual wants them. In this sense, the government (or state) is acting paternally in providing merit goods and services
Minimum price	A legally imposed price floor below that the normal market price cannot fall. To be effective the minimum price has to be set above the normal equilibrium price. A good example of this is minimum wage legislation currently in force in the UK
Mixed economy	Where resources are partly allocated by the market and partly by the government
Mixed goods	Products that have the characteristics of both private and public goods

Monopoly	A single seller of a product in a given market or industry
Moral hazard	When people take actions that increase social costs because they are insured against private loss: sometimes it is called hidden action due to the agent's actions being hidden from the principal
Nationalisation	The transfer of ownership of a firm from the private to public sector
Needs	Humans have many different types of wants and needs e.g.: economic, social and psychological. A need is essential for survival e.g. food satisfies hungry people. A want is something desirable but not essential to survival e.g. cola quenches thirst
Negative externality	Negative externalities occur when production and/or consumption impose external costs on third parties outside of the market for which no appropriate compensation is paid. This causes social costs to exceed private costs
Niche market	A specialist section of a larger market e.g. hand-made chocolates
Non price competition	Competing not on the basis of price but by other means, such as the quality of the product, packaging, customer service
Non-renewable resources	Non-renewable resources are resources that are finite and cannot be replaced. Minerals, fossil fuels and so on are all non-renewable resources
Non-rival consumption	Non-rivalry means that the consumption of a good by one person does not reduce the amount available for others
Normal goods	Normal goods have a positive income elasticity of demand. Necessities have an income elasticity of demand of between 0 and +1. Luxuries have income elasticity > +1 demand rises more than proportionate to a change in income
Normative statements	Normative statements express an opinion about what ought to be. They are subjective statements - i.e. they carry value judgments
Objectives	A specific target an organisation sets itself to achieve through its activity
Office of Fair Trading	A government agency responsible UK competition policy i.e. making markets work well for consumers
Off-peak pricing	Charging lower prices outside periods of intensive use
Oligopoly	A market dominated by a few large suppliers. Market concentration is high with typically the leading five firms taking over sixty per cent of total market sales
Opportunity cost	The cost of any choice in terms of the next best alternative foregone.
Optimum output	An efficient level of output which delivers both productive and allocative efficiency
Ostentatious consumption	Some goods are luxurious items where satisfaction comes from knowing both the price of the good and being able to flaunt consumption of it to other people
Out-sourcing	Subcontracting a process, such as design or manufacturing, to another company
Overhead costs	Business costs–such as rent and utilities–that don't directly relate to the production or sale of goods and services
Pareto efficiency	In neoclassical economics, an action done in an economy that harms no one and helps at least one person. A situation is Pareto efficient if the only way to make one person better off is to make another person worse off
Pareto efficiency	When resources cannot be reallocated without making someone else worse off
Paywall	Where access is restricted to users who have paid to subscribe to a website

Peak pricing	When a business raises prices at a time when demand is strongest
Penetration pricing	Where a firm choose to set a low price to gain market share / brand recognition
Persuasive advertising	Designed to manipulate consumer preferences and cause a change in demand
Perverse demand curve	A perverse demand curve is one that slopes upwards from left to right. Therefore an increase in price leads to an increase in demand. This may happen where goods are strongly affected by price expectations or in the case of Giffen goods
Planned economy	In a planned economy, decisions about what to produce, how much to produce and for whom are decided by central planners rather than using the price mechanism
Polluter pays principle	The government may choose to intervene in a market to ensure that the firms and consumers who create negative externalities include them when making decisions
Positional goods	Goods which are at least in part demanded because their possession or consumption implies social or other status of those acquiring them
Positive externalities	Positive externalities exist when third parties benefit from the spill-over effects of production/consumption e.g. the social returns from investment in education & training or the positive benefits from health care and medical research
Positive statement	Objective statements that can be tested or rejected by referring to the available evidence. Positive economics deals with objective explanation
Poverty trap	The poverty trap affects people on low incomes. It creates a disincentive to look for work or work longer hours because of the effects of the tax and benefits system
Preferences	Our tastes, likes, rankings reflected in the choices that people make in markets
Price elasticity of demand	Responsiveness of demand for a product following a change in its own price. Also called own price elasticity of demand.
Price elasticity of supply	Relationship between change in quantity supplied and a change in the price of a product
Price mechanism	The means by which decisions of consumers and businesses interact to determine the allocation of resources between different goods and services
Price rigidity	Situation where the price of a product rarely changes
Price signals	Changes in price act as a signal about how resources should be allocated. A rise in price encourages producers to switch into making that good but encourages consumers to use an alternative substitute product (therefore rationing the product)
Private benefit	The rewards to individuals, firms or consumers from consuming or producing goods and services. Also known as internal benefits
Private cost	Costs of an economic activity to individuals and firms. Also known as internal costs
Private goods	Products which are both rival and excludable
Privatisation	Privatisation is where state owned firms are sold to the private sector
Producer surplus	The difference between what producers are willing and able to supply a good for and the price they actually receive
Production function	Relationship between a firm's output and the quantities of factor inputs it employs

Production possibility frontier	A boundary that shows the combinations of two or more goods and services that can be produced using all available factor resources efficiently
Productive efficiency	When a business reaches the lowest point of its average cost curve implying an efficient use of scarce resources and a high level of factor productivity
Productivity	A measure of efficiency = output per unit of input or output per person employed
Profit	Profits are made when total revenue exceeds total cost. Total profit = total revenue - total cost. Profit per unit supplied = price = average total cost
Property rights	Property rights confer legal control or ownership of a good. For markets to operate efficiently, property rights must be defined and protected
Public bads	Public bads include environmental damage and global warming which affects everyone – no one is excluded from the dis-benefits
Public goods	Pure public goods are non-rival – consumption of the good by one person does not reduce the amount available for consumption by another person, and non-excludable – where it is not possible to provide a good or service to one person without it thereby being available for others to enjoy
Public ownership	Public ownership refers to state owned companies e.g. nationalised industries.
Public sector	Government organisations that provide goods and services in the economy - for example through state education and the national health service
Purchasing economies	Purchasing EOS arise when firms gain discounts from bulk buying
Quota	A quota is a limit on the quantity of a product can be supplied to a market
Rational choice	'Rational choice' involves the weighing up of costs and benefits and trying to maximise the surplus of benefits over costs
Redistribution	Measures taken by government to transfer income from some individuals to others
Regressive tax	A tax is said to be regressive when low income earners pay a higher proportion of their income in tax than high income earners
Regulations	Regulations are legally enforced rules that restrict or ban specified activities
Regulator	A government agency that monitors the performance of firms in an industry such as OFCOM or the Office of Rail Regulation
Relative poverty	Relative poverty measures the extent to which a household's financial resources falls below an average income threshold for the economy
Road pricing	A direct charge to road users for their use of a particular road e.g. a motorway toll
Scarcity	Scarce means limited. There is only a limited amount of resources available to produce the unlimited amount of goods and services we desire
Self sufficiency	Where people meet their own wants and needs without producing a surplus to trade
Seller's market	A market where demand exceeds supply, allowing the sellers of a product to have greater control over prices, terms, etc. The opposite of a buyer's market
Shortage	A situation in which quantity demanded is greater than quantity supplied
Signalling	Prices have a signalling function because the price in a market sends important information to producers and consumers

Social benefit	The benefit of production or consumption of a product for society as a whole. Social benefit = private benefit + external benefit
Social cost	The cost of production or consumption of a product for society as a whole. Social cost = private cost + external cost
Social efficiency	Where Marginal Social Cost (MSC) = Marginal Social Benefit. (MSB)
Social exclusion	When low income groups are denied access to goods and services normally available to members of society e.g. healthcare
Spare capacity	Where a firm or economy can produce more with existing resources. When there is plenty of spare capacity, elasticity of supply tends to be high
Specialisation	A method of production where a business or area focuses on the production of a limited scope of products or services to gain greater productive efficiency
Speculation	Speculation is the activity of buying a good or service in anticipation of a change in the price/market value e.g. currency or stock-market speculation
Spill-over effects	External effects of economic activity, which have an impact on outsiders who are not producing or consuming a product – these can be negative (creating external costs) or positive (creating external benefits)
Stakeholder conflict	When different stakeholders have incompatible objectives
Stakeholders	Groups who have an interest in the activity of a business e.g. shareholders, managers, employees, suppliers, customers, government and local communities. Different stakeholders have different objectives e.g. owners want maximum profits, customers low prices and workers high wages and rising living standards
State provision	Government-provided good or services - funded through tax revenue, in order to provide goods which have positive externalities or are public goods
Static efficiency	Efficiency occurring in a single time period i.e. efficiency now
Subsidy	Payments by the government to suppliers that reduce their costs. The effect of a subsidy is to increase supply and therefore reduce the market equilibrium price
Substitutes	Goods in competitive demand and act as replacements for another product
Substitutes in production	A substitute in production is a product that could have been produced using the same resources. Take the example of barley. An increase in the price of wheat makes wheat growing more attractive
Substitution effect	When a price fall encourages consumers to buy more of a relatively lower priced product and less of a higher priced substitute
Supply	Quantity of a good or service that a producer is willing and able to supply onto the market at a given price in a given time period
Supply chain	Different stages of making, distributing and selling a good or service from the production of parts, through to distribution and sale of the product
Supply shock	An event that directly alters firms' costs and prices shifting the supply curve either to the right (lower costs) or to the left (higher costs). Examples include unexpected changes in the global prices of commodities such as oil, gas and metals
Technology	The application of knowledge to production
Time lags	Time lags occur in production, particularly in agriculture, when decisions about the quantity to be produced are made well ahead of the actual sale. Demand and the price may change in the interval, creating a problem for the producer

Total costs	Total Costs (TC) refer to the amount of expenses incurred in a transport operation and is made up of fixed costs (FC) and variable costs (VC). TC = FC + VC
Total revenue	Total revenue (TR) is found by multiplying price (P) by the number of units sold (Q). TR = P x Q
Tradable permits	Government issued licences allowing firms to emit a specified amount of pollutant e.g. C02. Firms can buy and sell permits in a market.
Trade-off	The process of making a choice between alternatives e.g. deciding if is worth sacrificing a new car for a holiday
Tragedy of the Commons	When no one owns a resource, it gets over-used, for example fish stocks and deforestation - people use and benefit from it without regard to the effect on others
Value judgement	A view of the rightness or wrongness of something, based on a personal view.
Variable cost	Variable costs vary directly with output. I.e. as production rises, a firm will face higher total variable costs because it needs to purchase extra resources to achieve an expansion of supply. Common examples of variable costs or a business include the costs of raw materials, labour costs and consumables
Welfare loss	The excess of social cost over social benefit for a given output
Willingness to pay	The maximum price a consumer is prepared pay to obtain a product
Zero Hours Contracts	Under zero-hours contracts employees are available for work as and when required