AS Economics
Revision

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Microeconomics
Microeconomics looks at the decisions of individuals (consumers and producers) in the economy. At the heart of economics is scarcity and choices. Consumers, firms and the government must all make choices over scarce resources. For example, a consumer must choose how to allocate her scarce time, how long she should work and how much time she needs for leisure.

Microeconomics is concerned with questions such as “What happens to demand for good X if the price of a substitute good rises”?, “Does the government need to stop people smoking in public”? and “Are there too many firms in the market”? 
Basic Economics

Scarcity
Man’s infinite wants, his innate desire to have more, leads to scarcity. Scarcity is a situation in which there are only a limited number of resources available to produce goods and services.

Resources are known as the factors of production (the inputs used in the production process to produce output).

Production Process

There are four factors of production:

1) Land.

Land is all the natural resources on the planet. Land includes oil, gold, rocks, forests, fish etc.

2) Labour.

Workers are inputs and could be skilled or unskilled.

3) Capital.

Man-made aids used by labour in the production process. Capital includes machines, buildings, computers, telecommunications, roads etc.

4) Enterprise.

Risk-taking by an individual or group who combine the other factors of production in search of profit. In the movie Ghostbusters (starring Bill Murray and Dan Akroyd), 3 unemployed parapsychology professors take a risk and set up a paranormal investigations and eliminations business.

Because there exists only a finite amount of resources and yet an infinite amount of wants, a choice must be made over production. This is the basic economic problem, choosing how to allocate resources between alternative uses. A society (or individual) must choose what to produce, how to produce it and who to produce for. After making a choice, the decision makers face an opportunity cost. Opportunity cost is the next best alternative foregone. Choosing to produce some goods means the production of some other goods cannot happen. Thus, economics is the study of choices, the study of resource allocation.
**Opportunity Cost**

An economist is concerned with the opportunity cost of decisions.

Opportunity cost is the next best alternative foregone.

Let’s say you have £1 to spend on a chocolate bar and you have the choice of buying a Milky Way for £1 or a Lion bar for £1. You only have enough money to buy one chocolate bar. If you buy the Milky Way then you have no money left so you cannot buy the Lion bar. So the opportunity cost of buying a Milky Way is the Lion bar, you could have bought the Lion bar if you did not buy the Milky Way.

**Time Period**

An economist must distinguish between the sort-run and long-run because a change in a variable can have different effects depending on the time period.

The short-run is that period of time in which at least one factor of production is fixed (usually land and/or capital). Additional units of variable factors of production (raw materials and labour) must be added to the fixed factor of production to increase output.

All the factors of production are variable in the long-run. All inputs can be varied to increase output.

**Positive and Normative Statements**

A positive statement can be proved right or wrong by real world data for example, a fact.

- “The U.S. has a higher GDP than Spain.”

A normative statement is a value judgement or view about what should happen. It usually contains the words ought or should.

- “The government should reduce inflation.”
Production Possibility Frontier
A Production Possibility Frontier (PPF) shows all the different combinations of goods an economy can produce if all resources are fully and efficiently employed. The PPF shows the productive capacity of the economy (how much the economy can produce).

Movement Along the PPF
A movement along the PPF shows the opportunity cost of production.

At point A, resources are not fully employed and/or are not being used efficiently. At point B, all resources are fully employed and are being used efficiently. Point C is not attainable given current resources and technology.
A movement along the PPF from A to B shows an opportunity cost. To increase the production of good X from 20 to 70 units, the production of 40 (100-60) units of good Y must be foregone. At point A, 40 units of good Y is the opportunity cost of producing 50 more units of good X.

**Movement Along A Linear PPF**
A linear PPF shows a constant opportunity cost of production.

A movement along the PPF from A to B to C shows a constant opportunity cost. To increase the production of good X by 40 units from 40 to 80 units, the production of 20 (120-100) units of good Y must be foregone. To increase the production of good X by 40 units from 80 to 120 units, the production of 20 (100-80) units of good Y must be foregone. So the opportunity cost is the same all along the PPF.
**Movement of the PPF**

A movement of the PPF shows a change in the efficiency of production and/or the discovery (or destruction) of resources. The maximum level of output of goods X and Y changes due to a change in the quality and/or quantity of resources.

Below, the PPF has shifted outwards from PPF1 to PPF2 and the maximum output of X and Y has increased from X1 to X2 and Y1 to Y2 respectively.

Maybe technology or the quality of the workforce (education and skills) improves so the economy becomes more productive. As the quality of resources rise, the maximum level of output rises.

Maybe new raw materials or minerals (oil) were discovered causing the quantity of resources to increase. As the quantity of resources increase, more can be produced so the maximum level of output rises.

A leftward shift of the PPF could be caused by a war or natural disaster. Wars and natural disasters destroy resources and the infrastructure so the quantity and quality of resources falls, less can be produced so the maximum level of output falls.
Economic Systems
An economic system is the way an economy produces and allocates resources. There are three economic systems: a free market economy, a mixed economy and a command economy.

Free Market
A free market economy is an economic system which resolves the basic economic problem through the price mechanism. Basically market demand and supply determine prices and then whoever can afford goods at the market prices can buy them. A rise in the demand for a good means its price increases and firms switch more resources into producing that good. The government’s role is limited to providing the legal framework (property rights) and providing public goods (police).

A free market economy has the following characteristics:

1) Main Agents.

The main agents include consumers, producers, owners of private property and the government.

2) Private Ownership.

Most of the factors of production (land and capital) are owned by private agents. The government must enforce property rights to protect private agents’ property.

3) Motivation.

Motivation in a free market system is pure self-interest. Consumers maximize their own welfare, firms maximize their profits, private individuals maximize their own returns (wages, rents, interest and profit) and the government maximize social welfare.

4) Free Enterprise.

Firms can sell basically anything they want to sell, consumers can buy nearly anything they wish to buy and people can work for whoever they choose to.

5) Competition.

Basically all markets are competitive because there are many buyers and sellers. Buyers compete with each other to buy goods and firms compete with each other to sell goods.

6) Decentralized Decision Making.

Agents are free to choose what they want to do, so decision making is decentralized, that is, the government do not allocate resources.
### Benefits of A Free Market Economy

- **Consumer sovereignty.** Consumer sovereignty exists because firms will produce the goods that consumers want. Consumers face low prices, high quality and a wide range of choices.

### Costs of A Free Market Economy

- **Market failure.** Market failure could occur. For example, there may be a monopoly, public goods may not be provided and there may be externalities that need internalizing. All of these cause a welfare loss because society becomes worse off.

### Productive efficiency.

- Because there are many sellers, firms must compete and keep costs low and be productively efficient.

### Inequality.

- Income distribution may be very uneven, so the rich can afford a lot but the poor cannot buy much. Also, because the government’s role is limited there is little unemployment benefits and spending on healthcare and education so the poor may suffer even further.

### Innovation.

- Firms must produce high quality goods to compete with rivals otherwise they will lose consumers. Moreover, firms may need to innovate to produce new goods, attract new consumers and gain an advantage over rivals.

### Consumerism.

- A free market may cause too much advertising and encourage consumers to buy unnecessary goods.

### Mixed Economy

A mixed economy is an economic system which allocates resources partly by the price mechanism and partly by the government. The government provide public goods, subsidizes merit goods, regulates monopolies, sets minimum wages and provides social safety nets.

### Command Economy

In a command economy the government directs resource allocation. Central planning is used, that is, the government decides where every input and output is allocated. Jobs are allocated by the government and goods like food and housing are rationed. Basically the government decides what, how and who to produce for.
**Specialization**

A way to increase efficiency and output is to specialize. Specialization occurs when a factor of production is devoted to a specific role in the production process.

Adam Smith coined the phrase ‘division of labour’ to refer to labour specialization. The division of labour refers to labour being given their own specific tasks in the production process. Basically the idea of the division of labour begins with an assembly line and a bunch of workers. Let’s say if each worker uses the whole assembly line they produce a total of 20 units of output.

Alternatively, each worker could specialize in the production process and take on specific roles. One worker could handle the raw materials and the next worker could piece together components. Another worker could use one piece of machinery and a different worker could use another piece of machinery. Maybe the last worker supervises all the others. Because each worker is specializing they are more efficient. Each worker’s skills have been matched up to their role, they are doing what they are good at so they are better and more efficient at it. Also, workers are repeating their role so they can develop their skills in their specific roles. Workers ‘learn by doing’, develop and pick-up new and better skills whilst repeating their role. Maybe workers find short-cuts to produce output quicker and cheaper. Better skills means labour productivity is higher, output per worker rises and let’s say a total of 200 units of output are produced. By specializing, workers become more efficient and total output increases.

<table>
<thead>
<tr>
<th>Benefits of Division of Labour</th>
<th>Costs of Division of Labour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workers repeat their specific tasks over and over again so they become more efficient. Workers gain skills in a narrow range of activities so they become experts.</td>
<td>Labour may become bored if they find the work to be repetitive and monotonous, workers then begin to make mistakes.</td>
</tr>
<tr>
<td>Workers specialize in tasks in which they are best suited.</td>
<td>If specialized workers lose their job they may not be able to find another job that involves different skills.</td>
</tr>
<tr>
<td>Workers do not keep moving from one part of the building to another so time is saved in the production process.</td>
<td>Reduces flexibility since workers find it harder to move between different tasks.</td>
</tr>
<tr>
<td>It is cheap and easy to provide workers with specialist machinery.</td>
<td>If a machine breaks down or a worker is off ill then the assembly line may have to stop and production stops.</td>
</tr>
<tr>
<td>Training can be targeted for individual needs, which is more effective and cheaper.</td>
<td>Staff turnover may increase, leading to higher redundancy/hire costs for firms.</td>
</tr>
<tr>
<td>Quality can increase because goods are made by those with the best skills to make them.</td>
<td>Risk will be higher because a narrow range of products are produced.</td>
</tr>
<tr>
<td>Firms can produce more and lower their average costs so their profits rise.</td>
<td>Market size may limit the scope for specialization. Only if the market size is large enough is it beneficial to produce a lot at a low unit cost.</td>
</tr>
<tr>
<td>Labour productivity (output per worker) increases through the division of labour. More wants/needs can be satisfied with a given amount of scarce resources.</td>
<td><strong>Costs of Division of Labour</strong></td>
</tr>
</tbody>
</table>
Markets

Markets are systems or institutions of exchange where buyers and sellers meet to barter or exchange money for goods and services. Buyers demand goods and sellers supply goods. When demand equals supply the market is in equilibrium.

Demand

Demand is the quantity of a good or service that a consumer is willing and able to buy at the market price in a given time period.

Moving Along the Demand Curve

A demand curve shows the price a consumer is willing and able to pay for each quantity demanded. Market demand is the sum of all the individual demands from consumers in a market. The Law of Demand: An inverse relationship exists between price and quantity demanded. As the price of a good falls, quantity demanded rises, ceteris paribus\(^1\). So the demand curve slopes down.

\(\text{Demand} \quad \text{Price (P)} \quad \text{Quantity (Q)}\)

Note that demand is ‘effective demand’. A consumer’s want is not an effective demand, the consumer’s want must be backed up by income for it to be an effective demand.

\(^1\) A Latin phrase, ceteris paribus means: “All other things being constant.” Here we are concerned with a price change only and the effect on quantity demanded. We want to hold income, tastes, advertising and all other things constant. We just want to see the effect of a price change on quantity demanded.
As price falls, quantity demanded rises because of two effects:

1) The Income Effect.

As price falls, the consumer’s disposable income rises, consumers have the ability to buy more so quantity demanded rises.

2) The Substitution Effect.

As good X’s price falls, X becomes relatively cheaper than all other goods, so the quantity demanded of X increases.

**Movement/Shift of the Demand Curve**
An increase (decrease) in demand causes the demand curve to shift right (left). At each price there is a higher (lower) quantity demanded.

*An Increase/Decrease in Demand*
Many factors cause demand to change:

1) Income.

An increase in income means consumers have the ability to buy more goods/services, so the demand curve shifts right.

2) Preferences/Tastes.

Advertising and fashion (bad publicity) influences the choices consumers make and causes the demand curve to shift right (left). Advertising and fashion makes a consumer want a good more, so they will demand more of it. Bad publicity makes the consumer want the good less so they will demand less of it.

3) Population.

An increase (decrease) in the economy’s population means more (less) people are demanding a good so the demand curve shifts right (left). The composition of the population also affects demand for goods. More babies mean an increase in demand for bottles and baby food.

4) Substitutes.

Substitutes are alternative or replacement goods that satisfy similar wants (for example, Milky Way and Mars chocolate bars, Coca Cola and Pepsi, Ford and Audi cars, tea and coffee). Assume goods X and Y are substitutes. If the price of Y falls (rises), Y has become cheaper (dearer) relative to X, consumers substitute away from the more expensive good, so consumers demand more (less) of Y and less (more) of X. There is a movement along Y’s demand curve to the right (left), and the demand for X will shift to the left (right).

5) Complements.

Complements are goods that are bought (usually) to be used together (for example, tea and sugar, cars and petrol, cheese and bread). Assume goods X and Y are complements. If the price of Y falls (rises), consumers buy more (less) of Y and will thus buy more (less) of X. There is a movement along Y’s demand curve to the right (left), and the demand for X will shift to the right (left). If the price of cars falls, ceteris paribus, cars are now cheaper, consumers will buy more cars and will buy more petrol to drive the cars, so there is a movement along the demand curve for cars to the right and the demand curve for petrol will shift to the right.

6) Interest Rate.

An increase (decrease) in interest rates mean the cost of borrowing rises (falls) so consumers will demand less (more) goods that are usually bought on credit so the demand curve shifts left (right). Goods usually bought on credit include houses, cars and TVs. Also, the demand curve shifts left (right) because a higher (lower) interest rate means the return on saving is higher (lower) so consumers are incentivized to save more (less) and consume less (more). Additionally, higher (lower) interest rates cause demand to shift left (right) because consumers’ existing debt increases (decreases) so their disposable income falls (rises).
7) Direct Taxation.

A direct tax is a lump-sum tax income (income tax). A rise in income tax means disposable income falls, consumers cannot buy as much as before so demand shifts left.

8) Confidence/Expectations.

As consumers become more confident (better expectations about the economy and their future income) they buy more goods so demand increases and shifts right.


**Price Elasticity of Demand**

As price falls, ceteris paribus, quantity demanded rises. So demand responds to price changes. If quantity demanded rises a lot when price changes then demand is responsive to price changes. An economist would say demand is therefore elastic. An elastic band can be stretched, if it is very elastic then it is responsive/stretchy, if it is inelastic then it is not responsive/stretchy. Demand is elastic if it is responsive to price changes and inelastic if it is not responsive to price changes. To measure this elasticity economists use price elasticity of demand.

Price elasticity of demand (PED) measures the responsiveness of demand to a change in price.

\[
PED = \frac{\% \Delta \text{Quantity Demanded}}{\% \Delta \text{Price}}
\]

Remember that \(\% \Delta\) is calculated by \(\frac{\text{New} - \text{Original}}{\text{Original}} \times 100\)

Demand is price elastic if PED > 1 if demand is highly responsive to a change in price. A percentage change in price causes a larger percentage change in quantity demanded, ceteris paribus. An elastic demand curve is relatively flat. Anything that is a luxury likely has an elastic demand for example, top-brand jewellery and restaurants. Anything with substitutes likely has an elastic demand for example, Nike trainers, Samsung TVs and iPhones.

![Elastic Demand Curve](image.png)
Demand is perfectly elastic (or infinitely elastic) \( PED = \infty \) if any change in price causes quantity demanded to fall to zero, ceteris paribus. At the market price \( P^* \) consumers are willing and able to buy an infinite amount of the good. The demand curve is horizontal.

**Perfectly Elastic**

![Perfectly Elastic Demand Curve](image1)

Demand is unit elastic \( PED = 1 \) if a percentage change in price causes the same percentage change in quantity demanded, ceteris paribus.

**Unit Elastic**

![Unit Elastic Demand Curve](image2)
Demand is price inelastic $PED < 1$ if demand is very unresponsive to a change in price. A percentage change in price causes a smaller percentage change in quantity demanded, ceteris paribus. Anything that is a necessity or has a few substitutes likely has an inelastic demand for example, water, oil, electricity, rent, tube travel and medication.

Demand is perfectly inelastic $PED = 0$ if a change in price causes no change in quantity demanded, ceteris paribus. The consumer will pay any price for the good. The demand curve is vertical. A possible example is heroine to a drug addict.
Many factors determine PED:

1) **Availability of Substitutes.**

As the number and/or quality of substitutes for good X increases, consumers become more sensitive to price changes so X’s PED becomes more elastic.

2) **Market Width.**

As a market is defined more widely, there are less substitutes so PED becomes more inelastic. For example, the PED for Nike trainers may be elastic because there are many substitutes like Adidas and Puma, but the PED for all footwear should be inelastic because there are no substitutes for footwear.

3) **Time.**

As the time period increases, consumers can act upon price changes so PED becomes more elastic. Buyers may be locked into paying for a good in the short-run, but they may be able to substitute away from it in the long-run. For example, if the price of tube tickets rise so high that it is cheaper to buy a car, tube users will continue to use the tube in the short-run because of the time it takes to obtain a driving license, find and buy the car and pay for insurance etc. In the long-run, the tube users will substitute away from tube travel and buy a car.

4) **Addictions.**

Addictions and habits make consumers become attached to a good and become less sensitive to price changes so PED becomes more inelastic. As consumers become more addicted to a good, they care less about its price.

5) **Luxuries and Necessities.**

Luxuries (necessities) have a more elastic (inelastic) PED. A luxury is not necessary to survive, an increase in its price causes a large fall in quantity demanded. A necessity is necessary to survive, an increase in its price causes only a small fall in quantity demanded.
**PED Along a Linear Demand Curve**
A linear demand curve has a constant slope but PED varies along it. Moving rightwards along the demand curve, PED changes from being elastic to inelastic.

Let’s say you want to buy a Milky Way chocolate bar. At a very high price you buy none, as price falls a lot to a reasonable amount you buy one, as price keeps falling you buy more and more. Demand is highly responsive to price changes so PED is elastic. But then you become bored of Milky Ways and as price falls further you only buy a little bit more. Demand is very unresponsive to price changes so PED is inelastic.

**Revenue/Expenditure and PED**
Revenue or expenditure is price times quantity. A fall in price causes an increase in quantity demanded but revenue could rise, fall or stay the same depending on PED.

If PED is inelastic, a rise (fall) in price causes a proportionally smaller fall (rise) in quantity demanded so revenue rises (falls) because the rectangle below gets larger (smaller). The original total revenue is the red and green areas. After price rises, total revenue falls by the green area because $Q_1 - Q_2$ less units are sold but total revenue rises by the blue area because $Q_2$ units are now sold at a higher price. The blue area is larger than the green area so total revenue rises.
If PED is elastic, a rise (fall) in price causes a proportionally larger fall (rise) in quantity demanded so revenue falls (rises) because the rectangle below gets smaller (larger). The original total revenue is the red and green areas. After price rises, total revenue falls by the green area because $Q_1 - Q_2$ less units are sold but total revenue rises by the blue area because $Q_2$ are now sold at a higher price. The blue area is smaller than the green area so total revenue falls.

*Revenue and Inelastic Demand*

*Revenue and Elastic Demand*
**Income Elasticity of Demand**

A demand curve for a good shifts if income changes, but the direction and extent of the shift depends on the income elasticity of demand for that good.

Income elasticity of demand (YED) measures the responsiveness of demand to a change in income.

\[
YED = \frac{\% \Delta \text{Quantity Demanded}}{\% \Delta \text{Income}}
\]

A normal good has a positive \( YED > 0 \). As income rises, demand for a normal good rises. For example, chocolate, TVs and mobile phones etc.

A luxury good has a positive \( YED > 1 \). As income rises, demand for the luxury good rises a lot. The percentage change in demand is greater than the percentage change in income. For example, top-brands including Mercedes cars, Nike trainers, Dolce and Gabbana perfumes etc.

A necessity has a positive \( YED < 1 \). As income rises, demand for the necessity rises by only a small amount. The percentage change in demand is less than the percentage change in income. For example, milk, bread and water.

An inferior good has a negative \( YED < 0 \). As income rises, demand for an inferior good falls. For example, ‘economy’ food in supermarkets.
Cross Price Elasticity of Demand

Cross price elasticity of demand (XED) measures the responsiveness of demand for good X to a change in price of good Y.

\[ XED = \frac{\% \Delta \text{Quantity Demanded of } X}{\% \Delta \text{Price of } Y} \]

Substitutes are alternative or replacement goods that satisfy similar wants. Assume goods X and Y are substitutes. Substitutes have a positive XED because as the price of X rises (falls), the demand for Y rises (falls), ceteris paribus.

Goods that are close substitutes have a positive \( XED > 1 \), a rise in the price of Y causes a more than proportionate rise in demand for X. For example, Nike and Adidas trainers.
Goods that are weak substitutes have a positive $XED < 1$, a rise in the price of Y causes a less than proportionate rise in demand for X. For example, tea and coffee.

**Weak Substitutes**

Complements are goods that are bought (usually) to be used together. Assume goods X and Y are complements. Complements have a negative XED because as the price of Y rises (falls), the demand for X falls (rises), ceteris paribus. For example, tea and milk.

**Complements**
Goods that are close complements have an $|XED| > 1$, a rise in the price of $Y$ causes a more than proportionate fall in demand for $X$. For example, cars and petrol.

**Close Complements**

![Graph showing close complements](image)

Goods that are weak complements have an $|XED| < 1$, a rise in the price of $Y$ causes a less than proportionate fall in demand for $X$. For example, tea and sugar.

**Weak Complements**

![Graph showing weak complements](image)
Supply
Supply is the quantity supplied of a good or service that a producer is willing and able to sell at the market price for a given time period.

Movement Along the Supply Curve
A supply curve shows the price a producer is willing and able to sell at for each quantity supplied. Market supply is the sum of all the individual supplies from producers in a market. A positive relationship exists between price and quantity supplied. As the price of a good rises, ceteris paribus, the quantity supplied rises. So the supply curve slopes up.

As price rises, quantity supplied rises because of:

1) Signals.
A higher price acts as a signal to producers that more profit can be made so quantity supplied rises.

2) Resource Costs.
To increase quantity supplied, producers must use more resources, so resource costs are bid up, production costs rise and prices must rise to cover the higher costs.

3) New Producers.
As price rises, this acts as a signal for new producers to enter the market, so quantity supplied rises.
**Movement/Shift of the Supply Curve**

An increase (decrease) in supply causes the supply curve to shift right (left). At each price, there is a higher (lower) quantity supplied.

**An Increase/Decrease in Supply**

Many factors cause supply to change:

1) **Costs.**

   As costs fall, it becomes cheaper to produce so the supply curve shifts right. Costs include raw materials, components, wages, transport etc.

2) **Technology.**

   An improvement in technology increases efficiency and lowers costs so the supply curve shifts right.

3) **Education.**

   An increase in workers’ educational quality means labour productivity rises, workers can produce more, so unit labour costs fall and the supply curve shifts right.

4) **Substitutes.**

   Assume goods X and Y are substitutes. As the price of Y falls, producers switch to producing more X because it is more profitable relative to Y, so X’s supply curve shifts right.

5) **Climate.**

   Agricultural output heavily depends on the climate. As the climate improves, more can be harvested so agricultural output rises and the supply curve shifts right.
6) Number of Producers.

As more producers enter the market, total output rises so the market supply curve shifts right.

7) Producers’ Objectives.

If producers switch from sales maximization to profit maximization then less is produced so the supply curve shifts left.

8) Indirect Taxes.

An increase in indirect taxes on supply increases producers’ costs of production so the supply curve shifts left.

9) Subsidies.

A subsidy lowers a producer’s costs of production so the supply curve shifts right.

10) Legislation.

A legal barrier (maybe pollution charges) increases producers’ costs of production or limits their production so the supply curve shifts left.
**Price Elasticity of Supply**

Price elasticity of supply (PES) measures the responsiveness of supply to a change in price.

\[
PES = \frac{\%\Delta \text{ Quantity Supplied}}{\%\Delta \text{ Price}}
\]

Supply is elastic if supply is highly responsive to a change in price. A percentage change in price causes a larger percentage change in quantity supplied, ceteris paribus.

**Elastic Supply**

Supply is perfectly elastic if any change in price causes quantity supplied to fall to zero. At the market price \( P^* \) producers are willing and able to sell an infinite amount of the good. The supply curve is horizontal.

**Perfectly Elastic Supply**

\[
P = P^*
\]

\[
Q = \infty
\]
Supply is unit elastic $PES = 1$ if a percentage change in price causes the same percentage change in quantity supplied.

**Unit Elastic Supply**

Supply is inelastic $PES < 1$ if supply is very unresponsive to a change in price, ceteris paribus. A percentage change in price causes a smaller percentage change in quantity supplied.

**Inelastic Supply**
Supply is perfectly inelastic \( PES = 0 \) if a change in price causes no change in quantity supplied, ceteris paribus. The supply curve is vertical.

Many factors determine PES:

1) Availability of Resources and Labour.

If resources and labour are easily/quickly/cheaply available then supply can easily increase so supply is elastic.

2) Factor Substitutability.

As it becomes easier for producers to switch resources from producing one good to a substitute good, PES becomes more elastic.

3) Spare Capacity.

As producers get closer to full capacity, PES becomes more inelastic. A large degree of spare capacity means there is space to produce more with the current resources and technology so quantity supplied can easily be increased. But at full capacity, supply is at its maximum and cannot rise any more (this could cause PES to be perfectly inelastic in the short-run).

4) Availability of Substitutes.

As the number of substitutes rises, PES becomes more elastic. Assume goods X and Y are substitutes. As the price of Y falls, X becomes more profitable relative to Y, producers switch to producing less of Y and more of X.

5) Time.

As the time period increases, PES becomes more elastic. If producers are at full capacity in the short-run, they can increase investment to build more machines and buildings, increase their productive capacity in the long-run and increase quantity supplied in the long-run.
6) Lags.

A production lag is the length of time between using the factors of production and producing the final output. As the production lag increases, PES becomes more inelastic because producers cannot change quantity supplied quickly when price changes (this could cause PES to be perfectly inelastic in the short-run). An oil drill and pump may take a long time to set up, making oil supply very inelastic.

7) Stocks.

As producers keep more stocks and inventories, producers can increase quantity supplied when price rises even if they are at full capacity so PES becomes more elastic.
Market Equilibrium

Market equilibrium occurs when demand equals supply.

At market equilibrium, the market-clearing (or equilibrium) price $P^*$ is charged and output $Q^*$ produced and consumed. Markets clear at $P^*$ because all the goods on sale by producers are bought by consumers. At equilibrium, no producer or consumer has an incentive to change their behaviour.

Disequilibrium

Markets could also be in disequilibrium, but market forces will move markets back towards equilibrium. The time it takes to move from disequilibrium to equilibrium depends upon how long it takes for demand and/or supply to adjust to the equilibrium level.

Markets are in disequilibrium if there is excess demand or excess supply.

Excess Demand

Excess demand occurs when demand is greater than supply.

At price $P'$ there is excess demand because quantity demanded $Q_d$ is greater than quantity supplied $Q_s$. Excess demand is $Q_d - Q_s$. As there is excess demand, consumers bid up prices from $P'$ to $P^*$, quantity demanded falls and quantity supplied rises until the equilibrium price $P^*$ and quantity $Q^*$. 
Excess Supply
Excess supply occurs when supply is greater than demand.

\[ Q_s > Q_d \]

At price \( P' \) there is excess supply because quantity supplied \( Q_s \) is greater than quantity demanded \( Q_d \). As there is excess supply, producers reduce prices from \( P' \) to \( P^* \), quantity supplied falls and quantity demanded rises until the equilibrium price \( P^* \) and quantity \( Q^* \).

Changes in Market Equilibrium
Market equilibrium price and quantity will change if the demand curve and/or supply curve shifts.

A Change in Demand
An increase (decrease) in demand causes the demand curve to shift right (left), equilibrium price to rise (fall) and quantity to rise (fall), ceteris paribus.

Assume there is an increase in demand that causes the demand curve to shift right from \( D \) to \( D' \).

At the original equilibrium price \( P^* \) there is now excess demand, so prices are bid up by consumers, price rises to \( P' \) and there is a movement along the supply curve as quantity supplied increases from \( Q^* \) to \( Q' \). Markets clear at the new equilibrium price \( P' \) and output \( Q' \).
The extent of the change in equilibrium price and output depends on the magnitude of the increase in demand, how far the demand curve shifts. A larger (smaller) increase in demand causes a larger (smaller) price rise and larger (smaller) increase in quantity demanded.

Additionally, the extent of the rise in price and output depends upon the elasticity of supply. The more elastic (inelastic) is supply, the smaller (larger) the increase in price and the larger (smaller) the rise in output.

If supply is elastic, an increase in demand causes an increase in the equilibrium price but a more than proportionate increase in output.

If supply is inelastic, an increase in demand causes an increase in the equilibrium price but a less than proportionate increase in output.
If supply is perfectly inelastic, an increase in demand causes an increase in equilibrium price but no change in output.

![Perfectly Inelastic Supply](image)

If supply is perfectly elastic, an increase in demand causes no change in equilibrium price but an increase in output.

![Perfectly Elastic Supply](image)
A Change in Supply
An increase (decrease) in supply causes the supply curve to shift right (left), equilibrium price to fall (rise) and output to rise (fall), ceteris paribus.

Assume there is an increase in supply that causes the supply curve to shift right from S to S'.

At the original equilibrium price $P^*$ there is now excess supply, so prices are reduced by producers, price falls to $P'$ and there is a movement along the demand curve as quantity demanded falls from $Q^*$ to $Q'$. Markets clear at the new equilibrium price $P'$ and output $Q'$.

The extent of the change in equilibrium price and output depends on the magnitude of the increase in supply, how far the supply curve shifts. A larger (smaller) increase in supply causes a larger (smaller) price fall and larger (smaller) increase in quantity demanded.

Additionally, the extent of the fall in price and rise in output depends upon the elasticity of demand. The more elastic (inelastic) is demand, the smaller (larger) the fall in price and the larger (smaller) the rise in output.
If demand is elastic, an increase in supply causes a fall in the equilibrium price but a more than proportionate increase in output.

![Elastic Demand Diagram]

If demand is inelastic, an increase in supply causes a fall in the equilibrium price but a less than proportionate increase in output.

![Inelastic Demand Diagram]
If demand is perfectly elastic, an increase in supply causes no change in the equilibrium price but an increase in output.

![Perfectly Elastic Demand](image)

If demand is perfectly inelastic, an increase in supply causes a change in the equilibrium price but no change in output.

![Perfectly Inelastic Demand](image)
A Change in Both Demand and Supply
Markets can experience increases/decreases in demand and increases/decreases in supply at the same time. Any combination of demand curve and supply curve shifts can occur, for simplicity only increases are illustrated here.

An Increase in Demand and Supply

An increase in demand and supply may cause equilibrium price to rise or fall but the equilibrium level of output rises, ceteris paribus. A rightward shift of the demand curve from $D$ to $D'$ and supply curve from $S$ to $S'$ causes equilibrium price to remain constant at $P^*$ but equilibrium output to rise from $Q^*$ to $Q'$. Again the extent of the change in price and output depends upon the degree to which demand and supply increase. If demand shifts more in proportion than supply shifts, equilibrium price and output both rise. If supply shifts more in proportion than demand shifts, equilibrium price falls but output rises. Additionally, the extent of the change in equilibrium price and output depends on the elasticities of demand and supply.
**Consumer Surplus**

Consumer surplus is a measure of the benefit or welfare that consumers derive from consumption. Consumer surplus is the difference between what consumers are willing (and able) to pay and what they actually pay. Consumer surplus is the area between the demand curve and the market price.

The demand curve shows the maximum price consumers are willing and able to pay to buy different quantities of a good. Consumers are willing to pay a high price for the first unit they buy but a lower price for each extra unit they buy. Although, consumers only pay the market price $P^*$ for each unit.

At the market price $P^*$ consumers buy $Q^*$ units of output so they spend a total amount equal to the blue area. However, consumers are willing to pay the yellow and blue areas. Consumer surplus is the difference between the two, the yellow area.

An increase (decrease) in demand increases (decreases) consumer surplus.
Consumer surplus is originally the orange and yellow areas. After demand increases, the demand curve shifts rightwards from D to D', equilibrium price rises from P* to P' and output rises from Q* to Q'. The new consumer surplus is the red and orange areas. Consumer surplus falls a bit because a higher market price is paid but consumer surplus rises a lot because more is consumed. Overall, consumer surplus increases because the gain in consumer surplus (the red area) is greater than the loss in consumer surplus (the yellow area).

An increase (decrease) in supply increases (decreases) consumer surplus.

\[ \text{Consumer Surplus and An Increase in Supply} \]

\[ \begin{array}{c}
P \\
\text{P*} \\
\text{P'} \\
0 \\
Q^* \\
Q' \\
\end{array} \]

Consumer surplus is originally the yellow area. After supply increases, the supply curve shifts rightwards from S to S', equilibrium price falls from P* to P' and output rises from Q* to Q'. The new consumer surplus is the yellow and orange areas. Consumer surplus rises a lot because a lower market price is paid and more is consumed.
**Producer Surplus**

Producer surplus is a measure of the benefit or welfare that producers derive from selling output. Producer surplus is the difference between what producers are willing (and able) to supply at and what they actually receive. Producer surplus is the area between the market price and the supply curve.

The supply curve shows the minimum price producers are willing and able to accept to sell different quantities of a good. Producers are willing to sell at a low price for the first unit but a higher price for each extra unit they sell. Although, producers receive the market price $P^*$ for each unit.

At the market price $P^*$ producers sell $Q^*$ units of output and producer surplus is the blue area.

An increase (decrease) in supply increases (decreases) producer surplus.
Producer surplus is originally the blue and purple areas. After supply increases, the supply curve shifts rightwards from \( S \) to \( S' \), equilibrium price falls from \( P^* \) to \( P' \) and output rises from \( Q^* \) to \( Q' \). The new producer surplus is the purple and green areas. Producer surplus falls a bit because a lower market price is received but producer surplus rises a lot because more is sold. Overall, producer surplus increases because the gain in producer surplus (the green area) is greater than the loss in producer surplus (the blue area).

An increase (decrease) in demand increases (decreases) producer surplus.

Producer Surplus and An Increase in Demand

Producer surplus is originally the blue area. After demand increases, the demand curve shifts rightwards from \( D \) to \( D' \), equilibrium price rises from \( P^* \) to \( P' \) and output rises from \( Q^* \) to \( Q' \). The new producer surplus is the purple and blue areas. Producer surplus rises a lot because a higher market price is received and more is sold.

Consumer and producer surplus could be analyzed separately (as shown above) or together (as shown below). For simplicity, only the effects of an increase in demand is illustrated here.
An increase (decrease) in demand increases (decreases) both consumer and producer surplus.

*Consumer and Producer Surplus and An Increase in Demand*

Consumer surplus is originally the yellow area. Producer surplus is originally the blue area. After demand increases, the demand curve shifts rightwards from D to D', equilibrium price rises from \( P^* \) to \( P' \) and output rises from \( Q^* \) to \( Q' \). The new consumer surplus is the red area. The new producer surplus is the purple, yellow and blue areas. Consumer surplus falls a bit because a higher market price is paid but consumer surplus rises a lot because more is consumed. Producer surplus rises a lot because a higher market price is received and more is sold. The yellow area of lost consumer surplus is transferred to producers.
The Price Mechanism
Adam Smith posits that an ‘invisible hand’ operates in free markets. As long as economic agents (consumers and producers) act in self-interest in a competitive market with perfect information, the ‘invisible hand’ will allocate resources in society’s best interest. Basically all agents maximizing their own self-interest means everyone acts in their own self-interest so society acts in its own best interest.

The ‘invisible hand’ acts through the price mechanism. The price mechanism refers to the way in which demand and supply interact to change prices and allocate resources. Prices allocate resources in three ways:

1) Rationing.

At the market price for a good, only those consumers with sufficient effective demand can buy the good, those with a lower effective demand cannot buy the good. So goods are rationed by prices. As resources (and therefore goods) become less scarce, supply becomes more plentiful, price falls and more consumers can buy the good.

2) Incentives.

Incentives affect choices. Higher prices incentivize producers to increase quantity supplied because they can earn higher profits. Lower prices incentivize consumers to increase quantity demanded because they can buy more goods per £ spent.

3) Signals.

Prices reflect market conditions and send signals to agents. An increase in demand causes prices to rise and signals to firms to increase quantity supplied. An increase in supply causes prices to fall and signals to consumers to increase quantity demanded.
**Government Intervention**

A government may need to intervene in a market (if there is market failure for example). A government can use indirect taxes, subsidies, minimum and maximum prices to affect price and output.

**Indirect Taxes**

An indirect tax is a tax levied on the sale of goods. An indirect tax increases a producer’s costs and causes a decrease in supply so the supply curve shifts left.

A specific tax is levied as a fixed amount per unit of a good bought/sold. For example, a tax of £10 per unit. A specific tax is a fixed amount so it causes a parallel shift of the supply curve leftwards. A specific tax causes price to rise and output to fall.
An ad valorem tax is levied as a percentage of the price of a good. For example, a tax of 20% on price. An ad valorem tax is a percentage on price, the monetary value of the tax rises as price rises, so the supply curve shifts and pivots leftwards. An ad valorem tax causes price to rise and output to fall.

![Ad Valorem Tax](image)

An indirect tax raises revenue for the government. A specific tax raises revenue equal to the red and blue areas.

![Tax Revenue/Incidence](image)

A producer is legally responsible for the statutory incidence of a tax if it is levied on the producer. But ‘tax shifting’ allows producers to make consumers pay some of the tax too. A specific tax shifts the supply curve left, raises price from $P^*$ to $P'$ and lowers output from $Q^*$ to $Q'$. A tax essentially raises the price paid by consumers and lowers the price received by firms. Consumers pay taxes equal to the red area because price is higher. Producers absorb and pay the rest of the tax equal to the blue area.
The incidence of the tax depends upon the elasticities of demand and supply.

A more elastic (inelastic) supply causes taxes to fall more on the consumer (producer).

When supply is elastic, consumers pay the majority of the tax equal to the red area, producers pay taxes equal to the blue area.

When supply is inelastic, consumers pay taxes equal to the red area, producers absorb the majority of the tax and pay the blue area.
A more elastic (inelastic) demand causes taxes to fall more on the producer (consumer).

When demand is elastic, consumers pay taxes equal to the red area, producers absorb the majority of the tax and pay the blue area.

*Elastic Demand and Taxes*

![Graph showing elastic demand and taxes](image)

When demand is inelastic, consumers pay the majority of the tax equal to the red area, producers pay taxes equal to the blue area.

*Inelastic Demand and Taxes*

![Graph showing inelastic demand and taxes](image)
**Subsidies**

A subsidy is a grant given by the government to producers to encourage the production of a good.

A subsidy lowers a producer’s costs and causes an increase in supply so the supply curve shifts right. A subsidy causes price to fall and output to rise. Prices do not fall by the full extent of the subsidy though because producers’ costs rise as output rises so some of the subsidy must be used to cover these higher costs.

![Subsidies Diagram](image)

A subsidy benefits consumers because it lowers the market price and it benefits producers because their costs fall.

![Benefits of Subsidies Diagram](image)
A subsidy shifts the supply curve right, lowers price from \( P^* \) to \( P' \) and raises output from \( Q^* \) to \( Q' \). Consumers receive the red area in subsidies because price is lower. Producers receive the rest of the subsidy equal to the blue area. The total cost of the subsidy to the government is the red and blue areas combined.

A more elastic (inelastic) demand causes producers (consumers) to receive more of the subsidy.

When demand is elastic, producers receive the majority of the subsidy equal to the blue area, consumers receive a little bit of the subsidy equal to the red area.

**Elastic Demand and Subsidies**

![Elastic Demand and Subsidies Diagram]

When demand is inelastic, producers receive a little bit of the subsidy equal to the blue area, consumers receive the majority of the subsidy equal to the red area.

**Inelastic Demand and Subsidies**

![Inelastic Demand and Subsidies Diagram]
<table>
<thead>
<tr>
<th>Benefits of Subsidies</th>
<th>Costs of Subsidies</th>
</tr>
</thead>
<tbody>
<tr>
<td>More can be produced.</td>
<td>The magnitude of the subsidy may be small, if the subsidy is small then it will have little effect and will not increase output or reduce prices that much.</td>
</tr>
<tr>
<td>Price falls so consumer surplus rises.</td>
<td>If demand is elastic then price only falls a little bit, producers receive most of the subsidy and consumer surplus rises only a little bit.</td>
</tr>
<tr>
<td>Firms could use subsidies to invest in R&amp;D and produce new and better goods for consumers.</td>
<td>Subsidies lower firms’ costs and may encourage them to become inefficient and produce poor quality goods.</td>
</tr>
<tr>
<td>Firms’ costs fall so producer surplus rises.</td>
<td>If demand is inelastic then price falls a lot, consumers receive most of the subsidy and producer surplus rises only a little bit.</td>
</tr>
<tr>
<td>Firms’ costs fall so profits rise.</td>
<td>There is an opportunity cost because the government must pay for the subsidy, so the government may have to decrease spending elsewhere for example, healthcare and education.</td>
</tr>
</tbody>
</table>
Maximum and Minimum Prices

Maximum Price
A maximum price is a price ceiling, the market price cannot rise above it. A maximum price causes price to fall to $P'$, quantity demanded to rise to $Q_d$ and quantity supplied to fall to $Q_s$. Resultantly there is excess demand $Q_d - Q_s$.

Minimum Price
A minimum price is a price floor, the market price cannot fall below it. A minimum price causes price to rise to $P'$, quantity demanded to fall to $Q_d$ and quantity supplied to rise to $Q_s$. Resultantly there is excess supply $Q_s - Q_d$. 
A minimum price could be set by the government in an agricultural market to stabilize prices. Farmers are guaranteed a minimum price and the government buys up any excess supply. Below are the benefits and costs of an agricultural minimum price scheme:

<table>
<thead>
<tr>
<th>Benefits of A Minimum Price</th>
<th>Costs of A Minimum Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural incomes. Farmers receive a higher price for their output so farm incomes rise, farmers can buy more goods and services so farmers’ living standards rise.</td>
<td>Magnitude. A minimum price set slightly above equilibrium will not have that much affect. A minimum price set below equilibrium will have no effect.</td>
</tr>
<tr>
<td>Reduced fluctuations. Farmers are guaranteed a minimum price for their output so prices will fluctuate less, this makes it easier for farmers to plan and invest so agriculture can develop.</td>
<td>Prices fluctuate above the minimum price. A minimum price will stop prices fluctuating below the minimum price but not above it.</td>
</tr>
<tr>
<td>Rural employment. Farmers may hire more workers to produce more so rural employment will rise.</td>
<td>Lower quality. Farmers may be incentivized to produce low quality goods because they are guaranteed a high price for their output.</td>
</tr>
<tr>
<td></td>
<td>Length. A minimum price set for a short period of time will have little effect.</td>
</tr>
<tr>
<td></td>
<td>Inefficiency. Farmers are guaranteed a market so they may be incentivized to become inefficient and let their costs rise, so scarce resources are wasted.</td>
</tr>
<tr>
<td></td>
<td>Opportunity cost. The government may increase taxes to pay for any agricultural surplus.</td>
</tr>
<tr>
<td></td>
<td>Storage costs. The government must pay storage and security costs to keep any surplus output.</td>
</tr>
<tr>
<td></td>
<td>Dumping. The government may buy up the surplus of agricultural products and sell them in foreign markets at below the cost of production, this will out compete and destroy farmers in these foreign markets.</td>
</tr>
<tr>
<td></td>
<td>Higher food prices. A rise in agricultural prices means higher food prices so living standards may fall.</td>
</tr>
</tbody>
</table>
Buffer Stock Scheme

A severe problem in commodity markets concerns the wild fluctuation of prices. Commodities include raw materials like metals (copper), minerals (oil) and agricultural output (wheat, sugar, tea and bananas).

Causes of Price Fluctuations

Many factors cause commodity prices to fluctuate wildly including:

1) Price Inelastic Supply.

Agricultural output has a long time lag because it takes time to plant, grow and harvest crops. Raw materials like oil also have a long production lag because it takes time to find and extract from the land. If supply is inelastic and there is a demand shock, the demand curve shifts and price changes a lot.

A Demand Shock When Supply is Inelastic

2) Unpredictable Supply Shocks.

Agricultural output suffers from unpredictable supply shocks. A bumper harvest will result if weather conditions are favourable. A bad harvest will result if there is a drought, too much rainfall, a tsunami, a hurricane, a tornado, an insect plague or rabbit infestation. A good harvest causes supply to shift right and price to fall whilst a bad harvest causes supply to shift left and price to rise.

3) Price Inelastic Demand.

Agricultural output like food and raw materials like oil are necessities so they have an inelastic demand. If demand is inelastic and there is a supply shock, the supply curve shifts and price changes a lot.
A Supply Shock When Demand is Inelastic

Agricultural output like food is income inelastic because people have a limit to how much food they can consume, so demand for agricultural goods rises only a little bit as world income rises. If supply keeps increasing because of technological innovations like genetically modified crops (drought and pest resistant) but demand rises only a little bit then agricultural prices will fall over time.

Consequences of Price Fluctuations

There are many consequences of commodity price fluctuations:

1) Farm Revenue/Income.

A bumper harvest means price falls and, because demand is inelastic, revenue falls for farmers. Although, a bad harvest means price rises and, because demand is inelastic, revenue rises for farmers.

2) Lower Investment.

Because supply shocks are unpredictable farmers do not know if harvests will be good or bad so farmers cannot plan, they cannot invest and the development of farming may be restricted.

3) Consumer Surplus.

A bad harvest means price rises, consumers pay more for agricultural goods so consumer surplus falls. Although, a bumper harvest means price falls, consumers pay lower prices for agricultural goods so consumer surplus rises.
Buffer Stock Scheme

A buffer stock scheme is used by the government to reduce commodity price fluctuations. The government sets a band within which price is allowed to fluctuate between a maximum price and a minimum price, the government then buys/sells the commodity to ensure price remains within the band.

Below in the diagram the government sets the band with a maximum price $P^1$ and minimum price $P^2$. A bumper harvest means supply $S^1$ is high and price $P^4$ is low. Because the price $P^4$ falls below the minimum price $P^2$ the government intervenes in the market and buys $Q^2 - Q^1$ of the commodity to increases its own stockpile and raise the price back up to the minimum price $P^2$. A bad harvest means supply $S^2$ is low and price $P^3$ is high. Because the price $P^3$ is above the maximum price $P^1$ the government intervenes in the market and sells $Q^4 - Q^3$ from its stockpile of the commodity to lower the price back down to the maximum price $P^1$.

<table>
<thead>
<tr>
<th>Benefits of Buffer Stocks</th>
<th>Costs of Buffer Stocks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduced uncertainty. Price fluctuations are reduced, making it easier to plan and invest, so the agricultural sector can develop.</td>
<td>Magnitude. A maximum price too high above equilibrium and a minimum price too low below equilibrium will not reduce price fluctuations that much.</td>
</tr>
<tr>
<td>Stabilized farm revenue/income. Farm revenues are stabilized, so there is less chance that farmers fall into poverty.</td>
<td>Storage costs. Maybe the cost of storing stockpiles is too expensive for the government. Monitoring and security costs may also be too high.</td>
</tr>
<tr>
<td>Rural employment. Farmers may hire more workers to produce more so rural employment will rise.</td>
<td>Perishable. Many agricultural goods are perishable so they cannot be stockpiled for an adequate amount of time to make the buffer stock scheme work.</td>
</tr>
<tr>
<td>Self-financing. It should not cost the government much money because they just buy up and stockpile the commodity when price is too low and sell the commodity from their stockpile when price is too high.</td>
<td>Run out of money. Maybe the government runs out of money to keep buying up stocks of commodities after bumper harvests.</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Run out of stockpiles. Maybe the government runs out of stockpiles because there are too many bad harvests and not enough good harvests, the buffer stock scheme then breaks down.</td>
<td></td>
</tr>
</tbody>
</table>
Labour Market

Labour markets are markets for workers. Firms demand labour because labour is part of the production process. Workers supply labour to earn an income. The price of labour is the wage rate. At equilibrium, labour demand equals labour supply, the wage rate is \( W^* \) and \( L^* \) labour is employed.

Labour demand is the quantity of labour hours demanded by firms. The labour demand curve slopes down. As wages fall, the quantity of labour demanded rises, ceteris paribus. Labour demand slopes down because:
- As wages fall, labour becomes relatively cheaper than machinery so firms use more labour and less machinery in the production process.
- As wages fall, firms' costs fall, firms can produce more goods so more labour is needed.

Labour supply is the quantity of labour hours supplied by workers. The labour supply curve slopes up. As wages rise, the quantity of labour supplied rises, ceteris paribus. Labour supply slopes up because the substitution effect is greater than the income effect.
- The substitution effect: As wages rise, workers are incentivized to work more because they can earn more.
- The income effect: As wages rise, workers can earn the same income as before by working less, so workers work less to enjoy more leisure time.
Market forces will push the labour market back to equilibrium if wages are too high or too low.

If wages are too low there is excess labour demand because firms demand more labour than workers want to supply. At $W'$, firms want more labour so firms bid up wages to attract more labour until equilibrium is restored at $W^*$.

**Excess Labour Demand**

Excess Labour Supply

If wages are too high there is excess labour supply because workers want to work more than firms want to employ them. At $W'$, unemployed workers want to work, and current workers want to work more, so workers compete and bid down wages until equilibrium is restored at $W^*$.

**Excess Labour Supply**
Labour demand may increase (decrease), causing the labour demand curve to shift right (left), wages to rise (fall) and employment to rise (fall).

An Increase in Labour Demand

Many factors could cause labour demand to increase:

1) Alternative Input Costs.

A change in the price of machinery could make labour demand increase or decrease. If machinery becomes cheaper relative to labour then firms could switch to using more machines and less labour. Although, if machines become cheaper and firms use more machines, they may need more labour to use the machines.

2) Technological Advance.

New technology could make labour demand increase or decrease. Machines could become so productive that machines replace labour so labour demand falls. Although, new machinery could make labour more productive and lower unit labour costs so firms demand more labour.

3) Labour Productivity.

As workers become more productive, unit labour costs fall, firms can produce more at the same cost so labour demand rises.

4) Output Demand.

Labour is a derived demand, that is, labour demand depends on the demand for the good it produces. A rise in the demand for a good means more labour is required to produce more of that good, so labour demand rises.

---

2 Maybe machines replace labour entirely in the production process, the Terminator syndrome, machines creating machines!
Labour supply may increase (decrease), causing the labour supply curve to shift right (left), wages to fall (rise) and employment to rise (fall).

**An Increase in Labour Supply**

Many factors could cause labour supply to increase:

1) **Working Conditions/Environment.**

   Better health and safety regulations, holidays, job security and promotion prospects all incentivize people to work and increase labour supply.

2) **Income Tax.**

   As income tax rises, wages fall, the incentive to work falls so labour supply falls.

3) **Unemployment Benefits.**

   Unemployment benefit is money given by the government to the unemployed. As unemployment benefits rise, the income from being unemployed rises so workers are discouraged from working and labour supply falls.

4) **Migration.**

   Migration means the population size increases and there are more economically active people so there are more workers in the labour market and labour supply increases.
Minimum Wage
The minimum wage is the legal minimum hourly rate of pay. The government may impose a minimum wage to raise income and alleviate poverty. A minimum wage causes wages to rise so the quantity demanded of labour falls and the quantity supplied of labour rises. Because $L^s > L^d$ there is excess labour supply. Minimum wages only benefit $L^d$ workers, $L^s - L^d$ workers are willing and able to work at the minimum wage but are involuntarily unemployed.

![Minimum Wage Diagram](image)

<table>
<thead>
<tr>
<th>Benefits of A Minimum Wage</th>
<th>Costs of A Minimum Wage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher wages. Workers receive a higher wage, they can buy more goods and services so living standards rise.</td>
<td>Magnitude. A minimum wage set slightly above equilibrium will not increase wages that much. A minimum wage set below equilibrium will not have any affect.</td>
</tr>
<tr>
<td>Increased labour productivity. Workers may be incentivized to become more productive if they are paid a higher wage.</td>
<td>Lower quality. Workers may be incentivized to work less hard because they are guaranteed a high wage, so the quality of the produced good falls.</td>
</tr>
<tr>
<td>Reduced inequality. A higher wage for the lowest paid workers means poverty falls and income inequality decreases.</td>
<td>Inflation. A higher wage means firms’ costs rise, firms’ prices rise and consumers cannot buy as much so living standards fall.</td>
</tr>
<tr>
<td>Increased unemployment. Unemployment may rise because wages are too high. In the diagram above, $L^s - L^d$ workers are willing and able to work at the minimum wage but are involuntarily unemployed.</td>
<td></td>
</tr>
<tr>
<td>Length. A minimum wage set for a short period of time will have little effect.</td>
<td></td>
</tr>
<tr>
<td>Firms may be encouraged to hire illegal workers so as to avoid paying the higher minimum wage.</td>
<td></td>
</tr>
</tbody>
</table>
**Labour Mobility**
Geographical labour mobility refers to the ability of labour to move between areas to find/obtain work.

<table>
<thead>
<tr>
<th>Factors Affecting the Geographical Mobility of Labour</th>
<th>What the Government can do to Increase the Geographical Mobility of Labour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relationships. Labour may be tied to a certain area due to family and friends being there. Labour may have relationship roots or networks that are difficult to move away from.</td>
<td>Relocating firms. The government could relocate firms by subsidizing them, so firms move to workers and create jobs for them in the workers’ own areas.</td>
</tr>
<tr>
<td>House prices. Labour may not be able to move to a region where average house prices are high. Workers may be unable to afford a house, obtain a mortgage or rent a property in this expensive region.</td>
<td>Building houses. The government could build new houses, or relax planning laws to allow more houses to be built, so that labour can find houses in areas where houses are scarce.</td>
</tr>
<tr>
<td>Costs of moving house. Labour may be unable to move between areas because of the financial costs of moving houses. For example, removal trucks will cost money, as will stamp duty and solicitors to sign over deeds.</td>
<td>Relocation subsidies. The government could give relocation or housing subsidies to incentivize labour to move houses. More labour will move between regions because housing costs are lower.</td>
</tr>
<tr>
<td>Imperfect information. Labour may be unable to move between regions because workers do not have enough information on job availability in different regions. Workers may not be aware that jobs are available in other regions.</td>
<td>Job centres. The government could make new and more efficient job centres so that more job information becomes available to workers.</td>
</tr>
</tbody>
</table>

Occupational labour mobility refers to the ability to move between different types of jobs. For example, a footballer changing jobs to a university lecturer.

<table>
<thead>
<tr>
<th>Factors Affecting the Occupational Mobility of Labour</th>
<th>What the Government can do to Increase the Occupational Mobility of Labour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education. Labour may be unable to move to a different type of job due to a lack of education for that job. For example, an economics degree may be required to teach high school economics.</td>
<td>Increase spending on education. The government could increase spending on education to improve workers’ human capital by giving them more knowledge and skills so that they can get new jobs.</td>
</tr>
<tr>
<td>Training. Labour may be unable to move to a different type of job due to a lack of training. For example, to become a university lecturer you may need a PhD.</td>
<td>Apprenticeships. The government could subsidize firms to train workers to give them the skills for new jobs.</td>
</tr>
<tr>
<td>Skills. Labour may be unable to move to a different type of job due to insufficient skills. For example, a person may not be skilful enough at kicking a ball to become a footballer.</td>
<td></td>
</tr>
</tbody>
</table>
Market Failure

Market failure occurs when the price mechanism allocates resources inefficiently. Market failure means there is allocative and Pareto inefficiency. Allocative efficiency occurs when resources are used to produce what consumers want and in the quantities demanded. Pareto efficiency occurs when the only way to make one person better off is to make another worse off. Market failure means resources are not used to produce the goods and services consumers want and it is possible to make at least one person better off without making anyone else worse off. Market failure could occur due to: Monopoly, Public Goods, Externalities or Asymmetric Information.
Monopolies are Pareto inefficient because they cause a welfare loss. Market failure happens because the price mechanism breaks down and resources are allocated by the monopoly and not free markets. The monopoly restricts output to raise price and maximize profit. Because the monopoly only produces $Q^*$ and not $Q'$ there is lost consumer surplus and lost producer surplus, a welfare loss, and society loses out.

Monopoly and Welfare Loss

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3 Monopoly is an A2 topic, it is not necessary to understand the diagram for AS.
**Public Goods**

**Rivalry and Excludability**
Private goods are excludable and rival. Excludable means the good can only be used by the consumer who buys it. The buyer owns the property rights over the good. A Milky Way is excludable because if consumer A buys it and eats it, no one else can eat it. Rival means the consumption by one individual reduces the amount available for others to consume. A Milky Way is rival because if consumer A buys it, that reduces the amount others can buy. Private goods include cars, food, toys, pens, houses etc.

Public goods are non-rival and non-excludable. Non-rival means the consumption by one individual does not reduce the amount available for others to consume. A street light is non-rival because if consumer A uses it for light, others can still use it for light too. Non-excludable means anyone can use the good even if they do not pay for it. A street light is non-excludable because anyone can use it without paying for it. Public goods include street lights, the army, parks, beaches, flood control systems, the police etc.

**Free Rider Problem**
Markets fail to provide public goods because of the free rider problem. A consumer knows he can consume a public good for free if another consumer pays for it. Every consumer will reason like this and aim to free ride on consumers who pay, so no consumer will pay for the public good. Private firms cannot profitably provide public goods for free so they do not produce the public good. Market failure occurs because the market for public goods is missing, public goods are not produced.

**Valuation Problem**
Market prices cannot be accurately estimated for public goods. A consumer undervalues price to free ride, a firm overvalues price to earn more profit. Market failure occurs because consumers and firms do not agree on prices so public goods are not produced.

**Government Intervention**
The government must intervene to correct market failure. The government must estimate the amount of demand for public goods, estimate the price, and then tax consumers to raise the revenue to provide the good.
**Externalities**

An externality is a side-effect on third parties not directly involved in a market transaction. An externality causes market failure because too much/little of a good is produced so there is a welfare loss. Assume there are two producers near a river, a chemical factory upstream and a fisherman downstream. The chemical factory discharges toxic waste into the river which travels downstream, poisons the water and mutates/kills the fish. So the fisherman suffers because his catch will be less and/or damaged. The chemical factory’s toxic waste imposes an external cost on the fisherman.

**Benefits and Costs Model**

Private costs are the costs incurred by a first or second party directly involved in a market transaction. Private costs include a firm’s input costs or the prices consumers pay for goods. MPC is the marginal private cost of production/consumption. MPC is the market supply curve. External costs are spill-over costs to third parties not directly involved in a market transaction. External costs include air and noise pollution and global warming. Agents do not take responsibility for external costs. Social costs are the sum of private costs and external costs. MSC is the marginal social cost of production/consumption.

Private benefits are the benefits enjoyed by a first or second party directly involved in a market transaction. Private benefits include a firm’s revenue or the benefit a consumer enjoys from consuming a good. MPB is the marginal private benefit of production/consumption. MPB is the market demand curve. External benefits are spill-over benefits to third parties not directly involved in a market transaction. External benefits include an invention that society benefits from and a better healthcare system making the economy’s workers more efficient. Social benefits are the sum of private benefits and external benefits of a market transaction. MSB is the marginal social benefit of production/consumption.
**Negative Externalities**

An external cost is an uncompensated cost imposed on third parties not directly involved in a market transaction.

A negative externality occurs when $MSC > MPC$ as there is an external cost imposed on third parties.

At market equilibrium, agents act in their own self-interest and set $MPB = MPC$ at $P^*$ and $Q^*$. The socially optimum equilibrium is $MSB = MSC$ at $P'$ and $Q'$. A negative externality occurs because $MSC > MPC$. External costs are imposed on third parties. The sum of these external costs is the welfare loss to society. A market does not exist for external costs, so the goods’ market price is too low and output is too high compared to the socially optimum level. Market failure occurs because the good is under-priced and over-consumed.

Negative externality examples:
- Air pollution from smoking or burning fossil fuels. This damages the climate, crops and people’s health.
- Water pollution by an upstream factory that discharges toxic waste into a river that travels downstream. Water, plants, sea life, animals and humans downstream are harmed.
- Alcohol and drugs intoxicate people and may cause them to injure or kill others.
- Noise pollution from a neighbour playing loud music at night when others are sleeping.
- Litter and destruction of buildings and the environment are bad to look at.
The government must intervene to correct market failure. A mechanism must be used to internalize the externality, that is, to make agents take into account the external costs of their actions. Many different mechanisms could be used including taxation, regulation, property rights and marketable permits.

1) Taxation.

A Pigouvian tax \((t)\) is an indirect tax levied on an agent’s consumption/production. The tax is equal to the marginal external cost at the socially optimum level. Taxes increase private costs so MPC shifts left. Market price rises from \(P^*\) to \(P'\) and output falls from \(Q^*\) to \(Q'\). At \(MPB = MPC + t\), the market is now at the socially optimum level.

### Negative Externality With Pigouvian Taxes

<table>
<thead>
<tr>
<th>Benefits of A Pigouvian Tax</th>
<th>Costs of A Pigouvian Tax</th>
</tr>
</thead>
<tbody>
<tr>
<td>The indirect tax causes firms’ costs to rise and output to fall to the socially optimum level.</td>
<td>The government may not be able to estimate external costs accurately yet alone place a monetary value on them. The tax may be too high or too low, so the socially optimum level will not be reached. The government may only be able to move the market towards a more socially optimum level.</td>
</tr>
<tr>
<td>A Pigouvian tax is morally fair because the agent causing the externality is the one paying the tax.</td>
<td>If demand is inelastic, producers pass on most of the tax to consumers. Consumer surplus falls as taxes increase price and decrease output.</td>
</tr>
<tr>
<td>The government can use the tax revenue to cut taxes elsewhere or increase spending on health/education.</td>
<td>Black markets may develop to avoid taxes.</td>
</tr>
<tr>
<td></td>
<td>Taxes may make domestic goods less internationally price competitive. Consumers may switch to buying cheaper foreign goods, so domestic employment suffers.</td>
</tr>
</tbody>
</table>
2) Regulation (Command and Control).

Regulations and laws directly set the amount produced/consumed in a market to the socially optimum level. A quota system could be set up by the government so that each firm/consumer is only allowed to produce/buy up to a fixed amount.

<table>
<thead>
<tr>
<th>Benefits of Regulation</th>
<th>Costs of Regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulation directly limits the level of pollution to the socially optimum amount by</td>
<td>A firm will not cut emissions if the benefits of pollution are greater than the</td>
</tr>
<tr>
<td>setting quotas.</td>
<td>cost of fines for going over the quota.</td>
</tr>
<tr>
<td>All the government need to do is set the level of pollution and monitor firms.</td>
<td>Regulation will not reach the socially optimum level if the government cannot</td>
</tr>
<tr>
<td></td>
<td>accurately estimate external costs.</td>
</tr>
<tr>
<td></td>
<td>The government must monitor each firm/consumer to enforce regulation. Maybe firms</td>
</tr>
<tr>
<td></td>
<td>can hide their pollution levels, making it even more difficult for the government</td>
</tr>
<tr>
<td></td>
<td>to monitor pollution. Maybe pollution monitoring equipment is too costly to install.</td>
</tr>
<tr>
<td></td>
<td>Maybe regulation is too lax and not enforced consistently.</td>
</tr>
<tr>
<td></td>
<td>Maybe agents bribe the government and keep polluting.</td>
</tr>
<tr>
<td></td>
<td>Banning production/consumption all together may be below the socially optimum level.</td>
</tr>
</tbody>
</table>

3) Property Rights.

Maybe externalities arise because of undefined property rights. A property right defines who owns a resource and what they can do with it. A chemical factory may discharge toxic waste into a river because nobody owns the river so nobody has the right to stop them. The government could allocate property rights so that agents who are harmed by externalities are given the property rights over the resources being damaged. Agents can then legally stop or charge a price to others who damage their resources. Agents must negotiate how much of the negative externality there will be and what compensation will be paid to the property right owners. The externality is then internalized into the price mechanism and the socially optimum level is reached.

<table>
<thead>
<tr>
<th>Benefits of Property Rights</th>
<th>Costs of Property Rights</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agents negotiate compensation, the government does not. Agents should estimate their</td>
<td>Agents may overestimate their external costs to be compensated more. This will make</td>
</tr>
<tr>
<td>external costs more accurately than the government could. So equilibrium is closer to the</td>
<td>equilibrium output fall below the socially optimum level.</td>
</tr>
<tr>
<td>socially optimum level.</td>
<td>Resource owners may not be able to identify who is polluting or how much damage each</td>
</tr>
<tr>
<td></td>
<td>polluter is causing. Air pollution could be caused unequally by any number of pollutants.</td>
</tr>
<tr>
<td></td>
<td>Resource owners then cannot charge polluters.</td>
</tr>
<tr>
<td>A morally fair direct transfer of resources from polluters to innocent third parties.</td>
<td>Maybe enforcement costs (barbed wire, fences, security, policing, legal costs of lawyers)</td>
</tr>
<tr>
<td></td>
<td>are too high for property right owners to protect their resources.</td>
</tr>
<tr>
<td></td>
<td>A government cannot apply property rights on another country’s resources.</td>
</tr>
</tbody>
</table>
4) Marketable ( Tradable) Permits.

Marketable permits are created by the government. A pollution level is set at the socially optimum level and divided over a number of permits. Permits are allocated to polluters to let them pollute a certain amount (which sums to the socially optimum level). Polluters can buy or sell permits amongst themselves if they want to pollute more or less.

<table>
<thead>
<tr>
<th>Benefits of Marketable Permits</th>
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</tr>
</thead>
<tbody>
<tr>
<td>The permits sum up to the socially optimum level of pollution.</td>
<td>May be too difficult for the government to monitor and enforce.</td>
</tr>
<tr>
<td>Polluters are rewarded for cutting pollution as they can sell unused permits. Polluters are penalized for polluting too much as they must buy extra permits.</td>
<td>Are permits allocated fairly? How should permits be allocated? An auction? Equal amounts? Maybe grandfathering (allocating permits in proportion to past pollution)?</td>
</tr>
<tr>
<td>Polluters are incentivized to innovate and invest in green technology to lower future pollution levels and earn revenue from selling unused permits.</td>
<td>How do you fairly allocate permits among countries?</td>
</tr>
</tbody>
</table>
**Positive Externalities**
An external benefit is an unpaid for benefit enjoyed by third parties not directly involved in a market transaction.

A positive externality occurs when $MSB > MPB$ as there is an external benefit to third parties.

At market equilibrium, agents act in their own self-interest and set $MPB = MPC$ at $P^*$ and $Q^*$. The socially optimum equilibrium is $MSB = MSC$ at $P'$ and $Q'$. A positive externality occurs here because $MSB > MPB$. Benefits are enjoyed by third parties but the benefits are not fully exploited. The sum of these potential benefits is the welfare loss to society. Market failure occurs because the good is under-consumed.

Positive externality examples:
- A neighbour making their garden beautiful makes the neighbourhood look better and may cause local property prices to rise.
- Knowledge or invention spill-overs like the internet, everyone has benefited for free from the U.S. Army’s invention.
- A better health system means the population lives longer with a better quality of life.
The government must intervene to correct market failure. The government could use subsidies or regulation.

1) Subsidies.

A subsidy is a grant given by the government to producers to encourage the production of a good. A subsidy can be given to producers equal to the external benefit at the socially optimum level. The subsidy decreases a firm’s private costs and makes MPC shift right. Market price falls from $P^*$ to $P'$ and output rises from $Q^*$ to $Q'$. At $MPB = MPC + s$, the market is now at its socially optimum level.

**Positive Externality with Subsidies**

![Graph showing positive externality with subsidies]

But:
- What is the opportunity cost of the subsidy? A decrease in government spending on health, education and/or the infrastructure? Maybe a subsidy for a positive externality should be funded by a Pigouvian tax on a negative externality.

2) Regulation (State Provision).

Maybe the government could provide the good/service for free. In the U.S., kindergarten, elementary and high school are all free but a college education must be paid for.

But:
- Providing something for free could cause consumers to use it too much at an inefficiently high level.
**Asymmetric Information**

Agents have symmetric information when all agents have the same information. Agents have asymmetric information when some agents have more information than others. Asymmetric information can cause market failure.

Examples of asymmetric information leading to market failure include:

1) **Banks/Credit Markets.**

Asymmetric information may exist in credit markets as borrowers are likely to know more about their own credit worthiness than a bank does. Consequently, low-risk borrowers will be limited to small loans with high rates of interest if banks cannot tell whether they are risky or not.

2) **Mechanics.**

A mechanic is likely to know more about cars than a customer at a garage. A mechanic could lie and claim a car needs more work done to it than is necessary.

**Market Unravelling and Missing Markets**

Akerlof highlighted asymmetric information in the market for second hand cars. A second hand car could be a peach (good quality) or a lemon (bad quality). Assume sellers know if their car is a peach or lemon but buyers do not know. Buyers will only offer an average price for a car whether it is a peach or a lemon. All the peaches will leave the market because peach owners want more than the average price for their good quality car. The market begins to unravel. Asymmetric information causes adverse selection, that is, bad quality cars drive good quality cars out of the market. Only lemons are left, and buyers do not want lemons because they are bad quality cars, so buyers do not demand lemons. A missing market has developed, the market for second hand cars disappears, there is complete market failure.

To correct the market failure the government may implement a law stating that all second hand cars must meet some minimum quality criteria. Also, car sellers could signal that their cars are peaches by offering a warranty.

**Merit Goods**

A merit good has benefits for the consumer who buys it but the consumer may be unaware of its full benefits. A merit good is under-consumed due to asymmetric information. Merit goods include healthcare and education.

Market failure occurs because the good is under-consumed. The government must intervene to correct the market failure. The government could subsidise merit goods to encourage their consumption, provide them for free or advertise the benefits of merit goods.

**Demerit Goods**

A demerit good has costs for the consumer who buys it but the consumer may be unaware of its full costs. A demerit good is over-consumed due to asymmetric information. Demerit goods include drugs, smoking and gambling.

Market failure occurs because the good is over-consumed. The government must intervene to correct the market failure. The government could tax demerit goods to discourage their consumption, regulate the amount consumed, ban the good completely or advertise the costs of demerit goods.
Government Failure

Markets may fail to allocate resources efficiently, for example in the case of externalities, a monopoly, public goods and/or asymmetric information. Market failure means the government must intervene to correct the market failure. However, government failure could also occur. Government failure occurs when government intervention leads to an inefficient allocation of resources and a welfare loss.

Reasons for government failure:

1) Administrative Costs.

The administrative costs (salaries, monitoring equipment, surveys etc.) of correcting a market failure may outweigh the benefits of correcting the market failure. Society is worse off because there is a net welfare loss.

2) Imperfect Information.

Information could be misleading, conflicting or missing. If there is imperfect information the government will make mistakes and set the wrong policies.

3) Market Distortions.

The government may correct a market failure but inadvertently create another market failure in the process. For example, a minimum wage raises income for those in work but firms may fire workers because costs are higher, so unemployment rises.

4) Conflicting Objectives.

The government may want to spend more on education but this may mean they have to increase taxes. Maybe the welfare gain from spending more on education is less than the welfare loss of increasing taxes. So society becomes worse off after spending rises and taxes increase.

5) Political Myopia.

Government decisions may not be independent of politics. The government may make short-term decisions that benefit the electorate who vote for them even if that decision leads to a lower long-term social welfare than another policy option. For example, even if a new road will increase the economy’s productivity, the government may decide not to build the new road because it will create noise pollution in an area largely consisting of its electorate. The government fails in its economic policy response because it seeks to appease its supporters. As a whole, society is worse off.

6) Corruption.

Corrupt government officials could be bribed by special interest groups to carry out political favours. Government officials then make decisions based on maximizing their own benefit and the benefit of special interest groups rather than the benefit of society.
Microeconomic Definitions

Ad Valorem Tax. An indirect tax, levied as a percentage of the price of a good.

Asymmetric Information. Agents have asymmetric information when some agents have more information than others.

Buffer Stock Scheme. Used by the government to reduce price fluctuations by buying and selling a commodity to ensure price remains within a band.

Capital. A factor of production. Man-made aids used by labour in the production process. Capital includes machines, buildings, computers, telecommunications, roads etc.

Command Economy. In a command economy the government directs resource allocation.

Complements. Complements are goods that are bought (usually) to be used together, they have a negative XED.

Consumer Surplus. Consumer surplus is the difference between what consumers are willing (and able) to pay and what they actually pay. Consumer surplus is the area between the demand curve and the market price.

Cross Price Elasticity of Demand. XED measures the responsiveness of demand for good X to a change in price of good Y.

\[
XED = \frac{\% \Delta \text{Quantity Demanded of } X}{\% \Delta \text{Price of } Y}
\]

Demand. Demand is the quantity of a good or service that a consumer is willing and able to buy at the market price in a given time period.

Demerit Good. A demerit good has costs for the consumer who buys it but the consumer may be unaware of its full costs. A demerit good is over-consumed due to asymmetric information.

Direct Tax. A direct tax is a lump-sum tax on income.

Division of Labour. Refers to labour specialization in the production process, where workers take on specific roles.

Enterprise. A factor of production. Risk-taking by an individual or group who combine the other factors of production in search of profit.

Excess Demand. Excess demand occurs when demand is greater than supply.

Excess Supply. Excess supply occurs when supply is greater than demand.

External Benefit. An external benefit is an unpaid for benefit enjoyed by 3rd parties not directly involved in a market transaction, \( MSB > MPB \).
**External Cost.** An external cost is an uncompensated cost imposed on 3rd parties not directly involved in a market transaction, $MSC > MPC$.

**Factors of Production.** The factors of production are the inputs used in the production process to produce output. They include land, labour, capital and enterprise.

**Free Market Economy.** A free market economy is an economic system which resolves the basic economic problem through the price mechanism.

**Geographical Mobility of Labour.** Refers to the ability of labour to move between different areas to find a job. For example, moving from Manchester to London to find work.

**Government Failure.** When government intervention distorts the market and causes inefficiency.

**Income Elasticity of Demand.** YED measures the responsiveness of demand to a change in income.

$$YED = \frac{\% \Delta \text{Quantity Demanded}}{\% \Delta \text{Income}}$$

**Indirect Tax.** An indirect tax is a tax levied on the sale of goods.

**Inferior Good.** As income rises, demand falls. An inferior good has a $YED < 0$.

**Labour.** A factor of production. Labour is the worker in the production process. Labour can be skilled or unskilled.

**Land.** A factor of production. Land is all the natural resources on the planet. Land includes oil, forests, soil, fish etc.

**Long-Run.** All the factors of production are variable in the long-run.

**Luxury.** As income rises, quantity demanded rises more proportionally. A luxury has a $YED > 1$.

**Market Failure.** Market failure occurs when the price mechanism allocates resources inefficiently. There is a welfare loss. Market failure could occur due to: Monopoly, Public Goods, Externalities or Asymmetric Information.

**Maximum Price.** A maximum price is a price ceiling, the market price cannot rise above it.

**Merit Good.** A merit good has benefits for the consumer who buys it but the consumer may be unaware of its full benefits. A merit good is under-consumed due to asymmetric information.

**Minimum Price.** A minimum price is a price floor, the market price cannot fall below it.

**Minimum Wage.** The minimum wage is the legal minimum hourly rate of pay.

**Mixed Economy.** A mixed economy is an economic system which allocates resources partly by the price mechanism and partly by the government.
**Necessity.** As income rises, quantity demanded rises less proportionally. A necessity has a $0 < YED < 1$.

**Non-Renewable Resources.** Non-renewable resources are ones whose stock level decreases over time as it is consumed for example, fossil fuels (oil, gas and coal) and commodities (gold and aluminium). Recycling and developing alternative resources helps reduce the rate of decline of non-renewsables.

**Normal Good.** As income rises, demand rises. A normal good has a $YED > 0$.

**Normative Statement.** A normative statement is a value judgement or view. It usually contains the words ought or should.

**Occupational Mobility of Labour.** Refers to the ability of labour to move between different types of jobs. For example, footballer to university lecturer.

**Opportunity Cost.** Opportunity cost is the next best alternative foregone.

**Positive Statement.** A positive statement can be proved right or wrong by real world data.

**Price Mechanism.** The price mechanism refers to the way in which demand and supply interact to change prices and allocate resources.

**Price Elasticity of Demand.** PED measures the responsiveness of demand to a change in price.

$$PED = \frac{\% \Delta Quantity\ Demanded}{\% \Delta Price}$$

**Price Elasticity of Supply.** PES measures the responsiveness of supply to a change in price.

$$PES = \frac{\% \Delta Quantity\ Supplied}{\% \Delta Price}$$

**Private Benefits.** Benefits enjoyed by a 1\textsuperscript{st} or 2\textsuperscript{nd} party directly involved in a market transaction.

**Private Costs.** Costs incurred by a 1\textsuperscript{st} or 2\textsuperscript{nd} party directly involved in a market transaction.

**Private Goods.** Private goods are excludable and rival. Excludable means the good can only be used by the consumer who buys it. Rival means the consumption by one individual reduces the amount available for others to consume.

**Producer Surplus.** Producer surplus is the difference between the price producers are willing (and able) to supply at and what they actually receive. Producer surplus is the area between the market price and the supply curve.

**Production Possibility Frontier.** A PPF shows all the different combination of goods an economy can produce if all resources are fully and efficiently employed.
Public Goods. Public goods are non-rival and non-excludable. Non-rival means the consumption by one individual does not reduce the amount available for others to consume. Non-excludable means anyone can use the good even if they do not pay for it.

Renewable Resources. Renewable resources are ones whose stock levels can be maintained over a period of time for example, oxygen, water, timber, soil, solar energy and wind power. Biological or natural processes replenish these resources over time for example, trees grow. Renewable resources will run out if they are consumed quicker than they are replenished for example, a forest must be managed to avoid deforestation.

Short-Run. The short-run is that period of time in which at least one factor of production is fixed (usually land and/or capital).

Specialization. A factor of production is devoted to a specific role in the production process.

Specific Tax. An indirect tax. A specific tax is levied as a fixed amount per unit of a good bought/sold. For example, a tax of £10 per unit.

Subsidy. A grant given by the government to producers to lower costs and increase production.

Substitutes. Substitutes are alternative or replacement goods that satisfy similar wants, they have a positive XED.

Supply. Supply is the quantity supplied of a good or service that a producer is willing and able to sell at the market price for a given time period.

Sustainable Resources. Sustainable resources are a type of renewable resource. Sustainable resources are ones that are used at the same (or slower) speed than it is renewed. A forest is a renewable resource but it is only a sustainable resource if it survives over time despite activities like logging or farming. A forest that is chopped down is no longer a sustainable resource.

Symmetric Information. All agents have the same information.

Welfare Loss. A loss to society due to market failure.
Macroeconomics
Macroeconomics looks at the aggregate economy. Aggregate means added up, total or whole. Macroeconomics looks at all the economy’s markets added together, the whole economy, and studies aggregate level variables such as aggregate demand (AD), inflation, unemployment, Gross Domestic Product (GDP), economic growth and international trade. Macroeconomics is concerned with the performance of the entire economy over time and in comparison to other countries for example the UK vs. the US.

Macroeconomics seeks to address questions such as “What are the benefits of the UK economy growing”? “What are the effects of a rise in the average price level”? “How does a strong dollar affect the UK”? and “Should the government spend more money to boost the economy”?
Aggregate Demand

Aggregate demand (AD) is the total amount of expenditure on goods and services in an economy. AD slopes downwards:

$$AD = C + I + G + (X - M)$$

1) Consumption (C).
Consumption is total consumer expenditure on durable goods (electronics), non-durable goods (food) and services (banking).

2) Investment (I).
Investment is total investment by firms on buildings, machinery and the change in inventories.

3) Government Expenditure (G).
Government expenditure is total expenditure by the government on goods and services.

4) Net Exports (X-M).
Exports are domestic goods and services sold to foreign agents. Imports are foreign goods and services bought by domestic agents. Net exports are exports minus imports.

AD slopes downwards because, as the price level falls, real income rises so aggregate expenditure rises. Moreover, as the price level falls, domestic goods become cheaper, UK consumers buy more UK goods so imports fall, foreign consumers buy more UK goods so exports rise and real GDP rises.
Additionally, as the price level falls, the Monetary Policy Committee decrease interest rates, loans become cheaper, firms take out more loans, investment rises and real GDP rises.

AD will increase (decrease) and shift right (left) if C, I, G, and/or X-M rise (fall).

An Increase in Aggregate Demand

![Graph: An Increase in Aggregate Demand](https://via.placeholder.com/150)
**Consumption**

Consumption is total consumer expenditure on durables, non-durables and services.

An increase (decrease) in consumption will increase (decrease) AD and shift AD right (left).

*An Increase in Consumption*

Many factors could increase consumption:

1) **Real Disposable Income.**

A rise in real disposable income means consumers have more income to spend so they buy more goods.

2) **Direct Taxes.**

A fall in direct taxes increases consumers’ real disposable income so consumption rises.

3) **Confidence/Expectations.**

As consumers become more confident about the economy (and their own future income) they buy more goods so consumption rises.

4) **Interest Rate.**

A fall in interest rates means the cost of borrowing falls so consumers take out more loans and buy more goods (especially credit-bought items like T.V.s and home appliances). Moreover, the return on savings falls so saving becomes less attractive and consumption becomes more attractive. Furthermore, a fall in interest rates lowers mortgage repayments, consumers’ debt falls, real disposable income rises and consumption rises.
5) Assets.

As house prices rise, homeowners’ wealth rises inducing a wealth effect. Because consumers feel wealthier they will buy more goods and services so consumption rises. Also, a homeowner can borrow more against the higher value of their home and increase consumption (equity withdrawal).

**Marginal Propensity to Consume and Marginal Propensity to Save**

As consumers earn more income they may increase their consumption and/or saving. The marginal propensity to consume (MPC) measures how much each additional £ of income is used for consumption. If the MPC is 0.9: As income rises by £1, consumption rises by £0.90. The marginal propensity to save (MPS) measures how much each additional £ of income is saved. If the MPS is 0.1: As income rises by £1, savings rise by £0.10.
**Investment**

Investment is total investment expenditure by firms on buildings, machinery and the change in inventories. A firm invests in capital goods (machinery and buildings) and uses these capital goods to produce consumer goods. A firm invests to increase its productive capacity so that it can produce more in the future to make more profit.

An increase (decrease) in investment will increase (decrease) AD and shift AD right (left).  

An Increase in Investment

Many factors could increase investment:

1) **Profit.**

A rise in profits gives firms more funds for investment so investment rises. Also, profits are a cheaper source of funding investment than borrowing so investment becomes cheaper and investment rises. Furthermore, a rise in profits may signal to firms that the return on investment is higher, incentivizing firms to increase their productive capacity to be able to produce more to capture the higher profits.

2) **Expectations.**

Keynes posits that investment mainly depends on expectations which are driven by ‘animal spirits’ and prone to volatility because they depend on an unquantifiable uncertain future. As expectations rise, firms become more optimistic and expect higher returns on investment, so investment rises.

---

4 An increase in investment shifts AD rightwards, but in the long-run it also shifts the long-run aggregate supply curve rightwards, see p.94.
3) Uncertainty.

Uncertainty makes it difficult for firms to plan and invest. A more stable economic climate means firms can plan how much they will sell so they can plan how much they must invest, so investment rises.

4) Interest Rate.

A fall in the interest rate means the cost of borrowing falls, firms take out more loans and investment rises. Also, a fall in the interest rate makes more investment projects give a higher return than saving so investment rises.

5) AD.

As AD keeps rising in a boom, this signals to firms that profits are rising and incentivizes firms to increase investment to increase their productive capacity to produce more to capture these higher profits, so investment rises.

6) Income.

An increase in income means consumption rises, so firms may need to invest to increase their productive capacity so that they can produce more, so investment rises.

7) Cost of Capital Goods.

As the cost of capital goods falls, the cost of investment falls, investment becomes more profitable, so investment rises.
**Government Expenditure**

Government expenditure is total expenditure by the government on goods and services. The government must provide merit goods like education and healthcare and public goods like roads, parks, the police, national defence and the law.

An increase (decrease) in government expenditure will increase (decrease) AD and shift AD right (left).

**An Increase in Government Expenditure**

Government expenditure depends on:

1) **Business Cycle.**

A government must increase government spending during a recession to boost AD, increase employment and increase real GDP.

2) **Government Debt.**

A government must borrow funds to spend more than its tax revenue. But borrowing means the government gets into debt. A large government debt may eventually mean government spending in the domestic economy falls. A government cannot allow its debt to become too large and unsustainable in the long-run because creditors will fear the government will default on its debt so creditors charge a higher rate of interest to the government, the government’s debt rises further and eventually the government must reduce government spending and increase taxation to repay its debt.

3) **Type of Economy.**

A government intervenes little and spends little in a free market economy, intervenes more and spends more in a mixed economy, intervenes a lot and spends a lot in a command economy.
4) Merit and Public Goods.

A government must spend to provide public goods (national defence and street lighting) and subsidize merit goods (health and education) because the market price mechanism fails to allocate these goods efficiently.

5) Demography.

An aging population means there are more elderly people so the government must increase spending on healthcare and nursing homes. Also there are less economically active people (i.e. less people working), less people paying income tax, tax revenue falls and the government have less funds to spend. A younger population means there are more babies so the government must increase spending on healthcare. Migration means the population increases, there is more demand for public goods so the government must increase government spending to provide public goods.

6) Poverty and Inequality.

The more poverty and inequality there is, the more the government must spend to provide goods and services for those in poverty and benefits and subsidies to those on low incomes.

7) Elections.

The government may increase government expenditure on merit and public goods building up to election times.
**Net Exports**

Exports are domestic goods and services sold to foreign agents. Imports are foreign goods and services bought by domestic agents. Net exports are exports minus imports (X-M).

An increase (decrease) in net exports will increase (decrease) AD and shift AD right (left).

**An Increase in Net Exports**

Many factors could increase net exports:

1) **Exchange Rate.**

An exchange rate (XR) is the price of one currency in terms of another. A fall in the domestic country’s exchange rate means the domestic economy becomes more internationally price competitive, exports become cheaper and rise, imports become dearer and fall so AD rises.

2) **Rest of the World.**

Booms can spread from one country to another. A boom in country X means X’s income rises and their consumers demand more imports. Country Y exports to country X so Y’s exports rise and AD rises.

3) **Quality.**

If the quality of the domestic economy’s goods rises, foreign consumers will demand the domestic economy’s goods, exports rise and AD rises.

4) **Inflation.**

A fall in country X’s inflation makes X’s goods more internationally price competitive, exports are cheaper and rise, imports are dearer and fall so AD rises.
5) Income.

A fall in the domestic country’s income means consumers buy less luxury goods so imports fall and AD rises.
Aggregate supply is the total amount of supply of goods and services in an economy.

**Long-Run Aggregate Supply**

At first, long-run aggregate supply (LRAS) is perfectly elastic, real GDP increases without any inflationary pressure. This is because there is spare capacity. Resources are underutilized or unemployed so firms can employ more resources without bidding up their prices so firms’ costs and prices do not rise.

LRAS then becomes inelastic, both real GDP and the price level increase. This is because spare capacity is running out, resources are becoming scarce so there are bottlenecks (supply shortages). To obtain more resources, firms must bid up resource prices so firms’ costs and prices rise.

LRAS then becomes perfectly inelastic, the price level rises but real GDP stays the same. This is because the economy is at full capacity, all resources are fully employed, no more output can be produced. Firms must offer higher prices to tempt resources away from their current use. All that happens is firms’ costs rise so prices rise but aggregate output stays the same (the composition of output just shifts from some firms to others).
An increase (decrease) in LRAS shifts LRAS right (left), there is an increase (decrease) in the productive capacity of the economy because the economy can produce more (less).

Many factors could increase LRAS:

1) Raw Materials.

As raw materials become cheaper, costs of production fall, so firms can increase production. A fall in world demand for resources, or a rise in the value of the domestic currency means the price of imported raw materials falls.

2) Investment.

An increase in investment raises the stock of capital (machinery) so the economy can produce more.

3) Technological Advance.

Research and Development (R&D) leads to improved technology, machines become more efficient so more can be produced with the same amount of resources.

4) Education.

An increase in education raises human capital, labour skills improve and labour becomes more efficient, so output per worker rises.

5) Labour Market Flexibility.

As the labour market becomes more flexible, unit labour costs fall so production rises. Also, migrant labour means more labour is available so more can be produced.

6) Red Tape.

A reduction of red tape by the government makes firms more efficient so they can produce more.
**AD-AS Equilibrium**

Macroeconomic equilibrium occurs at the intersection of AD and LRAS. The diagram below shows macroeconomic equilibrium, the equilibrium price level is $P^*$ and equilibrium real GDP is $Y^*$.

As Keynes posits, the economy could be in equilibrium at full employment but is likely to be in equilibrium below full employment.

An increase (decrease) in AD shifts AD right (left), increases (decreases) the price level and increases (decreases) real GDP.
An increase (decrease) in LRAS shifts LRAS right (left), the price level decreases (increases) and real GDP increases (decreases).
Circular Flow of Income

Assume a simple model of the economy with just households and firms, there is no government and no foreign trade. Households own the factors of production (land, labour and capital) and supply these to firms in return for income (rent, wages and profit). Households spend all of their income on goods and services. Firms use the factors of production to produce goods and services and sell these to households. Firms spend all of their revenue on the factors of production.

All three variables income, expenditure and output should be identical in value:

\[
\text{Income} \equiv \text{Expenditure} \equiv \text{Output}
\]

All income is spent, so income is identical to expenditure, and all expenditure goes on output, so expenditure is identical to output.
Adding banks (saving and investment), the government (government spending and taxes) and foreign trade (exports and imports) to the model, the circular flow now shows injections and leakages. An injection into the circular flow is money coming into the economy. Injections include:
- Investment
- Government Spending
- Exports

A leakage from the circular flow is money leaving the economy. Leakages include:
- Saving
- Taxes
- Imports

An increase in injections makes AD, income and output rise because there is more money flowing around the circular flow. An increase in leakages makes AD, income and output fall because there is less money flowing around the circular flow. At equilibrium, AD, income and output do not change.

**Income and Wealth**
Income is a flow of money that an agent receives between a period of time. Wealth is a stock of assets that an agent owns at any one point in time. An agent’s wealth can include houses, stocks and shares. Wealth generates a flow of income for example a house can earn rent, stocks and shares can earn dividends and profit.
Any AD fluctuations are amplified by the multiplier through knock-on AD effects. An initial change in AD has a larger final impact on real GDP due to the multiplier.

\[ \text{Multiplier} = \frac{1}{1 - MPC} \]

The higher is the marginal propensity to consume (MPC) the more consumers spend during knock-on AD effects and the higher is the multiplier.

The multiplier may be difficult to measure because:
- Econometric models must be built to estimate it, these models may be wrong, they are not 100% accurate.
- Maybe data is conflicting, missing or unreliable.
- The multiplier could change over time as consumers become more confident and spend more of their additional income rather than save it.
- The multiplier has a time lag, it does not occur instantaneously. The multiplier takes up to 2 years to exert its full effect.
Economic Growth

An economy produces output (goods and services). Gross Domestic Product (GDP) measures the monetary value of all the output produced by an economy during a given time period.

Real GDP vs. Nominal GDP
Economic growth occurs if the economy produces more output. Economic growth is the percentage change in real GDP over a given time period.

Nominal GDP is the monetary value of all the output produced in an economy during a given time period. Nominal GDP does not accurately measure economic growth because nominal GDP rises if prices and/or output rises. A rise in prices is not economic growth, economic growth occurs when the economy’s output increases.

Real GDP is GDP adjusted for inflation. Real GDP = (Nominal GDP / Price Level) x 100. A base year is taken and prices are adjusted to equal that base year. Real GDP measures the quantity of output that an economy produces during a given time period. Economic growth occurs if real GDP increases because this means the quantity of an economy’s output rises, more is being produced.

Business Cycles
Positive economic growth means real GDP rises and the economy grows. A boom occurs if there is a major and rapid increase in real GDP. Negative economic growth means real GDP falls and the economy shrinks. A recession occurs if real GDP falls for two consecutive quarters.

Business cycles are the fluctuation of real GDP around the trend growth rate. Actual GDP growth is the growth in real GDP that currently occurs. The long-term trend growth rate is potential real GDP growth, the GDP growth that will occur if all resources are fully and efficiently employed. Potential real GDP growth increases if technology or knowledge improves.
Actual growth occurs when AD rises:

**Actual GDP growth**

![Graph of Actual GDP growth]

Potential GDP growth occurs when LRAS increases, the productive capacity of the economy increases:

**Potential GDP growth**

![Graph of Potential GDP growth]

Alternatively, potential GDP growth shifts the PPF curve outwards, the maximum amount of output the economy can produce increases.
**Output Gaps**
The difference between actual GDP growth and the long-term trend growth rate is the output gap. A positive output gap occurs when real GDP growth is above its trend. A negative output gap occurs when real GDP growth is below its trend.

![Output Gaps Diagram]

**Causes of Economic Growth**
Economic growth occurs if AD and/or LRAS shifts right. An increase in C, I, G or (X-M) means AD increases and AD shifts right so real GDP rises. A number of factors could cause one of the components of AD to change and shift AD, see pp.84-92. An increase in LRAS means LRAS shifts right so real GDP rises. A number of factors could cause LRAS to shift, see p.94.

**Benefits and Costs of Economic Growth**

<table>
<thead>
<tr>
<th>Benefits of Economic Growth</th>
<th>Costs of Economic Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incomes rise. Real income rises, consumers can buy more goods and services, consumption rises and living standards rise. Additionally, economic growth may mean that assets generate a larger income flow, so consumption rises and living standards rise further.</td>
<td>Inflation may rise. Economic growth may mean AD increases and shifts right and, if there are bottlenecks (i.e. the AS curve is inelastic), inflation rises. As inflation occurs, workers cannot afford as much as before, workers demand higher money wages, firms’ costs rise, firms’ prices rise, workers demand higher money wages and the spiral continues.</td>
</tr>
<tr>
<td>Employment rises. Jobs are created because firms produce more, and because labour is a derived demand, firms must employ more workers. The government are closer to achieving their target of full employment.</td>
<td>Inequality rises. The poor (workers) may benefit from higher wages but the rich (owners of machinery and firms) may benefit from even higher profits. So the rich get richer faster than the poor get richer and income distribution becomes more unequal.</td>
</tr>
<tr>
<td>Profits rise. Economic growth means incomes are rising, consumers buy more goods and services so firms make more profit.</td>
<td>Environmental damage. More resources are extracted from the ground so the geosphere is damaged, more land is used and trees cut down so the biosphere is damaged. More people drive</td>
</tr>
</tbody>
</table>
and use electrical goods, requiring more fossil fuels to be burned, so there are more dirty emissions pumped into the air and the atmosphere is damaged.

<table>
<thead>
<tr>
<th>Efficiency increases. Firms earn more profit so they invest more in R&amp;D, develop new machinery, become more efficient and LRAS shifts right.</th>
<th>Time lag. It takes time for new machinery to be developed. New machines must first be researched and tested. The benefits of increased efficiency may only occur in the long-run.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tax revenue rises. Economic growth means incomes and profits are rising, consumers pay more income tax and firms pay more corporation tax so the government’s tax revenue increases. Also, firms are producing more and hiring more workers so unemployment benefits fall. The government then has more to spend on health and education.</td>
<td>Magnitude. The extent of the rise in economic growth determines how much tax revenue rises by. A small increase in economic growth will only increase the government’s income tax revenue and corporation tax revenue by a small amount.</td>
</tr>
<tr>
<td>Exports may rise. If growth is due to export-led growth then exports are rising rapidly, AD is rising and real GDP is rising. The government are closer to achieving their objective of a current account surplus.</td>
<td>Current account deficit. Real incomes rise, domestic consumers may buy more luxury imports so imports rise and the current account moves towards a deficit. Also, domestic firms may sell more goods to domestic consumers rather than sell to foreign consumers who may have a lower income, so exports fall and the current account moves deeper into a deficit.</td>
</tr>
</tbody>
</table>

**Sustainable Growth**

Economic growth is sustainable if the needs of future generations are not compromised by current consumption/production. In the movie The Road (starring Viggo Mortensen), the planet’s resources have basically ran out and no more goods can be produced. If the current generation produces too much now then future generations may have no resources to produce goods.

**Comparing Living Standards Between Economies**

An economy with a large population will likely have a higher GDP than an economy with a smaller population because the larger one can produce more. It is unfair to compare their GDPs. Instead, GDP per capita must be used to compare economies. GDP per capita is GDP divided by population, it measures the average GDP per person. An economy could have a high GDP but a low GDP per capita in contrast to another economy with a low GDP but high GDP per capita, the average person is better off in the second economy.
Even GDP per capita does not accurately measure the welfare or living standards of an economy. Many other factors affect welfare:

1) Health.

Better health means better living standards.

2) Social Indicators.

Better education and less crime means better living standards.

3) Political Freedoms.

GDP does not measure democracy or dictatorship.

4) Income Distribution.

High GDP per capita does not necessarily mean income is distributed evenly. An economy could have a high GDP per capita if there is one extremely rich person and the rest are poor.

5) Black Economy.

GDP only measures official transactions, it does not measure illegal transactions in the black economy. Also, DIY at home and other cash-in-hand transactions are not included.

6) External Costs.

A high GDP means a lot is being produced so pollution may be high. Pollution could damage health and lower living standards. Also, too much production could mean resources deplete and future generations suffer lower living standards.
Human Development Index

The UN Human Development Index (HDI) is a multidimensional measure of the economic development of an economy.

The HDI is an index combining:

1) Income. Measured by GDP per capita at Purchasing Power Parity (PPP), what the average citizen can afford.
3) Education. Measured by the adult literacy rate and educational enrolment rates.

The HDI measures a mix of income, health and education. These three measures are given equal weighting. The HDI lies between 0 and 1. A country is more developed the higher its HDI score is.

<table>
<thead>
<tr>
<th>Benefits of the HDI</th>
<th>Costs of the HDI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Easy to obtain data. Almost every country has GDP, life expectancy and literacy rate figures.</td>
<td>GDP per capita does not reveal the distribution of income. Maybe the majority of the population are in poverty so the economy is not developed. Maybe the Human Poverty Index could be added to the HDI to include a deprivation measure.</td>
</tr>
<tr>
<td>It includes social factors such as literacy rates.</td>
<td>The HDI does not reveal the quality of education. Moreover, kids could be in school but not learning. Also, maybe kids are taught academic knowledge when they need practical knowledge (cook, clean, build).</td>
</tr>
<tr>
<td>It qualifies income as the cost of living (PPP).</td>
<td>Life expectancy does not reveal the quality of life. An economy is not developed if people live long in poor conditions.</td>
</tr>
<tr>
<td>Easy to compare the HDI scores between countries.</td>
<td>It does not include political indicators like democracy and dictatorship or other social indicators such as crime rates.</td>
</tr>
</tbody>
</table>

Alternative Measures of Development

Alternative measures of development include:

- Access to clean water and energy consumption per capita. Clean water is necessary for basic human survival, good health and to prevent diseases. Energy consumption is required for transport, heating and lighting, it helps increase living standards. However, more energy consumption could mean more pollution, this damages health and future generations.
- Percentage of adult males in agriculture. As GDP rises, this measure should fall because agricultural labour is replaced with tractors and combine harvesters. Also, adult males should move to cities to get higher paid jobs in the manufacture and service sectors.
- Primary and secondary educational enrolment rates. Education increases human capital so wages rise, people can consume more and poverty falls. Also, education gives people individual freedoms like the ability to read and fill in forms.
- Access to phones per 1,000 of the population. Access to communication gives people individual freedoms and makes it easier to buy and sell goods.

However, many of these measures will overlap for example, a lot of energy consumption may be caused by a lot of male workers in the manufacture sector. Also, there may be data collection problems, it may be very hard to get data (how would you get data on a farmer’s energy consumption?). Moreover, data may be inaccurate so the measures could be misleading.
**Inflation**

An economy’s average (or general) price level is the average of all the prices in the economy. Inflation is a rise in the average price level over a given time period. Deflation is a fall in the average price level over a given time period.

Demand-pull inflation occurs when AD rises, spare capacity falls, resources begin to run out so firms’ resource costs and prices rise.

Cost-push inflation occurs when LRAS shifts left because resource prices rise or wages rise so firms’ costs rise and their prices rise.
Many costs of inflation exist:

1) Transfer of Resources.

Inflation causes a transfer of resources from savers to borrowers. Inflation devalues savings so savers are worse off. Inflation devalues debt so borrowers are better off.

2) Interest Rates.

If inflation is too high a tight monetary policy may be used to increase interest rates, so the cost of borrowing rises, consumers take out less loans and consumption falls.

3) Investment.

Inflation creates uncertainty, uncertainty means firms cannot plan, if firms cannot plan they cannot invest so investment falls. Also, if inflation is too high a tight monetary policy may be used to increase interest rates, so the cost of borrowing rises, investors take out less loans and investment falls.

4) Menu Costs.

As prices change, firms must change their prices and reprint menus and catalogues, edit websites and shop signs, this is costly for firms.

5) Search Costs.

As prices change, consumers incur search costs because they must keep up to date with all the new prices that firms charge.

6) Wage-Price Spiral.

As inflation occurs, workers cannot afford as much as before, workers demand higher money wages, firms’ costs rise, firms’ prices rise, workers demand higher money wages and the spiral continues. At the extreme, this could cause hyperinflation.

7) International Competitiveness.

A rise in country A’s prices means A becomes less internationally price competitive, A’s exports are dearer and fall, imports are cheaper so A imports more.

**Measuring Inflation**

A measure of inflation is the Consumer Price Index (CPI). An annual price survey, the Expenditure and Food Survey, is undertaken by the ONS to collect data. The CPI is a price index of a basket of roughly 700 goods and services typically bought by the average household. The basket includes food, drink, shelter, clothing, energy, education and banking services. Goods are weighted more if households spend more money on them.

Each year the basket is updated to account for the changing patterns of consumer behaviour, some goods may be taken out and/or given less weight, current goods may be given more weight and/or new goods may be added.

Limitations of the CPI:
- The sample may not be representative of the average household. For example, it could include too many rich households, so the basket will not represent the average household’s consumption.
- Spending patterns may be dynamic and could change frequently throughout the year, meaning the basket and weights need to be changed more than once per year.
- Black market transactions are unofficial, no data exists for them, so they cannot be included in the CPI.
- Prices may rise over time because better quality goods are being sold (technically this is not defined as inflation).
Unemployment

Employment is the amount of workers with a job. Unemployment is the amount of people willing and able to work at the market wage but without a job.

Many types of unemployment exist:

1) **Keynesian (Demand-Deficient) Unemployment.**

AD is insufficient for all workers to be employed. Let’s say an economy is in a recession where AD and real GDP are declining. Firms produce less and require less labour so lay-off workers. Workers want to work but some are involuntarily unemployed. Keynesian unemployment can persist even in the long-run. AD must rise to reduce unemployment.

2) **Frictional Unemployment.**

Frictional unemployment occurs when workers are moving between jobs. Workers are unemployed but searching for a new job. It is a short-run phenomenon. The government must reduce benefits to incentivize the unemployed to find jobs quicker. Also, the government must disseminate job information so that the unemployed can find jobs quicker.

3) **Seasonal Unemployment.**

Seasonal unemployment occurs when workers are unemployed during the off-season. Agriculture experiences seasonal unemployment as workers are employed during harvests but unemployed during winters.

4) **Real Wage Unemployment.**

Real wage unemployment occurs when real wages are above the market-clearing level, maybe because of a minimum wage. At \( \frac{W}{P} \) the quantity supplied of labour is greater than the quantity of labour demanded, there is excess labour supply \( L^s - L^d \) workers are willing and able to work at \( \frac{W}{P} \) but are involuntarily unemployed.
5) Structural Unemployment.

Structural unemployment exists when there is a mismatch between labour’s skills and the skills required by employers.
- Sectoral Unemployment: An economy goes through structural change, maybe mining declines, so skilled miners become unemployed because they do not have the skills to immediately get a different job.
- Technological Unemployment: Maybe new technology is developed which replaces some workers who do not have the skills to immediately get other jobs.

Costs of Unemployment
There are many costs of unemployment:

1) Lower Living Standards.

Anyone unemployed earns no wage and must go on unemployment benefits, so their income falls, they cannot buy as many goods and their living standards fall. At the extreme, without any social safety nets like unemployment benefits, the unemployed fall into poverty. Additionally, the unemployed’s dependents will suffer if they are not fed or looked after properly. However, the unemployed may benefit from more leisure time and, if unemployment benefits are available, the incomes and living standards of the unemployed may not fall that much.

2) Crime.

An unemployed person cannot afford to buy many goods or services so they may turn to illegal activities and crime to get what they want. Run down areas in certain parts of the country may suffer the most if rising unemployment is a regional problem.

3) Lost Output.

An unemployed person is not working so some of the economy’s labour is not being used, the economy is inside its PPF and the economy suffers lost output. But, because output falls, income falls, consumption falls, AD falls and there is cost-push deflation.

4) Loss of Skills.

A person who is unemployed for a long time may become de-skilled, lose their skills, their human capital is damaged and consequently it becomes more difficult for them to find a job.

5) Lower Profits.

Rising unemployment means incomes fall, consumption falls and firms sell less goods and services so firms make lower profits. Firms may also be discouraged from investing because they make less profits so in the long-run LRAS shifts left and real GDP falls.

6) Lower Tax Revenue.

The government’s tax revenue falls because with less people working, the government receives less in income tax and there is less consumption so the government receives less VAT. The government must also spend more on unemployment benefits so they may need to raise taxes or cut spending on health or education to pay for more benefits.
Migration and Unemployment

<table>
<thead>
<tr>
<th>Migration Increases Employment</th>
<th>Migration Increases Unemployment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Migrants may be young people of working age, so migrants will expand the economically active population and increase employment.</td>
<td>Maybe migrants take jobs away from domestic workers and cause unemployment to rise among domestic citizens.</td>
</tr>
<tr>
<td>Migrants increase the economy’s population and consumption so AD rises, firms must produce more goods so they hire more labour, more jobs are created and employment rises.</td>
<td>Migrants may come to work in the country but if there is not enough demand for jobs then they simply become unemployed.</td>
</tr>
<tr>
<td>Migrants may be more flexible than domestic workers. For example they may be willing to work longer hours, harsher conditions and accept a lower pay. This improves the flexibility of the labour market so employment rises.</td>
<td>Migrants’ family and friends may follow them to the economy but not possess the education/training/skills required to find jobs and consequently become unemployed.</td>
</tr>
<tr>
<td>Migrants may fill important skill shortages in the domestic labour market so employment rises.</td>
<td>Migrants may just be coming to the economy to claim benefits and not work.</td>
</tr>
</tbody>
</table>

Measuring Unemployment

The International Labour Organization (ILO) measure of unemployment:
- The ONS carry out the Labour Force Survey. A survey of 60,000 working age people (age range 16-65) are interviewed four times per year by phone. A person is defined as unemployed if they have been looking for work in the last four weeks and if they are ready to work within the next two weeks.

<table>
<thead>
<tr>
<th>Benefits of ILO</th>
<th>Costs of ILO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allows international comparison.</td>
<td>Time consuming and costly.</td>
</tr>
<tr>
<td>More inclusive than the Claimant Count, includes 16 year olds.</td>
<td>Sample may be too small and not representative of the average person.</td>
</tr>
<tr>
<td>People could lie.</td>
<td></td>
</tr>
</tbody>
</table>

The Claimant Count (CC) measure of unemployment:
- Anyone claiming unemployment benefit (for example, Job Seekers Allowance) is defined as unemployed. The claimants must be between 18-65, be able to prove they are looking for work and register at unemployment offices.

<table>
<thead>
<tr>
<th>Benefits of CC</th>
<th>Costs of CC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cheap and easy to obtain information.</td>
<td>Some people eligible for unemployment benefits may not claim (maybe due to pride).</td>
</tr>
<tr>
<td></td>
<td>Housewives are technically defined as unemployed but often do not claim unemployment benefits.</td>
</tr>
<tr>
<td></td>
<td>Someone could work and claim illegally (benefit fraud).</td>
</tr>
<tr>
<td></td>
<td>Claimants may not be looking for a job, they are...</td>
</tr>
</tbody>
</table>
not willing to work.

<table>
<thead>
<tr>
<th>Not internationally recognized.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over time the government could change the rules to be eligible to claim unemployment benefits. So it may be easier to claim benefits in the present time than it was in the past, more people would be claiming at the present time but that does not necessarily mean unemployment has risen.</td>
</tr>
</tbody>
</table>

**Unemployment: A Lagging Indicator**

Unemployment is a lagging indicator, that is, when a recession occurs there is a time delay before unemployment rises. This is because:

- Workers may not be laid off immediately when sales fall because of contracts, it may be cheaper to keep the workers on rather than fire them.
- Workers may not be fired immediately due to compassionate reasons.
- Recruitment costs may be very high so it may be cheaper to keep workers on during a recession rather than fire them and employ new workers in the future.
- Workers may not be laid off because they represent an expensive investment in human capital, it takes time and money to train workers.
- If the economy is recovering from a recession, there is economic growth but unemployment may not fall immediately because firms may fear the recovery is only temporary.
Balance of Payments

The balance of payments (BoP) is a record of all the external financial transactions between one economy and the rest of the world. The two main components of the BoP are the current account and financial account.\(^5\)

**Current Account**
The current account includes:
- Trade in goods/visibles (raw materials, manufacture goods, cars etc.).
- Trade in services/invisibles (banking, insurance, transport etc.).
- Investment income (profits, dividends and interest on assets abroad). Money from the use of capital abroad.
- Transfers including aid, remittances (money sent to relatives abroad) and EU contributions.

**Current Account Surplus and Deficit**
A current account surplus means the exports of goods and services is greater than the imports of goods and services \((X - M) > 0\) and money flows into the domestic economy.

A current account deficit means the imports of goods and services is greater than the exports of goods and services \((X - M) < 0\) and money flows out of the domestic economy.

**Causes of A Current Account Deficit**
Many factors could cause a current account deficit:

1) Exchange Rate Appreciation.

An appreciation/rise in the domestic country’s exchange rate means the domestic economy becomes less internationally price competitive, exports become dearer and fall, imports become cheaper and rise so the current account moves towards a deficit.

2) Global Recession.

A global recession means foreign consumers have a lower income so they buy less UK exports, UK exports fall and the current account moves towards a deficit.

3) Poor Quality Goods.

If the quality of the domestic economy’s goods falls, foreign consumers will demand less of the domestic economy’s goods so exports fall, domestic consumers buy more foreign goods so imports rise, and the current account moves towards a deficit.

4) Inflation.

A rise in country A’s inflation makes A’s goods less internationally price competitive, exports are dearer and fall, imports are cheaper and rise so the current account moves towards a deficit.

\(^5\) Only the current account is of interest for AS economics.
5) Domestic Income.

A rise in the domestic country’s income means consumers buy more domestic and foreign goods so imports rise, domestic firms sell more to domestic consumers so exports fall, and the current account moves towards a deficit.

**Significance of A Current Account Deficit**
A current account deficit may or may not be a problem, it depends on the size of the deficit and what caused the deficit.

If the current account deficit is small and sustainable then it is not a problem, the domestic economy can easily fund it. A large sustainable current account deficit is not a problem because the domestic economy can fund it. Moreover, a current account deficit may not be a problem if the domestic economy imports a lot of capital goods. Machinery may be imported so the domestic economy’s productive capacity rises, LRAS shifts right and in the future the domestic economy can produce more consumer goods for its domestic consumers so its imports fall and the domestic economy can sell more consumer goods to foreign consumers so the domestic economy’s exports rise.

A current account deficit could be a sign that the economy is growing because economic growth means incomes rise and consumers buy more imports. Although, a current account deficit could be a sign that the economy is in a recession (so it is not producing enough exports).

Additionally, a current account deficit may be a problem because it indicates that the domestic economy’s goods are not internationally competitive. Maybe the domestic economy’s goods are poor quality relative to the rest of the world.

A current account deficit may also be a problem because if an economy is producing too little exports then there may not be enough jobs and unemployment may be too high.

A large and unsustainable current account deficit is a problem because money is leaving the economy. An economy could fund the current account deficit by borrowing international money from foreign banks. But, if there is a large and persistent current account deficit, creditors may soon deem the economy more risky as there is a higher chance of default. Credit worthiness falls, interest rates rise so the cost of borrowing international money rises, it becomes more difficult for the economy to repay its foreign debt, the risk of default rises further, credit worthiness falls further and the loop spirals out of control. Eventually the economy must reduce its imports.

A current account surplus may even be a problem because it may mean that the domestic economy is producing goods for foreign consumers rather than domestic consumers. Also, a large current account surplus for the domestic economy means other countries have a current account deficit, this could cause trade frictions and disputes.
Macroeconomic Objectives

The government has four main macroeconomic objectives for the economy:

1) High Economic Growth.

Basically the government aim for high economic growth because as real GDP increases, incomes grow so consumers can buy more goods and living standards rise. Also, the government earns more tax revenue because more income tax and corporation tax is paid. Additionally, because consumers are spending more, firms make more profit so investment increases and the economy becomes more efficient in the long-run.

2) Low and Stable Inflation.

An inflation rate of 2% plus or minus 1% (measured by the CPI) is targeted. Low inflation is targeted because inflation devalues money and consumers’ real income so less can be bought and living standards fall. Low inflation also means domestic prices are low so domestic consumers buy more domestic goods and less imports, foreign consumers buy more domestic goods so exports rise and the current account moves towards a surplus. Stable inflation makes it easier for firms to plan and invest, and investment is key for long-run economic growth because it increases the productive capacity of the economy.

3) Low Unemployment.

Low unemployment is desired because consumers earn an income so they can buy goods and increase their living standards. Moreover, low unemployment means the economy is operating near its full capacity, so the minimal amount of resources are wasted. Furthermore, low unemployment means most people are earning an income so crime rates should fall.

4) Current Account Surplus (or Low Deficit).

The government aims for a current account surplus to make exports greater than imports, boost AD and real GDP.

The government have two additional macroeconomic objectives:


As economic growth occurs, the rich get richer faster than the poor get richer so income distribution worsens. This is because the rich own capital like machinery and factories so the rich make a lot of profit and pay the poor wages.

6) Environmental Protection.

Environmental protection is important because economic growth must be sustainable, the needs of future generations must not be compromised by current consumption.
Conflicts Between Objectives
There are many conflicts between macroeconomic objectives:

1) Growth vs. Inflation.

An increase in AD means real GDP increases, so there is economic growth, but there is also demand-pull inflation.

However, if economic growth occurs because LRAS shifts right (due to an increase in the economy’s efficiency) then real GDP increases, so there is economic growth, but at the same time there is deflation.

2) Unemployment vs. Inflation.

As the economy grows, unemployment falls, spare capacity runs out and resources are nearly all used up. To hire more labour, firms must offer higher wages, wages rise, firms’ costs rise and there is inflation.

Although, if economic growth occurs because LRAS shifts right (due to an increase in the economy’s efficiency) then unemployment falls, spare capacity rises and there is deflation.

3) Growth vs. the Environment.

As the economy grows, more is consumed and produced so more resources are used (for example more oil is extracted from the land, more trees are cut down and more fish are taken from the sea) so resources deplete and future generations may run out of resources. Moreover, economic growth means more is produced so there is more pollution (for example more toxic waste dumped into rivers, loss of biodiversity and the atmosphere is damaged from dirty emissions).

But, the government could make sure the environment is protected by using green taxes to decrease the amount of environmentally damaging consumption and production. Additionally, the government could invest and develop green technology that reduces environmental damage.

4) Growth vs. the Current Account.

As the economy grows, income increases, consumers buy more domestic goods and more foreign goods, so imports rise and the current account moves towards a deficit.

However, maybe there is export-led growth, that is, exports could be rapidly increasing, the current account moves towards a surplus, AD rises and there is economic growth. A current account surplus could be driving economic growth. Also, maybe economic growth is occurring because LRAS is shifting right. This means domestic prices fall, domestic consumers buy more cheap domestic goods and less imports, foreigners buy more domestic goods so exports rise, and the current account moves towards a surplus.
Monetary Policy

Monetary policy is the manipulation of monetary variables (interest rate and money supply) by the MPC to influence AD and inflation.

An economy’s central bank controls the interest rate and money supply. In the UK the central bank is the Bank of England (BoE). However, it is not the BoE who decide on interest rate changes, instead this is decided by the Monetary Policy Committee (MPC). The MPC is a group of 9 economists, 5 are from the BoE and 4 are independent experts and they are responsible for controlling inflation in the UK. The MPC use the CPI measure of inflation and target inflation of 2% plus or minus 1%. The MPC use the interest rate and money supply to influence AD and control inflation. The MPC are independent from the government and apolitical so they have credibility in inflation targeting.

The MPC meet once a month and consider all the factors affecting inflation over the next 2 years:
- Economic growth. Higher growth causes income and consumption to rise and demand-pull inflation.
- Consumption. An increase in consumption causes demand-pull inflation.
- Asset prices. A rise in house prices induces a wealth effect that increases consumption and causes demand-pull inflation.
- Unemployment. Lower unemployment means income and consumption rise so there is demand-pull inflation.
- Exchange Rate. A fall in the exchange rate causes exports to rise, imports to fall and demand-pull inflation. Also, imports are more expensive so there is cost-push inflation.
- Commodity prices. A rise in commodity prices means imported commodities are more expensive and firms’ costs rise so there is cost-push inflation.
- Less Developed Country (LDC) wages. UK workers must compete with low wages in LDCs to attract MNCs and find employment, this leads to lower wages for UK firms and cost-push deflation.

After considering all the factors affecting inflation, the MPC predict inflation over the next two years and decide on what should happen to interest rates to keep inflation within its target. If inflation is too low, the MPC will use loose monetary policy to decrease interest rates and increase inflation. If inflation is too high, the MPC will use tight monetary policy to increase interest rates and decrease inflation.
**Loose and Tight Monetary Policy**

A loose monetary policy causes interest rates to fall and AD to rise. Multiplier effects make AD rise further. The price level rises and real GDP rises.

![Loose Monetary Policy Diagram](image)

A tight monetary policy causes interest rates to rise and AD to fall. Multiplier effects make AD fall further. The price level falls and real GDP falls.

![Tight Monetary Policy Diagram](image)
Monetary Policy influences AD through:

1) Consumption.

A fall in interest rates means the cost of borrowing falls so consumers take out more loans and buy more credit-bought items. Furthermore, the return on savings falls so saving becomes less attractive and consumption becomes more attractive. Consumption rises, AD rises, the price level rises and real GDP rises.

2) Investment.

A lower interest rate means savings generates a lower return so more investment projects become profitable. Moreover, a fall in interest rates means the cost of borrowing falls, investment becomes cheaper so firms take out more loans and invest more. Investment rises, AD rises, the price level rises and real GDP rises.

3) Exchange Rate.

A fall in the domestic country’s interest rate means the return on domestic saving falls relative to the rest of the world so domestic and foreign consumers will save less in the domestic economy and save more overseas. Demand for the domestic currency falls, the domestic currency’s exchange rate falls, the domestic economy becomes more internationally price competitive, exports become cheaper and rise, imports become dearer and fall, the current account moves towards a surplus, AD rises, the price level rises and real GDP rises.

4) Housing Market.

A fall in interest rates lowers mortgage repayments, consumers’ debt falls, disposable income rises so consumption rises. Moreover, lower interest rates means mortgages are cheaper so demand for houses rise and house prices rise. As house prices rise, homeowners’ wealth rises inducing a wealth effect. A homeowner can borrow more against the higher value of their home and increase consumption (equity withdrawal). Consumption rises, AD rises, the price level rises and real GDP rises.

**The Effectiveness of Monetary Policy**

Monetary policy’s effectiveness depends on many factors:

1) Magnitude of Interest Rate Change.

Monetary policy’s effectiveness depends on the magnitude of the change in interest rates. Monetary policy is more (less) effective the larger (smaller) the change in interest rates. A larger (smaller) fall in interest rates means AD rises a lot (a little), the price level rises a lot (a little) and real GDP rises a lot (a little). Moreover, the shift in AD depends upon the size of the multiplier. Monetary policy is more effective the larger (smaller) the multiplier.
2) Elasticity of LRAS.

Monetary policy’s effectiveness depends on the elasticity of the LRAS curve. Monetary policy is more (less) effective in raising real GDP the more elastic (inelastic) is LRAS. Conversely, monetary policy is more (less) effective in raising inflation the more inelastic (elastic) is LRAS.

If LRAS is elastic there is a lot of spare capacity, a loose monetary policy boosts AD, real GDP rises a lot but the price level rises a little bit (maybe stays the same).

\[ \text{Monetary Policy and An Elastic LRAS} \]

If LRAS is inelastic the economy is near full capacity, a loose monetary policy boosts AD, real GDP rises a little bit (maybe stays the same) but the price level rises a lot.

\[ \text{Monetary Policy and An Inelastic LRAS} \]
3) **Short-Run vs. Long-Run.**

A lower interest rate increases investment so AD shifts right, the price level rises and real GDP rises in the short-run. More investment means new and more efficient technology is developed so the economy eventually becomes more productive, LRAS shifts right, real GDP rises and the price level falls in the long-run.

![Short-Run vs. Long-Run](image)

4) **Interest Elasticity of Investment.**

An interest rate drop will not affect investment if investment is interest inelastic because investment does not respond to interest rates. An interest rate drop affects investment if investment is interest elastic because investment responds to interest rates.

5) **Time Lags.**

Monetary policy takes time to come into effect due to time lags. An interest rate change takes roughly 2 years to exert its effect. Moreover, the multiplier takes up to 2 years to exert its full effect.

**Quantitative Easing**

Another instrument the MPC can use to target inflation is quantitative easing.

Basically quantitative easing is the control of the money supply to influence AD and inflation. If inflation is too low, the central bank could pump money into the economy by buying assets (usually government bonds) from agents. Banks like Barclays sell their government bonds to the central bank, so Barclays has more money to lend, consumers can take out more loans so consumption rises, firms can take out more loans so investment rises and AD rises. Multiplier effects make AD shift further and inflation increases.

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6 The central bank could either print money or transfer money electronically.
However, quantitative easing is relatively untried in the UK, it was first used in 2009, so its effects may be unpredictable. Maybe quantitative easing is dangerous, it could make inflation rise above target and become out of control.

**Problems Facing the MPC**

The MPC face many problems when setting interest rates to target inflation:

1) **Trade-Offs.**

Higher interest rates reduce inflation but they may also reduce AD, income, employment and real GDP. This causes a conflict with the government’s macroeconomic objectives.

2) **Lags.**

It takes time to change interest rates. Also, it takes roughly two years for interest rates to exert their full effect on investment and consumption. This makes it more difficult to plan what should happen to interest rates.

3) **Uncertainty.**

Some events cannot be predicted (maybe oil price shocks or financial crises). Resultantly, the MPC will fail to implement an effective policy response, interest rates may be too high or too low so inflation will be off target.

4) **Data Reliability.**

Data may be imperfect, and if the MPC plan and act with inaccurate information they will set the wrong type of interest rate response.

5) **Conflicting Data.**

Conflicting data makes it more difficult for the MPC to decide on the interest rate response. Some data could indicate that inflation is rising so interest rates must rise whilst other data indicates that inflation is falling so interest rates must fall.

6) **Models.**

Economists do not agree on the ‘correct’ model of the economy (for example Keynesian models vs. Classical models). MPC members may not agree on models, some may argue that interest rates must rise whilst others may argue that interest rates must fall.
### Monetary Policy Summary

**Definition**
Monetary policy is the manipulation of monetary variables (interest rate and money supply) by the MPC to influence AD and inflation.

### Diagram
Loose Monetary Policy:

![Diagram of AD and LRAS](image)

### Analysis - Transmission Mechanisms
Loose monetary policy; i.r. ↓, AD ↑ & there is demand-pull inflation because:
- **Consumption.** A ↓ i.r. means the cost of borrowing ↓ so consumers take out more loans, C ↑ & AD ↑. Also, consumers ↓ savings, there are less leakages, more money flows around the economy, C ↑, I ↑ & AD ↑.
- **Investment.** A ↓ i.r. means the cost of borrowing ↓ so firms take out more loans, I ↑, there are more injections into the economy & AD ↑.
- **Exchange Rate.** A ↓ i.r. in the UK means foreigners save less in UK banks so demand for the £ ↓, the £ depreciates, UK X are cheaper so X ↑, M into the UK are dearer so M ↓ & AD ↑.
- **Housing Market.** A ↓ i.r. means mortgages are cheaper, demand for houses ↑, house prices ↑, a wealth effect occurs, homeowners feel wealthier, homeowners take out more loans, C ↑ & AD ↑.

### Evaluation
- **Magnitude.** A small ↓ in i.r. will only ↑ C & ↑ AD a little bit so inflation does not ↑ much.
- **Elasticity.** Monetary policy does not ↑ inflation if LRAS is elastic. An elastic LRAS means that, as AD ↑, real GDP ↑ but there is no demand-pull inflation because the economy has spare capacity.
- **Time Lag.** An i.r. change takes up to 2 years to exert its full effect. The multiplier also takes up to 2 years to exert its full effect.
- **Long-Run.** A ↓ i.r. means I ↑ so AD ↑ and there is demand-pull inflation in the short-run but in the long-run, more efficient machines are made, the economy becomes more efficient, LRAS ↑ & there is cost-push deflation.
Fiscal Policy

Fiscal policy is the manipulation of government expenditure (G) and taxation (T) by the government to influence macroeconomic variables.

Government expenditure is total expenditure by the government on goods and services like merit goods (education and healthcare) and public goods (roads, the police, national defence and the law). Taxes are either direct or indirect. Direct taxes are taxes on consumers’ income (income tax) or firms’ profits (corporation tax). Indirect taxes are taxes on expenditure (VAT).

The fiscal budget is tax revenue minus government expenditure \((T - G)\). A balanced budget means \(T = G\) so \((T - G) = 0\). A budget surplus means \(T > G\) so \((T - G) > 0\). A budget deficit means \(G > T\) so \((T - G) < 0\).

**Public Sector Net Cash Requirement**

Public sector net cash requirement (PSNCR) is government borrowing over a period of time, the difference between government expenditure and tax revenue. A budget deficit means \(G > T\) so the government must borrow funds to spend and the government goes into debt and the PSNCR is positive. A budget surplus means \(G < T\) so the government is receiving more tax revenue than it is spending and the PSNCR is negative.

**National Debt**

National debt is the sum of all the past unpaid government borrowing. Problems with a large national debt:

- A large national debt means the government may increase taxes in the future to repay the debt, so there is an opportunity cost to future generations who must suffer higher taxes.
- Maybe existing consumers decrease their own consumption to save and pay for an anticipated future tax increase, so AD falls and real GDP falls.
- A large debt may be unsustainable because it means a higher risk of default, lower credit worthiness, higher interest rates and the debt spirals out of control. The government could become riddled with financial troubles. But, if the government borrowed to develop the infrastructure and education then LRAS shifts right, real GDP rises, the government’s tax revenue rises and it can repay its debt in the future.
Expansionary and Contractionary Fiscal Policy

An expansionary fiscal policy means $G > T$ so AD rises. Multiplier effects make AD rise further. AD shifts right so the price level rises and real GDP rises.

**Expansionary Fiscal Policy**

A contractionary fiscal policy means $T > G$ so AD falls. Multiplier effects make AD fall further. AD shifts left so the price level falls and real GDP falls.

**Contractionary Fiscal Policy**
Fiscal Policy influences AD through:

1) Government Spending.

A rise in government spending means there is more spending in the economy so AD increases.

2) Income Tax.

A fall in income tax means consumers’ real disposable income rises so consumption rises and AD rises.

3) Corporation Tax.

A fall in corporation tax means firms’ after-tax profits increase, so the profitability of investment rises, investment rises and AD rises.

The Effectiveness of Fiscal Policy

Fiscal policy’s effectiveness depends on many factors:

1) Magnitude of Change in G and/or T.

Fiscal policy is more (less) effective in raising AD the larger (smaller) the rise in G and/or the larger (smaller) the fall in T. A large rise in G and/or a large fall in T means AD rises a lot and shifts rightwards, the price level rises, real GDP rises and employment rises.

2) Elasticity of LRAS.

Fiscal policy is more (less) effective in raising AD, real GDP and employment the more elastic (inelastic) is LRAS.

If LRAS is elastic there is a lot of spare capacity, an expansionary fiscal policy boosts AD, real GDP rises a lot, employment rises a lot but the price level rises a little bit (maybe stays the same).

Fiscal Policy and An Elastic LRAS
If LRAS is inelastic the economy is near full capacity, an expansionary fiscal policy makes AD, real GDP and employment rise a little bit (maybe stays the same) but the price level rises a lot.

\[ \text{Fiscal Policy and An Inelastic LRAS} \]

3) Short-Run vs. Long-Run.

An expansionary fiscal policy increases AD, real GDP and the price level in the short-run and may increase LRAS in the long-run so the productive capacity of the economy rises, real GDP rises and the price level falls. More government spending on the infrastructure makes the economy more efficient so LRAS shifts right in the long-run. Also, as AD rises, firms’ profits rise, investment is more profitable, investment rises, more efficient machinery is developed so LRAS shifts right.

\[ \text{Short-Run vs. Long-Run} \]
4) Time Lags.

Fiscal policy takes time to come into effect due to time lags. Fiscal policy must first be announced before G and T change. Also, it takes time for the multiplier to exert its full effect.

5) Unsustainable Debt.

The government cannot keep running a fiscal deficit because the government will build up debt that could become unsustainable. A level of debt too high means creditors will begin to fear that the government will default on its debt so creditors will charge the government a higher rate of interest. A higher interest rate means the government’s debt rises, the risk of default rises, credit worthiness falls, creditors charge the government higher interest rates and the spiral continues. Eventually the government must decrease government spending and increase taxation to repay the debt. AD will fall, real GDP falls and the economy falls into a recession.

**Crowding Out**

An expansionary fiscal policy may have no effect on real GDP if government spending crowds-out private investment. An increase in government spending will increase money and credit demand, increase the interest rate and decrease investment. AD shifts right because government spending rises but AD shifts left because investment falls. If there is complete 100% crowding out then the increase in government spending is cancelled out by the decrease in investment so AD does not move and real GDP does not change.
Crowding In
An expansionary fiscal policy may cause crowding-in, that is, it may cause private investment to increase. An increase in government spending will increase income and consumption so firms will increase investment to sell more and make more profit. Maybe an increase in government spending on the infrastructure decreases firms' costs and incentivizes firms to increase investment to produce more to make more profit. AD shifts right because government spending rises and AD shifts right again because investment rises.
## Fiscal Policy Summary

<table>
<thead>
<tr>
<th>Definition</th>
<th>Fiscal policy is the manipulation of government expenditure (G) and taxation (T) by the government to influence macroeconomic variables.</th>
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</thead>
<tbody>
<tr>
<td><strong>Diagram</strong></td>
<td>Expansionary Fiscal Policy</td>
</tr>
</tbody>
</table>
| **Analysis - Transmission Mechanisms** | An expansionary fiscal policy ↑ AD because:  
- **Government Spending.** An ↑ G means there are more injections into the circular flow of income, more money flowing around the economy, more spending & AD ↑.  
- **Income Tax.** A ↓ in income tax means consumers’ disposable income ↑, C ↑ & AD ↑.  
- **Corporation Tax.** A ↓ in corporation tax means firms’ after tax profits ↑, firms ↑ I & AD ↑. Also, as I ↑, new & more efficient technology is developed in the long-run so LRAS ↑ in the future. |
| **Evaluation** |  
- **Magnitude.** A small ↑ in G will not ↑ AD much. A small ↓ in T will not ↑ incomes much so C does not ↑ much & AD does not ↑ much.  
- **Elasticity.** Fiscal policy does not ↑ real GDP if LRAS is inelastic. An inelastic LRAS means that, as AD ↑, there is demand-pull inflation but real GDP does not ↑ because the economy is at full capacity.  
- **Time Lag.** A ↓ in T takes time to have an effect because tax changes must first be announced in The Budget before they are executed.  
- **Debt.** A ↑ G may mean the government have to take out more loans to fund its spending, the government’s debt may become unsustainable, the government’s credit rating ↓ & the government is charged ↑ i.r. on its loans so taxes must ↑ in the long-run.  
- **Ricardian Equivalence Hypothesis.** A ↑ in G may have no effect on real GDP because consumers will expect a future tax hike to repay the current ↑ in G so consumers ↓ C to ↑ savings &, if the ↑ in G equals the ↓ in C, AD & real GDP do not change.  
- **Opportunity Cost.** An ↑ in G on education means the government may have to ↓ spending on healthcare. |
Supply-Side Policies

Supply-side policies are designed to increase productivity/efficiency and shift LRAS right. The productive capacity of the economy increases because more can be produced. As LRAS shifts right, the price level falls and real GDP rises.

The government could make the labour market more flexible to increase the quantity and quality of labour, encourage firms to invest, develop the infrastructure and cut red tape. Many supply-side policies can be used:

1) Education and Training.

Education and training improves workers’ human capital. Labour becomes more skilled and efficient, the marginal productivity of labour rises so workers produce more and LRAS shifts right. Also, better trained labour means less structural unemployment as workers can adapt more easily to different jobs, and more employment means more can be produced.

2) Reduce Income Tax.

A decrease in income tax is likely to increase labour supply, so the economy can produce more and LRAS shifts right. A lower tax acts through the substitution effect to incentivize workers to work more because they can earn more. A lower tax acts through the income effect to disincentivize workers from working because they can earn the same income as before by working less. As long as the substitution effect is greater than the income effect, a fall in taxes will increase labour supply. Although, if the income effect is greater than the substitution effect, a fall in income tax means a decrease in labour supply, the economy produces less and LRAS shifts left.
3) Reduce Unemployment Benefits.

Reduce unemployment benefits to encourage the unemployed to work so LRAS shifts right. Although, the unemployed still may not work because wages after taxes may be too low. The government must also decrease taxes at the same time to encourage the unemployed to work.

4) Remove Minimum Wages.

Remove minimum wages, wages fall, firms demand more labour so employment rises, more can be produced and LRAS shifts right.

5) Reduce Trade Union Power.

Remove (or reduce the power of) trade unions, wages fall so firms demand more labour, employment rises, more can be produced and LRAS shifts right. Also, less strikes occur so workers take less days off work.

6) Corporation Tax.

If the government reduce corporation tax, firms’ after-tax profits rise, investment is incentivized because firms keep more of their profits, investment rises, better technology and more efficient machinery is developed, so more output can be produced and LRAS shifts right.

7) Infrastructure.

An increase in government spending on the infrastructure means better roads, railways, ports, utility networks and telecommunications, the economy becomes more efficient and firms can produce more so LRAS shifts right.

8) Research and Development (R&D).

R&D grants could be used to encourage firms to invest and innovate to develop new and more efficient technology so LRAS shifts right.

9) Red Tape.

Red tape could be reduced (for example less laws and form-filling), firms’ costs fall so firms can produce more and LRAS shifts right. Also, more firms can enter the market so competition increases, firms must become more efficient and reduce costs to compete with rivals.

10) Privatization.

Privatization is the sale of state-owned assets or enterprises to the private sector. A private firm aims to profit maximize so it is likely to be efficient and minimize costs so LRAS shifts right.
Effectiveness of Supply-Side Policies

The effectiveness of supply-side policies depends on many factors:

1) Magnitude.

A small cut in income tax or a small increase in government spending on the infrastructure will not increase efficiency that much so LRAS only shifts a little bit.

2) Time Lags.

Most supply-side policies exert their effect in the long-run. It takes time to educate and train workers, build roads and telecommunication networks and to develop new and more efficient technology.

3) Short-Run vs. Long-Run.

In the short-run AD rises because investment is higher, so AD shifts right, spare capacity runs out, the price level rises and real GDP rises. So supply-side policies have inflationary effects in the short-run. Although in the long-run, the price level falls because LRAS shifts right.

4) Opportunity Cost.

Supply-side policies may be very expensive so there is an opportunity cost involved. For example, an increase in government spending on the infrastructure may mean less spending on education or healthcare.
### Supply-Side Policy Summary

**Definition**
Supply-side policies are designed to increase productivity/efficiency and shift LRAS right.

<table>
<thead>
<tr>
<th>Diagram</th>
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<tr>
<td><img src="image.png" alt="Diagram" /></td>
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<table>
<thead>
<tr>
<th>Analysis - Transmission Mechanisms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply-side policies ↑ LRAS because:</td>
</tr>
<tr>
<td>- <strong>Education &amp; Training.</strong> ↑ education spending, human capital ↑, workers become more efficient so LRAS ↑.</td>
</tr>
<tr>
<td>- <strong>Unemployment Benefits.</strong> A ↓ in benefits means the unemployed are incentivized to work because they earn less by being unemployed, more people work, the productive capacity of the economy ↑ &amp; LRAS ↑.</td>
</tr>
<tr>
<td>- <strong>Income Tax.</strong> A ↓ income tax incentivizes workers to work longer &amp; harder because they can earn more money, the productive capacity of the economy ↑ &amp; LRAS ↑.</td>
</tr>
<tr>
<td>- <strong>Trade Unions.</strong> ↓ trade union powers so that wages ↓, firms’ costs ↓ &amp; LRAS ↑.</td>
</tr>
<tr>
<td>- <strong>Corporation Tax.</strong> A ↓ in corporation tax means firms’ after-tax profits ↑, firms’ I ↑, firms develop new &amp; more efficient machinery, firms become more efficient &amp; LRAS ↑.</td>
</tr>
<tr>
<td>- <strong>Subsidies.</strong> Subsidize firms to I, firms ↑ I, firms develop new &amp; more efficient machinery, firms become more efficient &amp; LRAS ↑.</td>
</tr>
<tr>
<td>- <strong>Red Tape.</strong> ↓ red tape to ↓ firms’ costs &amp; ↑ LRAS.</td>
</tr>
<tr>
<td>- <strong>Infrastructure.</strong> Develop the infrastructure to make roads &amp; utilities better, make firms more efficient &amp; ↑LRAS.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Evaluation</th>
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</thead>
<tbody>
<tr>
<td>- <strong>Magnitude.</strong> A small ↑ in education spending will not ↑ human capital &amp; efficiency that much so LRAS will not shift right that much.</td>
</tr>
<tr>
<td>- <strong>Time Lag.</strong> Supply-side policies take time to come into effect because it takes time to build a school or to educate/train.</td>
</tr>
<tr>
<td>- <strong>Long-Run.</strong> An ↑ in education spending means AD ↑ &amp; there is demand-pull inflation in the short-run but in the long-run, workers are more efficient, LRAS ↑ &amp; there is cost-push deflation.</td>
</tr>
<tr>
<td>- <strong>Opportunity Cost.</strong> Supply-side policies may be dear so there is an opportunity cost involved. For example, an ↑ in G on the infrastructure may mean a ↓ in G on education or healthcare.</td>
</tr>
</tbody>
</table>
Macro Policies: Targeting Objectives

Below is a summary of macroeconomic policies (monetary, fiscal and supply-side policies) that can be used to target various objectives such as high economic growth or low unemployment.

### Macroeconomic policies to \( \uparrow \) economic growth

<table>
<thead>
<tr>
<th>Explanation</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loose monetary policy, ( \downarrow ) i.r., cost of borrowing ( \downarrow ), ( \uparrow ) C, ( \uparrow ) I, ( \uparrow ) AD &amp; ( \uparrow ) real GDP.</td>
<td>But time lag, ( \Delta ) i.r. takes 2 years to effect AD. Also, LRAS must be elastic otherwise just demand-pull inflation &amp; no growth.</td>
</tr>
<tr>
<td>Expansionary fiscal policy, ( \uparrow ) G, ( \downarrow ) T, more injections, more money in the economy, AD ( \uparrow ) &amp; real GDP ( \uparrow ).</td>
<td>But magnitude of ( \uparrow ) in G must be large enough.</td>
</tr>
<tr>
<td>Supply-side policies, ( \downarrow ) corporation tax, firms’ profits ( \uparrow ), firms ( \uparrow ) I, R&amp;D, new machinery, more efficient, LRAS ( \uparrow ) &amp; real GDP ( \uparrow ).</td>
<td>But time lag, takes time to build machinery.</td>
</tr>
</tbody>
</table>

### Macroeconomic policies to \( \downarrow \) unemployment

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Supply-side policies, ( \downarrow ) income tax, incentivize unemployed to work &amp; unemployment ( \downarrow ).</td>
<td>But time lag, tax changes must first be announced in The Budget before they are executed.</td>
</tr>
<tr>
<td>Expansionary fiscal policy, ( \uparrow ) G, ( \downarrow ) T, more injections, more money in the economy, AD ( \uparrow ), more jobs created &amp; unemployment ( \downarrow ).</td>
<td>But magnitude of ( \uparrow ) in G must be large enough.</td>
</tr>
<tr>
<td>Loose monetary policy, ( \downarrow ) i.r., cost of borrowing ( \downarrow ), ( \uparrow ) C, ( \uparrow ) I, ( \uparrow ) AD, firms produce more, firms hire more workers &amp; unemployment ( \downarrow ).</td>
<td>But time lag, ( \Delta ) i.r. takes 2 years to effect AD. Also, LRAS must be elastic otherwise just demand-pull inflation &amp; no ( \downarrow ) in unemployment.</td>
</tr>
</tbody>
</table>

### Macroeconomic policies to \( \downarrow \) inflation

<table>
<thead>
<tr>
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</tr>
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<tbody>
<tr>
<td>Tight monetary policy, ( \uparrow ) i.r., cost of borrowing ( \uparrow ), ( \downarrow ) C, ( \downarrow ) I, ( \downarrow ) AD &amp; demand-pull deflation.</td>
<td>But time lag, ( \Delta ) i.r. takes 2 years to effect AD. Also, LRAS must be inelastic otherwise just fall in real GDP and no deflation.</td>
</tr>
<tr>
<td>Contractionary fiscal policy, ( \downarrow ) G, ( \uparrow ) T, more leakages, ( \downarrow ) AD &amp; demand-pull deflation.</td>
<td>But time lag, tax changes must first be announced in The Budget before they are executed.</td>
</tr>
<tr>
<td>Supply-side policies, ( \uparrow ) education, human capital ( \uparrow ), workers are more efficient, LRAS ( \uparrow ) &amp; cost-push deflation.</td>
<td>But time lag, takes time to build schools and to train/educate.</td>
</tr>
</tbody>
</table>
### Macroeconomic policies to ↓ current account deficit

<table>
<thead>
<tr>
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</tr>
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<tbody>
<tr>
<td>Loose monetary policy, ↓ i.r., foreigners save less in UK banks, demand for £ ↓, £ depreciates, X cheaper so X ↑, M dearer so M ↓ &amp; current account moves to surplus.</td>
<td>But demand for UK X may be price inelastic so as £ depreciates, demand for X ↑ less proportionally and X revenues actually ↓.</td>
</tr>
<tr>
<td>Contractionary fiscal policy, ↓ G, ↑ T, more leakages, ↓ AD, demand-pull deflation, UK goods are cheaper so X ↑ &amp; M ↓ so current account moves to surplus.</td>
<td>But magnitude of ↓ in G must be large enough.</td>
</tr>
<tr>
<td>Supply-side policies, ↑ education, human capital ↑, workers are more efficient, LRAS ↑, cost-push deflation, UK goods are cheaper so X ↑ &amp; M ↓ so current account moves to surplus.</td>
<td>But time lag, takes time to build schools and to train/educate.</td>
</tr>
</tbody>
</table>

### Macroeconomic policies to ↓ income inequality

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<tbody>
<tr>
<td>Supply-side policies, ↓ income tax, make tax system more progressive, rich pay an even higher proportion of their income in tax than the poor, government redistribute income from rich to poor &amp; income inequality ↓.</td>
<td>But time lag, tax changes must first be announced in The Budget before they are executed. Also, rich may avoid higher taxes with loopholes.</td>
</tr>
<tr>
<td>Expansionary fiscal policy, ↑ G, ↓ T, more injections, more money in the economy, AD ↑, more income for rich and poor, multiplier effect means C ↑ &amp; AD ↑ again, higher incomes trickle down to the poor so income inequality ↓.</td>
<td>But magnitude of ↑ in G must be large enough.</td>
</tr>
<tr>
<td>Loose monetary policy, ↓ i.r., ↓ cost of borrowing, borrowers likely to be poor so poor pay less interest on loans &amp; poor’s disposable income ↑, savers likely to be rich so rich receive less interest on savings &amp; rich’s disposable income ↓ so income inequality ↓.</td>
<td>But C ↑ &amp; I ↑, AD ↑, demand-pull inflation, food prices ↑, poor’s real incomes may ↓ a lot so income inequality ↑.</td>
</tr>
</tbody>
</table>

### Macroeconomic policies to ↓ environmental damage

<table>
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<tbody>
<tr>
<td>Supply-side policies, ↓ corporation tax, firms’ profits ↑, firms ↑, I ↑, more efficient &amp; green technology developed &amp; firms cause less environmental damage for example, less toxic waste dumped into rivers.</td>
<td>But time lag, takes time to build green technology. Also, firms may use extra profits to ↑ pay for managers instead.</td>
</tr>
<tr>
<td>Contractionary fiscal policy, ↓ G, ↑ T, more leakages, ↓ AD, less cars driven so air pollution ↓ &amp; less resources extracted from land so geosphere damage ↓.</td>
<td>But magnitude of ↓ in G must be large enough. Also, bad for consumers because income ↓ so consumption ↓.</td>
</tr>
<tr>
<td>Tight monetary policy, ↑ i.r., cost of borrowing ↑, ↓ C, ↓ I, ↓ AD, firms produce less &amp; dump less toxic waste into rivers so biosphere is protected.</td>
<td>But time lag, Δ i.r. takes 2 years to have an effect.</td>
</tr>
</tbody>
</table>
Macroeconomic Definitions

Actual GDP Growth. Actual GDP growth is the growth in real GDP that currently occurs.

Aggregate Demand. Aggregate demand (AD) is the total amount of expenditure on goods and services in an economy.

\[ AD = C + I + G + (X - M) \]

Aggregate Supply. Aggregate supply is the total amount of supply of goods and services in an economy.

Balance of Payments. The balance of payments (BoP) is a record of all external financial transactions between one economy and the rest of the world.

Boom. A boom occurs if there is a major and rapid increase in real GDP.

Business Cycles. Business cycles are the pattern of booms and recessions in an economy over a period of time. Business cycles are the fluctuation of real GDP around the long-term trend growth rate.

Circular Flow of Income. A model of the economy that shows how households sell their labour to firms for an income and then use this income to buy goods and services produced by firms.

Claimant Count. A measure of unemployment, anyone claiming unemployment benefit is defined as unemployed by the claimant count.

Consumer Price Index (CPI). The CPI is a measure of inflation. The CPI is a price index of a weighted basket of goods and services that the average household buys.

Consumption. Consumption is total consumer expenditure on durables, non-durables and services.

Contractionary Fiscal Policy. A contractionary fiscal policy means \( T > G \) so AD falls. Multiplier effects make AD fall further. AD shifts left so inflation falls and real GDP falls.

Cost-Push Inflation. Cost-push inflation occurs when LRAS shifts left because resource prices rise or wages rise, firms’ costs rise and their prices rise.

Credit Crunch. A situation where banks and other financial institutions decrease their lending or stop lending altogether.

Crowding In. An increase in government spending causes an increase in private investment (maybe the government invests in the infrastructure which encourages private firms to invest).

Crowding Out. An increase in government spending causes a decrease in private investment (maybe the government uses resources that private firms would have used).
**Current Account.** A record of an economy’s international trade in goods, services, investment income and transfers.

**Deflation.** Deflation is a fall in the average price level over a given time period.

**Demand-Deficient Unemployment.** AD is insufficient for all workers to be employed.

**Demand-Pull Inflation.** Demand-pull inflation occurs when AD rises, spare capacity falls, resources begin to run out so firms’ costs rise and prices rise.

**Direct Tax.** Taxes on consumers’ income (income tax) or firms’ profits (corporation tax).

**Economic Growth.** A percentage change in real GDP over a given time period.

**Employment.** Employment is the amount of workers with a job.

**Exports.** Exports are domestic goods and services sold to foreign agents.

**Export-Led Growth.** Export-led growth means an economy’s AD and real GDP is rising mainly because its exports are rising rapidly, this could be because the government are promoting exports.

**Exchange Rate.** An exchange rate (XR) is the price of one currency in terms of another.

**Expansionary Fiscal Policy.** An expansionary fiscal policy means $G > T$ so AD rises. Multiplier effects make AD rise further. AD shifts right so inflation rises and real GDP rises.

**Fiscal Policy.** Fiscal policy is the manipulation of government expenditure (G) and taxation (T) by the government to influence macroeconomic variables.

**Frictional Unemployment.** Frictional unemployment occurs when workers are moving between jobs. Workers are unemployed but searching for a new job.

**Full Employment.** An economy is at full employment if all resources are fully employed, no more can be produced.

**Government Expenditure.** Government expenditure is total expenditure by the government on goods and services.

**Gross Domestic Product.** Gross Domestic Product (GDP) measures the monetary value of output produced by an economy during a given time period.

**Human Development Index (HDI).** The HDI is a multidimensional measure of the economic development of an economy. The HDI measures a mix of income, health and education.

**Hyperinflation.** A period of rapid inflation.

**ILO Unemployment.** A measure of unemployment. The ONS carry out the Labour Force Survey. A survey of 60,000 working age people are interviewed four times per year by phone. A person is defined as unemployed if they have been looking for work in the last four weeks and if they are ready to work within the next two weeks.
**Imports.** Imports are foreign goods and services bought by domestic agents.

**Indirect Tax.** Taxes on expenditure (Ad valorem or specific taxes).

**Inflation.** Inflation is a rise in the average price level over a given time period.

**Injection.** An injection into the circular flow is money coming into the economy (investment, government spending and exports).

**Interest Elasticity of Investment.** The responsiveness of investment to a change in interest rates.

**Interest Rate.** The interest rate is the additional money a saver receives for saving and the additional money a borrower pays for taking out a loan.

**Investment.** Investment is total investment expenditure by firms on buildings, machinery and the change in inventories.

**Leakage.** A leakage from the circular flow is money leaving the economy (saving, taxes and imports).

** Loose Monetary Policy.** A loose monetary policy causes interest rates to fall and AD to rise. Multiplier effects make AD rise further. Inflation rises and real GDP rises.

**Long-Term Trend Growth Rate.** The long-term trend growth rate is potential real GDP growth, the GDP growth that will occur if all resources are fully and efficiently employed. This increases if technology and/or knowledge improve.

**Macroeconomic Objectives.** The government’s main macroeconomic objectives are 1) High economic growth, 2) Low unemployment, 3) Low and stable inflation and 4) A current account surplus or low deficit.

**Marginal Propensity to Consume.** Measures how much each additional dollar of income is used for consumption. If the MPC is 0.9: As income rises by £1, consumption rises by £0.90.

**Marginal Propensity to Save.** Measures how much each additional dollar of income is saved. If the MPS is 0.1: As income rises by £1, savings rise by £0.10.

**Menu Costs.** As prices change, firms must change their prices and reprint menus, catalogues, websites and shop signs, this is costly for firms.

**Monetary Policy.** Monetary policy is the manipulation of monetary variables (interest rate and money supply) by the MPC to influence AD and inflation.

**Multiplier.** Any AD fluctuations are amplified by the multiplier through knock-on AD effects. An initial change in AD has a larger final impact on real GDP due to the multiplier.

\[
\text{Multiplier} = \frac{1}{1 - MPC}
\]

**Negative Output Gap.** Occurs when real GDP is below the trend growth rate.
Net Exports. Net exports are exports minus imports (X-M).

Output Gap. The difference between actual or real GDP and the trend growth rate.

Positive Output Gap. Occurs when real GDP is above the trend growth rate.

Productive Capacity. Productive capacity refers to how much output an economy can produce.

Productivity. Productivity is output per worker.

Public Sector Net Cash Requirement. Public sector net cash requirement (PSNCR) is government borrowing over a period of time, the difference between government expenditure and tax revenue.

Quantitative Easing. Quantitative easing is the control of the money supply by the MPC to influence AD and inflation.

Real GDP. Real GDP is GDP adjusted for inflation.

Real Wage Unemployment. Real wage unemployment occurs when real wages are above the market-clearing level, there is excess labour supply, more people are willing and able to work at the going market wage than firms will employ.

Recession. A recession occurs if real GDP falls for two consecutive quarters.

Seasonal Unemployment. Seasonal unemployment occurs when workers are unemployed during the off-season.

Search Costs. As prices change, consumers incur search costs because they must keep up to date with all the new prices that firms charge.

Spare Capacity. An economy has spare capacity if some resources are unemployed. More resources can be employed and more can be produced.

Stagflation. A period of rising inflation and rising unemployment.

Structural Unemployment. Structural unemployment exists when there is a mismatch between labour’s skills and the skills required by employers.

Supply-Side Policies. Supply-side policies are designed to increase productivity and shift LRAS right.

Sustainable Growth. Economic growth is sustainable if the needs of future generations are not compromised by current consumption/production.

Tight Monetary Policy. A tight monetary policy causes interest rates to rise and AD to fall. Multiplier effects make AD fall further. Inflation falls and real GDP falls.

Unemployment. Unemployment is the amount of people willing and able to work at the market wage but without a job.