



Business Economics Notes - Lecture Notes, Lectures 1 - 10

Business Economics (University of Sheffield)

Business economics (101)

So what is economics?

There is no set definition however it revolves around the basis of as a society we encounter :-

Utility – this is what we want

Scarcity – this is what we have

Choice - this is what we can choose

Regional agents in economics are constrained by available resources:

- Consumers – maximising utility subject to budget constraints
- Firms – maximising profit subject to operational constraints
- Governments – maximising welfare subject to resource constraints

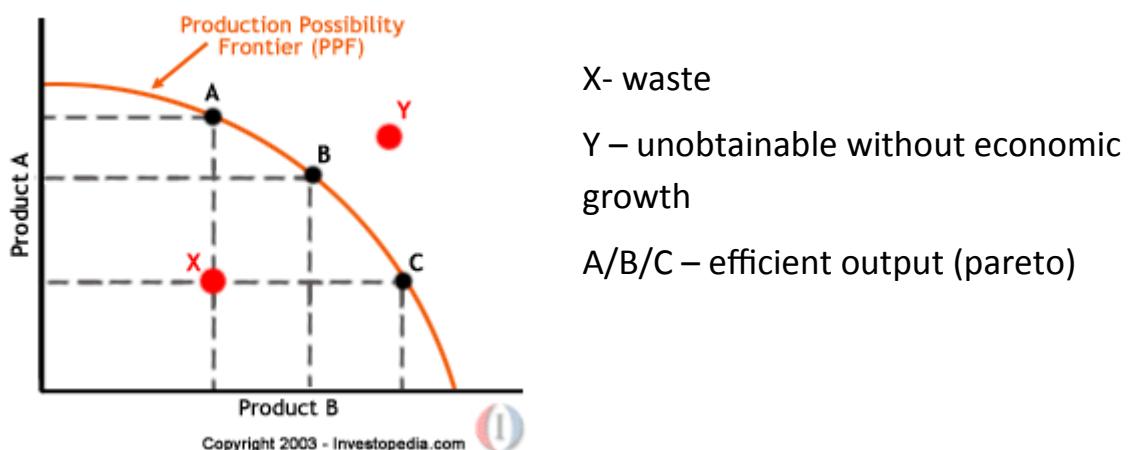
Each of these sectors will have to make choices at the margin based on these constraints. In addition they will probably end up trading one thing for another:

- Consumers – more utility now less later
- Firms – more revenue means more costs
- Governments – more incomes means less wealth in society

These decisions will be made with reference to opportunity cost “value destroying activity” which can show accounting profit.

Production possibility curve (PPC)

This illustrates fundamental trade-offs in economics and looks like this:



The opportunity cost is NOT constant. If you were to want more of one product, you would have to reduce some of the other product. Where the economics depends on utility.

Regional agents must respond to incentives:

- If price is cut, there will be an increased quantity demanded
- A more profitable industry will attract entry
- An apathetic electorate will increase consumption

However this means there are consequences:

- Although bonuses mean increased efforts, it is given to areas not needed
- A price cut will capture the market share but how will rivals react
- If tax is raised the government revenue declines

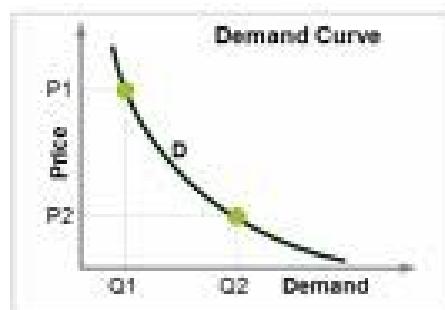
Constant principles are applied to constant changing business environments
sooo...

- Make assumptions
- Derive theorems with logic and reason
- Test theorems against empirical evidence
- Search for general principles that are versatile

Demand and supply

Demand plays a central role in determining prices and output, but also inflation and unemployment. It is made with references to what you will give up. It is not a measure of needs, wants or desires, it is a quantity of a good or service for which agents are willing to pay. There are numerous determinants of demand of which desire is just one.

Inverse demand curve illustrates the relationship between price and quantity. On this you will find the price on the y-axis and quantity on the x-axis.



Here we can see the inverse relationship, where as price rises, quantity falls. And when price falls, quantity rises. The movement is along the demand curve, unless there was a shift.

The curve slopes downwards due to the income effectst, substitute effects and diminishing marginal utility:

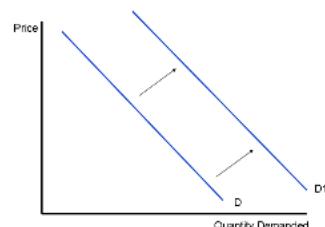
Income – as price rises, it reduces real income and so consumers may not be able to afford to product.

Substitute – as price rises, it causes the relative price of a substitute good to fall and so consumers would switch to the substitute.

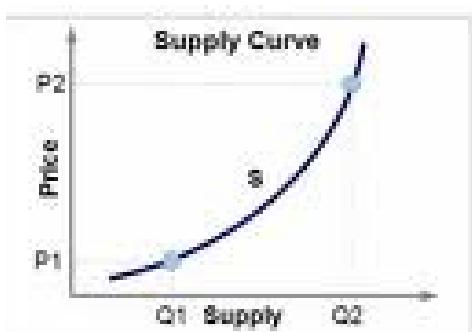
Utility – for example the 1st potato adds the most to utility. However each subsequent potato adds less than the one before.

If a determinant of demand changes it shifts the demand curve due to:

- Tastes
- Price of substitute or complement
- Income
- Expectations of future prices



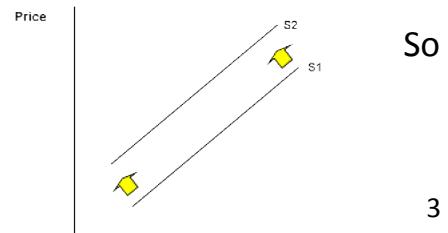
Supply is the activity of the production. Its central role is determining prices and output but also inflation and unemployment. It is a measure of willingness to produce which compiles the factors of production to produce goods and services. The quantity supplied to the amount of goods and services is that firms are willing to produce.



Here we can see a positive relationship. As price increases, so does supply. As price decreases so does supply. Again the movement is along the curve unless there was a shift.

The curve slopes upwards due to the rising costs of production because of ‘bottlenecks’. The firms direct resources to the most profitable good. More efficient firms are willing to enter at a lower price and so as prices increase more firms enter. The supply will rise to meet the demand.

Again the curve will shift if supply was to change. If increased, would shift right.

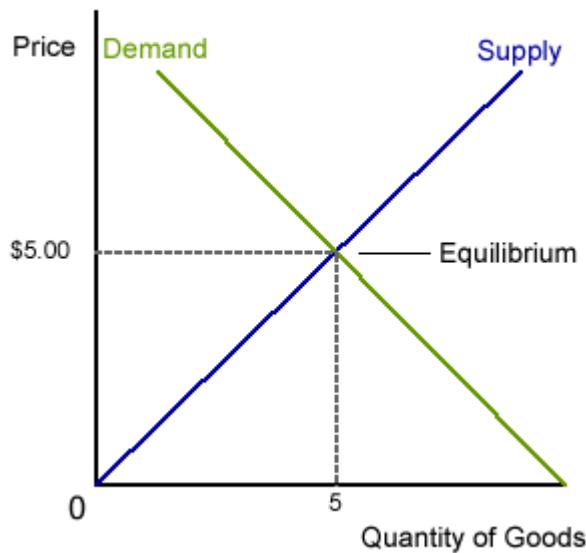


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If determinant of supply changes it will shift the supply curve:

- Raw input costs
- Technology
- Supply shocks
- Substitute product sees a fall in demand
- Expectations of future price

Graph A - Supply and Demand Curve



So when we provide both the supply curve and demand curve onto the same graph we are able to see the equilibrium point.

What are the implications of the model?

The graph shows that consumers are paying less than they expected to, and suppliers are willing to supply more than they expected to. This shows a win-win situation, meaning there is a perfect allocation of resources. It also shows no wastage and that utility has been maximised at the equilibrium point.

Additionally, the market has “cleared” themselves and produced this model, which was said by Smith in 1778 known as the “invisible hand”.

However, a more sophisticated model would allow price discrimination.

Elasticity

Classical economy predicts that a market economy will clear shortages and surpluses:

- Wide ranging implications
- Basis for ‘Laissez Faire@’ policy
- Embodies the best and worst of the economy
- Parsimonious, logical model with testable predictions and amazing wealth creating potential
- Descriptively unrealistic, dehumanising, overgeneralise dogma

Rational thinking at the margin implies elasticity play a major role:

- Restated by the 20th century ‘marginal revolution’ or ‘neoclassical’ movement, Marshall 1927
- Emphasis on rational thinking at the margin
- Analyse small incremental changes in output and prices
- The slope of demand and supply curves will be important
- Also implies a lot of calculus which we ignore

The elasticity of demand is responsiveness of the quantity demanded to a change in X

- If X is the price of good then its ‘own price elasticity of demand (PED)’
- Also interested in response of quantity demanded to income and price of other good
- Elasticity allows to calculate the extent to which demand responds to variables
- Critical information for firms and policy makers
- Price elasticity of demand is always negative

Elastic price elasticity of demand implies small change in price to cause large change in quantity demanded

- Perfectly elastic PED curve is horizontal
- Elastic PED curves flat
- Goods with close substitute are often price elastic
- EG petrol at Tesco

Inelastic price elasticity of demand implies that a large change in price cause a small change in quantity demand

- Perfectly inelastic PED curve is vertical
- Inelastic PED curves are steep
- Goods often with few substitute are often price inelastic
- EG market price of petrol

$$\text{Price Elasticity of Demand} = \frac{\% \Delta \text{in } QD}{\% \Delta \text{in Price}}$$

$$= \frac{(Q^2 - Q^1)/Q^1}{(P^2 - P^1)/P^1}$$

Elasticity will be different depending on whether price increases or decreases

Example

There was a price cut from £5 to £4

$$Q_1 = 8, Q_2 = 10, P_1 = 5, P_2 = 4$$

$$\text{PED} = \frac{(10-8)/8}{(4-5)/5}$$

$$= \frac{1/4}{-1/5}$$

$$= -1.25 \text{ 'PRICE ELASTIC'}$$

There was a price increase from £4 to £5

$$Q_1 = 10, Q_2 = 8, P_1 = 4, P_2 = 5$$

$$\text{PED} = \frac{(8-10)/10}{(5-4)/4}$$

$$= \frac{-1/5}{1/4}$$

$$= -0.8 \text{ 'PRICE INELASTIC'}$$

Mid-point method

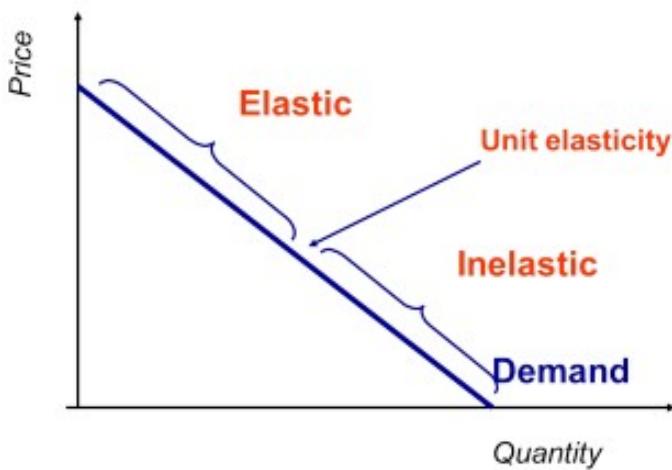
$$\text{PED} = \frac{(Q^2 - Q^1)/(Q^1 + Q^2)/2}{(P^2 - P^1)/(P^1 + P^2)/2}$$

$$= \frac{(10-8)/9}{(4-5)/4.5}$$

$$= -1 \text{ UNITARY ELASTIC}$$

Linear demand curve

The PED varies along a linear demand curve



Why?

$$\frac{\% \Delta Q}{\% \Delta P}$$

$$\frac{\Delta Q/Q}{\Delta P/P}$$

$$\frac{\Delta Q}{\Delta P} \times \frac{P}{Q}$$

As you increase quantity, the equation tends towards zero

You may use this method for very small changes to discover 'point' PED

When elasticity is at its limit, it's called perfect (0)

- Perfectly inelastic demand equals 0
- Perfectly elastic demand equals ∞

PED determined by ease at which consumers can substitute between goods

- More choice, more price sensitive
- More income, less price sensitive
- More time, more price sensitive
- Expense claims, perfectly inelastic

Price cuts are revenue increasing for elastic goods

- If elastic, a price cut would increase quantity demanded by a bigger proportion
- So the overall impact is revenue increasing
- For a price rise, there would be decreased revenue

However for inelastic goods it would be

- For a price cut, revenues would decrease
- And a price rise, revenues would increase

Why?

#1 to meet increased demand they must increase production. If marginal cost is increased then there would be reduced profit

#2 assume that there is no reaction to your price cut from rival firms

We will relax this assumption later when we look at imperfect competition

Sensitive is demand to changes in income:

- Income elastic can be positive or negative
- It would be positive for normal goods
- However its negative for inferior goods such as buses where if we got richer, we would never use them
- For luxury goods income is elastic, because they are sensitive to changes in income, so you'd cut them out first if income was reduced
- Necessities are income inelastic because you buy no matter what your income is

In order to assess this we would replace price (P) with income (Y)

But why is this information useful?

For firms..

It shows how you can cope with recession

The output strategy – how much to produce?

Marketing strategy – which market segment?

Portfolio strategy – diversify, be 'recession proof'

Table: The impact on revenue of price changes depends on PED

	Price Increase	Price Decrease
Elastic Demand	TR falls	TR increases
Inelastic Demand	TR increases	TR falls
Unitary Demand	TR Unchanged	TR Unchanged

1. Assuming no response from rival firms

Cross price elasticity

The effect of changes in price of other goods...

- Positive for substitute goods
- Negative for complement goods
- Close substitute will be cross price elastic
- Far substitute will be cross price inelastic

$$\begin{aligned}
 &= \frac{\% \Delta Q_x}{\% \Delta P_z} \\
 &= \frac{\Delta Q_x / Q_x}{\Delta P_z / P_z} \\
 &= \frac{\Delta Q_x}{\Delta P_z} * \frac{P_z}{Q_x}
 \end{aligned}$$

In the formula we would replace the price with good (Z)

Why may a firm want to lower the cross price elasticity? And how might they do this?

This could be because they want to become more immune to changes from an aggressive competitor so your quantity demanded will not reduce. This could be done by:

- Creating brand loyalty
- Customer lock in (sunk cost)
- Network externalities
- Sell unique experiences not just stuff
- Apple being a prime example

Elasticity of supply is responsiveness of quantity supplied to x

If X is the price of the good then it is “own price elasticity of supply”. But we may also be interested in the responsiveness of quantity supplied.

Elastic price elasticity of supply implies a small change in price will have a large effect in change of quantity supplied:

- Perfectly elastic PES curves are horizontal
- Perfectly inelastic PES curves are vertical
- Supply becomes more elastic over time

Market intervention

As previously discussed, the market tends to sort itself out. It could also be due to libertarian where the government has no control.

Through intervention you can change the equilibrium:

We would delegate this to government policy makers:

1. Do markets clear by themselves?
2. Do we have wider concerns than efficiency?

Markets can fail to provide optimal allocation of resources:

- Information problems. For example the used car market. Where the seller knows more than the buyer, thus creating uncertainties so the price lowers as the buyer will lower what they're willing to pay. Because of this good quality cars will leave the market, causing market failure.
- Externalities. For example pollution. Where a 3rd party is affected by the transaction between the buyer and seller.
- Natural monopolies eg railways. This is where the capital expenditure is so large, it would be only efficient to have 1 provider. And so there would be some competition between train operators.
- Anti competitive behaviour eg Barclay and LIBOR. Where the firm has the incentive to manipulate the market. So can profit from LIBOR if they know in advance what it will be.

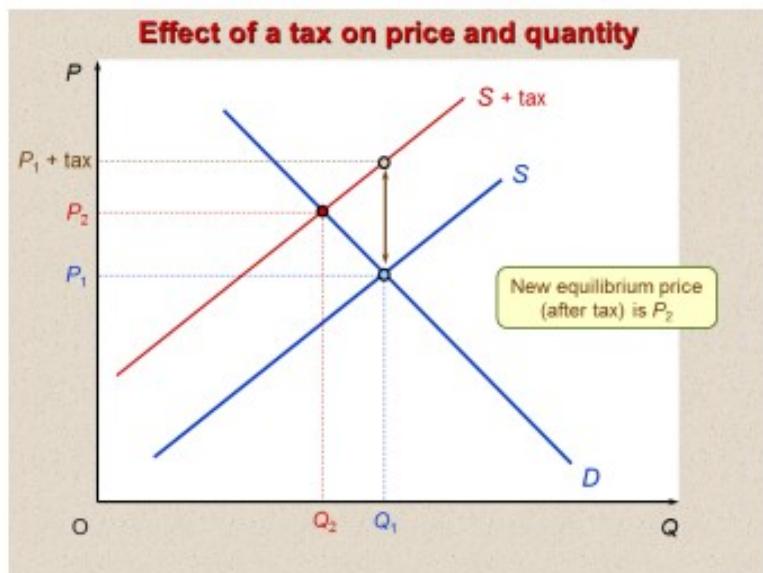
Policy makers may have wider concerns than efficiency:

- Efficiency vs equality trade off
- Guarantee provision of some goods to all citizens. This is the principle behind the NHS
- Some markets are illegal

Government may increase the price of goods through taxation:

- If the increase in government revenue, but up to a point
- It can reduce the supply of demerit good which carry negative externalities eg cigarettes
- Tax shifts the supply curve to the left

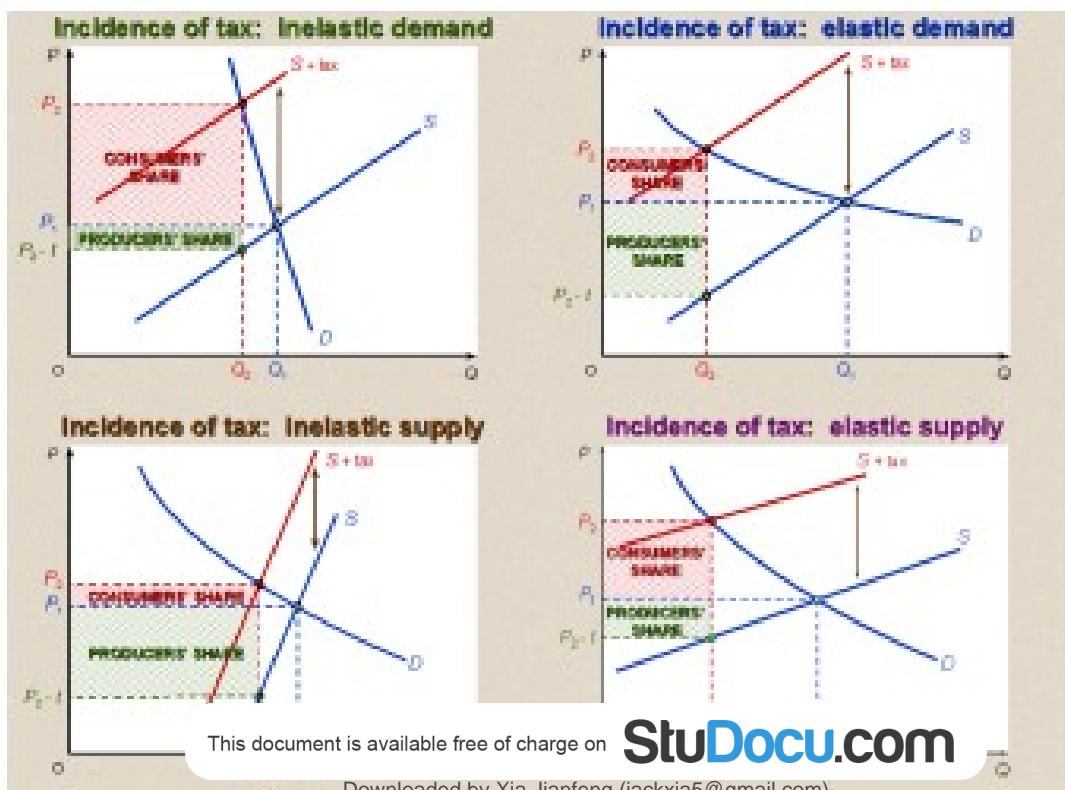
Effect of tax on price and quantity:



Burden of tax is shared between producers and consumers:

- The more inelastic the demand, the greater burden on consumers
- The more inelastic the supply, the greater burden on producers
- The more inelastic the supply and demand, the greater the tax revenue
- Quantity will not move much, but if were elastic the demand will decrease

Incidence graphs:



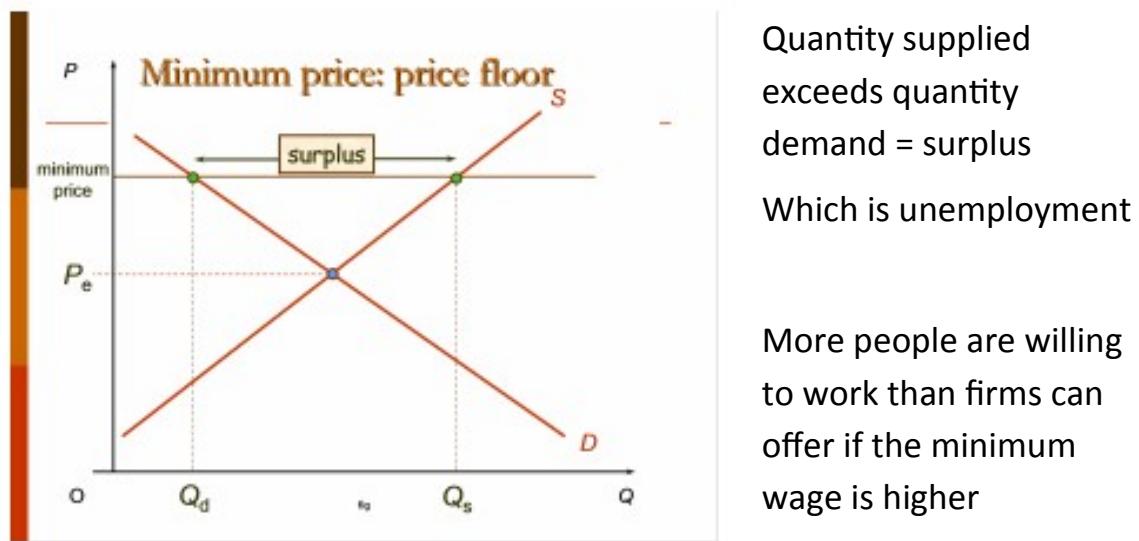
Consumer and producers share goes to the government. The empty triangle is deadweight loss.

Tax creates deadweight loss:

- Creates revenue but reduces equilibrium output
- Value of lost output is greater than increased tax revenue
- Deadweight loss triangle is the net loss to society from imposing tax
- But this may be offset if the government generates more wealth from tax revenue
- So a crucial question is how effective are the government spending revenue

The government can set a price floor below which no legal exchange can occur:

- In UK minimum wage for full time adults is at £6.19
- If the equilibrium wage is higher than £6.19 there will be no effect
- If the equilibrium wage is lower than £6.19 there will be unemployment



Minimum price must be justified with reference to adverse effects:

- If creates a surplus, may hurt the people trying to help
- Suppliers may relocate to territories with no minimum price
- Create an illegal hidden economy
- But still may be morally right thing to do

Other interventions can achieve similar ends:

- Impose a quota to raise price
- Tax buyers
- Provide direct aid to sellers
- No perfect solution



Government can set a price ceiling above which no legal exchange can occur.

For example would students like it if rent could be restricted to less than £50 a week.

Here we can see that quantity demanded exceeds quantity supplied, so is a shortage.

This would still distort the market:

- Create shortages or no effect
- Lottery allocation- first come first served basis
- May create an illegal “hidden economy”
- Still may be morally right thing to do

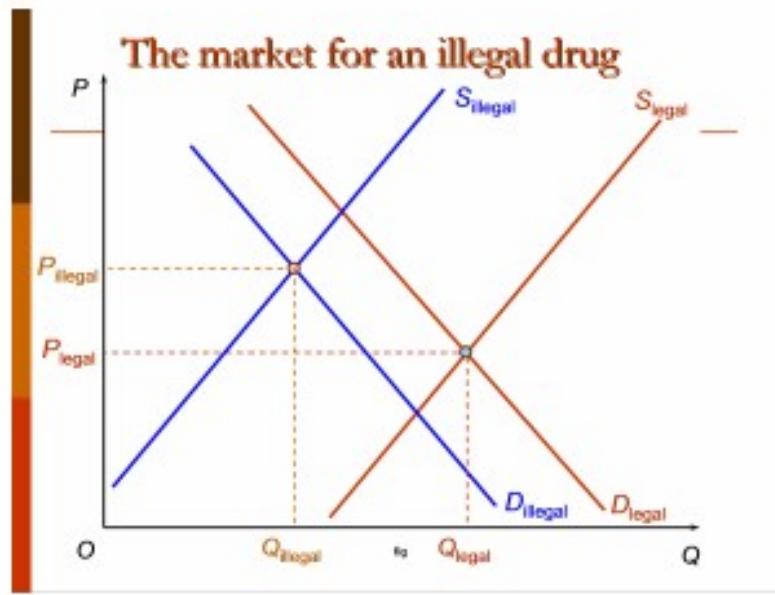
May cause problems in accommodations such as:

- Those who get accommodation are better off
- Landlords would be worse off
- Some wouldn't get any
- Quality may decline
- Introduce fees to bypass rent controls
- Relocate away from premium areas

Illegal markets

This is where the product is made illegal, but cannot be removed from the market:

It will reduce the amount supplied, but there may be a small reduction in demand but by how much? The supply falls more than demand, so the price will rise. This is subsidiary for illegal producers.



Taxation is an alternative to declining products illegal:

- Remove incentive to produce
- Probably not as strong a signal to demand side
- If we made crack cocaine legal, would consumers think it was safe?

Production cost, revenues and profit

Neo-classical theory assumes firms profit maximises, so it assumes:

- Perfect information about cost and revenues
- No internal management issues
- No strategic or stakeholder goals
- No concerns over regulations
- A BLACK BOX theory of the firm

Total revenue – total costs

In defence of profit maximisation:

- It is an abstraction that builds a simple model
- Can test this model against evidence
- If the model fails, we can adapt it
- Survivorship bias towards profit maximisation
- “the business of business is business” Milton Friedman

What output will maximise profit?

- How does the cost of production vary as we expand output?
- How does the revenue from production vary as we expand output?
- Answers drawn on rational thinking at the margin

Short run

In the short run, one factor of production is fixed

- Factory has fixed capacity of throughput
- In the short run, we can vary output between zero and maximise capacity of the factory
- To increase output we add more labour to a fixed amount of capital

Short run of production

The simplest production function has output as a function of capital and labour:

$$\begin{aligned} Y &= f(k, l) \\ &= k^\alpha, l^\beta \\ &= k^{0.3}, l^{0.7} \end{aligned}$$

The symbol α is the elasticity of capital

The symbol β is the elasticity of labour

Both of these will tell us how responsive output is to changes in these levels

Do you get more out than you put in?

If elasticity is >1 , decreasing returns to that factor (more in, less out)

If elasticity is <1 , increasing returns to that factor (more in, more out)

If elasticity is $=1$, there is constant return (same back as put in)

\sum Elasticity, returns of whole added up elasticity

So what are the returns to the scale in the above equation?

Capital is <1 so has decreased and the same with labour. However as a whole it equals 1, so the return is constant. ($0.3+0.7=1$)

This is likely to vary over a range of outputs. Eventually, diminishing returns will kick in.

Total costs graph

x-axis = output, y-axis = cost

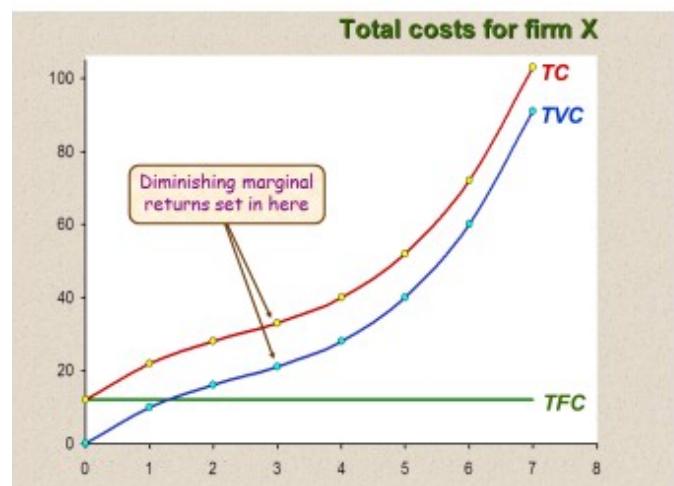
TC – total cost

TVC – total variable cost

TFC – total fixed cost

$$TC = TVC + TFC$$

The graph shows decreasing and increasing returns. Where the line is flat it is increasing, and where it bends it is decreasing returns.



FC and VC

The cost of factory is a fixed cost in the short run, however a variable cost in the long run. Fixed costs are irrelevant to output decisions, but they will pay a role in determining total profit.

AC and MC

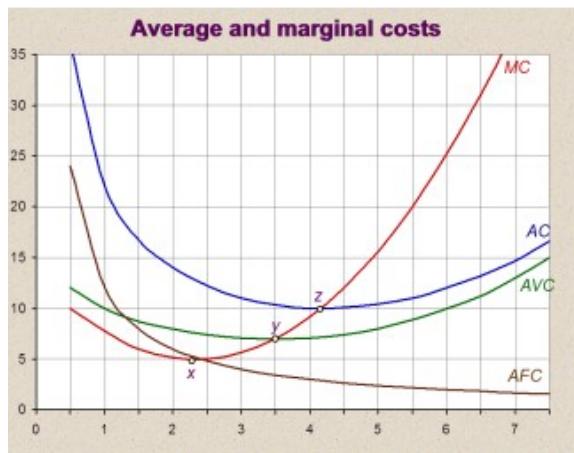
MC is the key to output decisions

AC - average costs, which is total costs divided by quantity

MC – marginal costs, which is the change in total costs divided by the change in quantity.

We have to think of MC as cost of last unit or one additional unit produced.

Cost curves



Up until X, there are increasing returns, before-hand they are decreasing returns. Where MC cuts AV (point z), that is it's minimum. When MC is below AV, it means as you are adding output, it costs less than average. We can also see that the AC is falling, so when MC is above the AC, extra output costs more than average, and so drive up the AC curve.

From this we can say, that to the left of point Z, it is below average, and to the right of point Z it is above average.

$$AC = AVC + AFC$$

AFC = total fixed costs divided by quantity.

Sunk costs

Costs that are unavoidable are known as “sunk costs”. These may be special types of fixed costs such as advertising. Factory can said to be partial sunk cost, because some of the costs may be recoverable, such as selling off the machinery, however other aspects of the factory may not be recoverable and probably aren't.

Sunk costs are ignored from rational decisions.

Long run

All costs are variable in the long run. Investment decisions are fixed in the short run but are variable in the long run. For example they may ask themselves how many factories should we have? And what products should we make?

The economies of scale occur if the long run average costs fall as output rises.

We would expect economies of scale at low levels of output, so at this point we are doubling output, it will less than double costs. This could lead to economies becoming exhausted as output increases, and so diseconomies may occur at high levels of output, which would be represented by a graph of LRAC (long run average costs)

Cost curve graph



We can see that at the bottom of SRAC3, the economies of scale are becoming exhausted. So by SRAC4, there is the beginning of diseconomies of scales, so the LRAC increases.

Economies of scale give larger firms an advantage:

- Spread fixed cost over large volume of output
- Volume increases at a faster rate than surface area
- Brand leverage
- Subsidisation across the product line
- “deep pockets” to see off aggressive competitors

Diseconomies of scale penalise larger firms

- Cross line efficiency
- Slower decision making
- Delegation may produce rogue employees
- Difficult to serve niche markets

Revenue

Marginal revenue is key to output decisions

Total revenue = $P \times Q$

Average revenue = $P \times Q / Q$

Marginal revenue = change in total revenue divided by change in quantity

Marginal revenue slopes downwards under the demand curve

- To sell another unit, have to decrease the price
- So marginal revenue must be below average revenue
- But all customers will pay the lower price (unless price discrimination is possible)
- So marginal revenue will eventually become negative

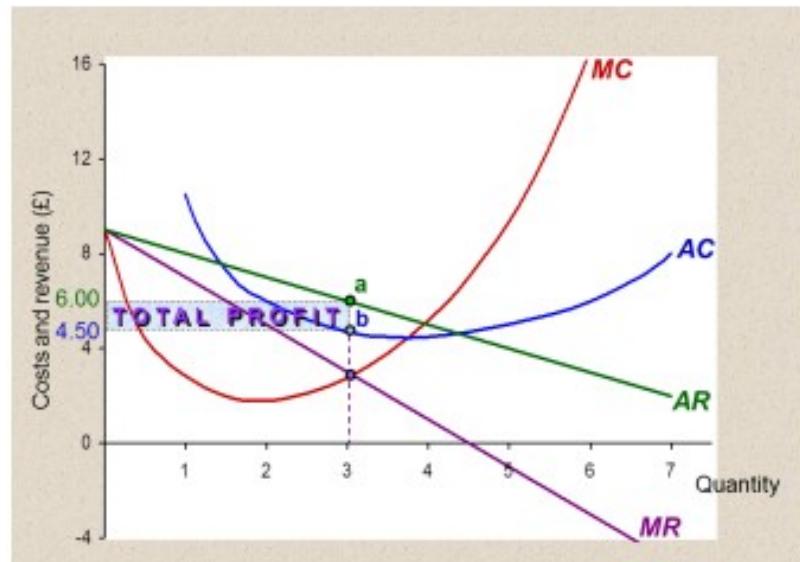
But when will this happen?

- Recall as you move down linear demand curve, it becomes inelastic
- So MR is positive, when demand curve is elastic
- And MR is negative, when demand curve is inelastic

After 4.5 on the graph, total revenue is decreasing so would be inelastic and negative.

Profit maximising quantity is where $MR=MC$ which is at the quantity of 3, and price of 6.

If $MR > MC$, the last unit of production is adding more to revenue than costs. But if $MR < MC$, the last unit of production is adding less to revenue than costs.



To profit maximise we just need to know out MR and MC curves.

The total profit = $AR - AC \times Q$

Opportunity cost is included in the curves, so that doesn't need to be addressed in the formula.

Can use $MR=MC$ to work out equilibrium:

If $AR > AC$ abnormal or supernormal profit

If $AR = AC$ normal profit

If $AR < AC$ economy loss

If $AR < AVC$ immediately shut down

Perfect competition

Competition protects both the seller and the buyer

- Competition amongst sellers drives down prices
- Competition amongst buyers drives up prices
- With competition on both sides, each transaction is welfare increasing
- Free trade

Competition is often welfare increasing:

- Increases choice
- Efficiency in production

- Efficiency in allocation (gets price as low as possible, and output as high as possible. You can't make consumers better off without making a firm worse off)
- Incentives to innovate and beat competition

Monopoly- this is where there is a complete absence of competition

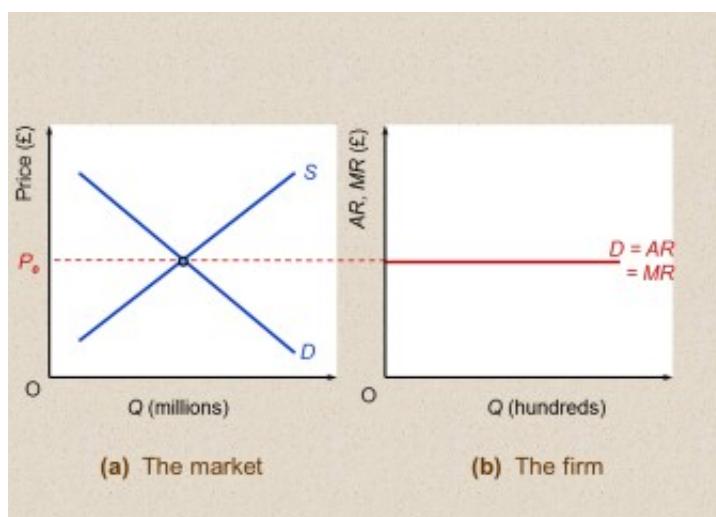
Trade is restricted in absence of competition:

- Monopoly is when there is a single seller
- Monopsony is when there is a single buyer
- Choice will decrease
- Output will decrease, price will increase, quality will decrease and inefficiency becomes possible

Perfect competition makes assumptions that are deliberate abstractions. So we can build a model and ask ourselves what happens if we had an industry like this?

- Homogenous products (same product at all firms so no branding)
- Perfect information (non is hidden)
- Many buyers and sellers (no restrictions)
- Price taking sellers (firm has little control over price)
- Freedom of entry and exit (no sunk costs)
- Buyers and sellers are rational (no mistakes or biases)

Model of industry and firm demand



Shows that the firm is too small to influence price, but at the market price the firm can sell as much as they wish. If they try to raise the price, their share price will go down and will sell nothing. $AR=MR$ because in order to sell more we don't have to lower the price.

Firm demand

Price taking firms face a perfectly

elastic demand curve:

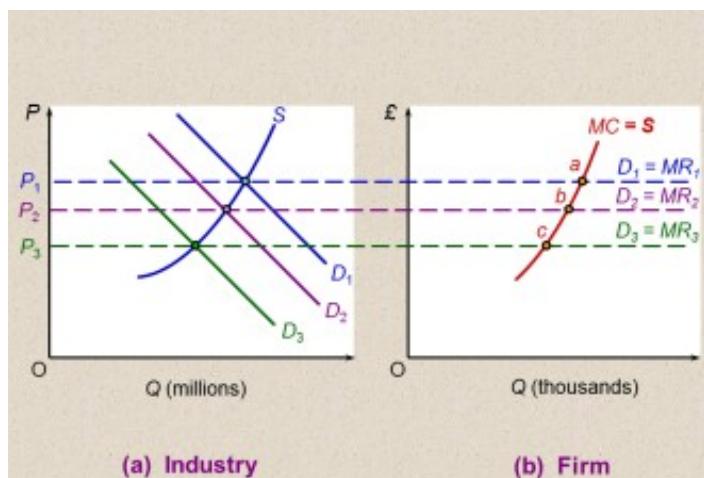
- industry supply and demand clear
- firms in perfect competition take market price
- if they higher price, lose market share
- if they lower price, will gain no market share

Question

A horizontal demand curve, sell as much as you like at the market price. The quantity demanded at this price is infinite. Do you make and sell an infinite amount?

If you were to do this you would end up making a loss the more units you make. You can effectively only sell what you produce. As you increase production, eventually diminishing returns kicks in and marginal costs increases. If $MC > P$, units made and sold will decrease profits.

Firm supply

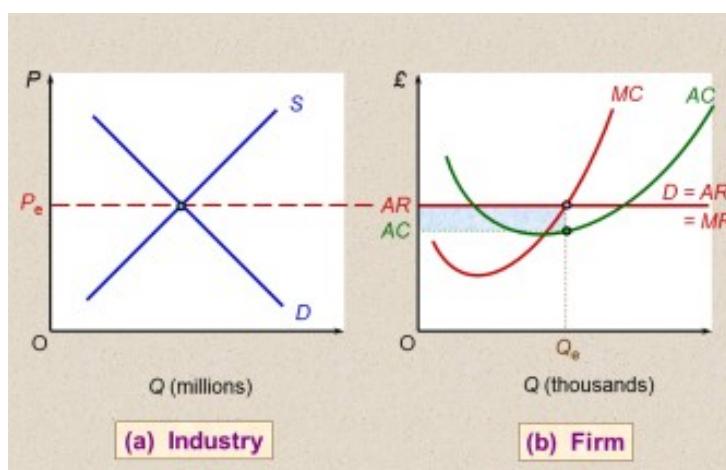


The firm will supply its MC curve:

At the market price...

Output to the left of MC, is leaving money on the table. But output to the right of MC is making a loss.

So ... $Q=MC$



Short run equilibrium

Equilibrium at $MR=MC=AR=P$

Output expansion will be profitable until $MC>MR$

Profit max Q at $MR=MC$

But with the horizontal demand $MC=AR=P$. So.... $P=MC$

How much profit at this equilibrium?

Profit if $AR>AC$

Normal profit if $AR=AC$

Economic loss is $AR < AC$

Free entry

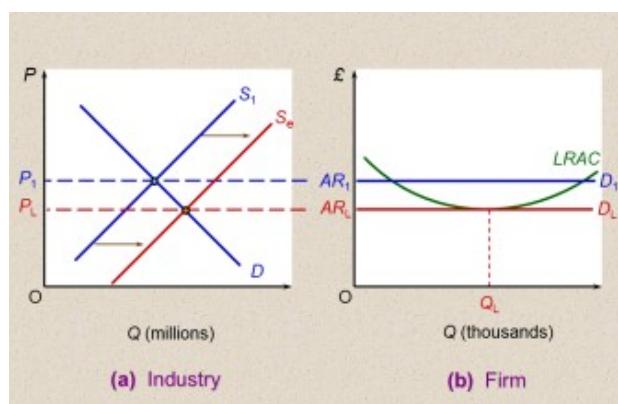
Firms move freely in profitable market:

- assumes the firms are making a profit
- attracts entry and increases supply
- market price will be driven down until profits are exhausted
- free entry requires no “barriers to entry”

Free exit

Firms move freely out of a loss making market:

- assumes the firms are making a loss
- encourage exit and decrease supply
- market price will be driven up until no more losses
- free exit requires no sunk costs



Long run equilibrium

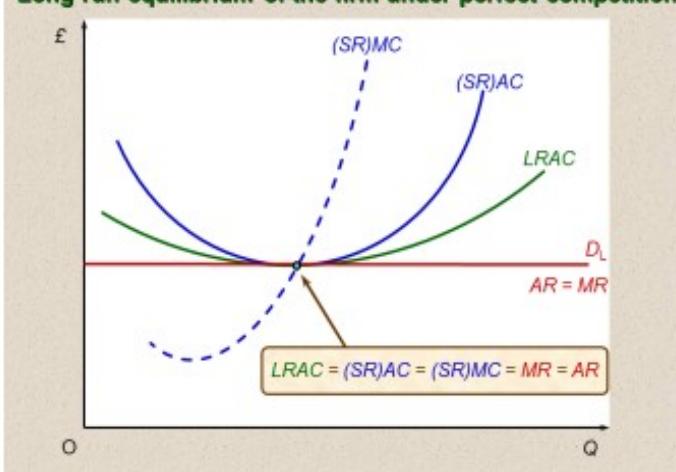
$$MR = MC = P = AR = LRAC$$

Entry and exit occur until $AR = LRAC$

This is the only equilibrium

At this point there is no incentive to exit or enter

Long-run equilibrium of the firm under perfect competition



Perfect competition gives perfect equilibrium:

- Efficiency in allocation $P = MC$
- Efficiency in production $Q = \min LRAC$
- No shortages or surpluses $QD = QS$
- Normal profits for firms
- No adverts

Critique

Austrian critique

Is competition good for innovation?

An Austrian economist called Schumpeter 1945 said it is critical of statistical efficiency. There is a need for long run profits to motivate innovation, where innovation is central to growth and prosperity.

A Chicago economist called Stigler had the opposite opinion in that competition is good.

Non-economic critique

Is perfect competition ever going to happen?

- Probably not but realism is not of the 1st importance
- Simple, logical model can be compared against evidence
- Understanding the mechanics of perfect competition can help to understand how more complex competition works
- A benchmark. How far from perfect competition is this industry?

Application

How close to perfect competition is E-commerce? (internet)

- Homogenous products – almost, depending if you have preferences
- Perfect information – no, but ever increasing uses of rating systems
- Free entry and exit – true, using the internet doesn't cost a lot
- Small buyer and sellers- true, many people buying and selling online
- So it could be said that they are pretty close

Monopoly

Monopoly is the welfare decreasing (most of the time)

- Most market economies legislate against monopolies
- Regulators may act long before the firm has 100% market share
- Is the firm behaving as a monopolist?

Assumptions

A “textbook” monopoly:

- Markets with single suppliers
- Barriers to entry which may be natural or imposed by monopolist

Barriers of entry maintain the monopoly

- Natural monopoly
- Economies of scale

- Product differentiation
- Control of supply chain
- Legal restrictions eg patents
- Mergers

Demand

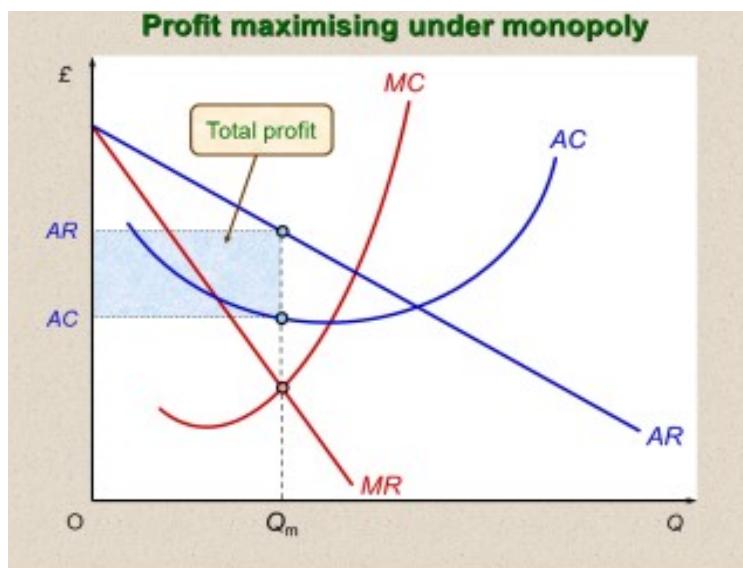
Monopoly is the industry

- Firms demand is the industry demand
- Demand behaves as in lecture 6
- Downward sloping where MR is below AR

Supply

There is no unique supply curve

- Cost curves have a normal shape
- MC through bottom of AC
- Output at $MR=MC$ implies different prices depending on demand
- No definite price and quantity supplied relation

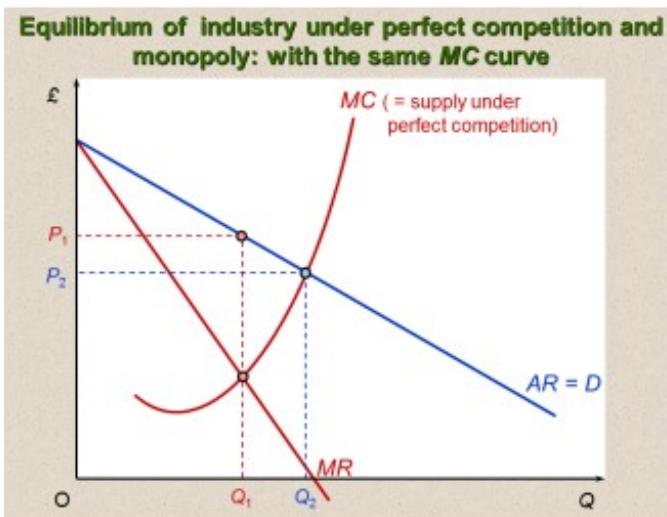


Question

How does equilibrium compare with that of perfect competition?

- $P > MC$ allocative inefficiency
- $P > \min AC$ productive inefficiency
- Supernormal profit, firms better off
- Increase in price, decreases output, so consumers worse off
- Deadweight loss, so society worse off

Competition vs Monopoly



Mark up

Price mark up above MC depends on demand elasticity:

$$P = \frac{MC}{1 + (1/ed)} \rightarrow \frac{P - MC}{P} = \frac{1}{Ed}$$

- More inelastic, higher mark up
- Monopolist can increase price without losing too many customers
- Recall if a competitive firm tries this it loses the whole market

Question

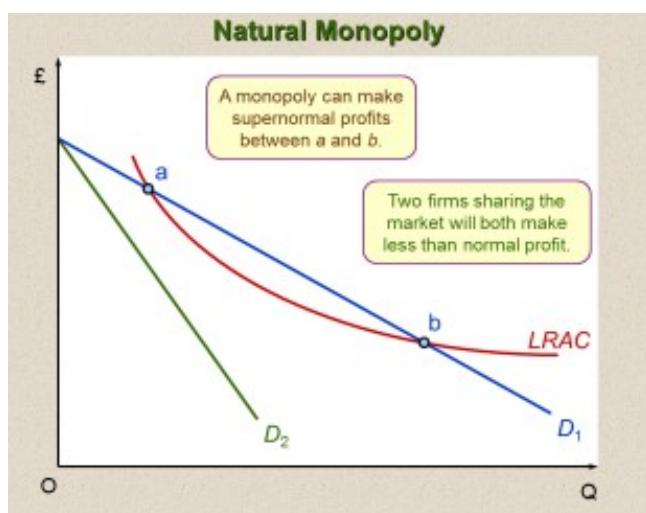
Which is worse for consumers? A monopolist with a highly inelastic good or a monopoly with highly elastic goods or are they equally as bad?

Monopoly with inelastic good will charge higher prices and consumer will have no choice but to pay.

Regulation

If monopolies are bad for economy, do we ban them?

- Yes
- Takeovers that create monopolies are blocked
- Or require undertakings eg break ups
- Firms act anti-competitively can be fined
- But is monopoly always bad?



Big set up costs but are low after.

2 firms sharing a market will make less than normal profit = duopoly

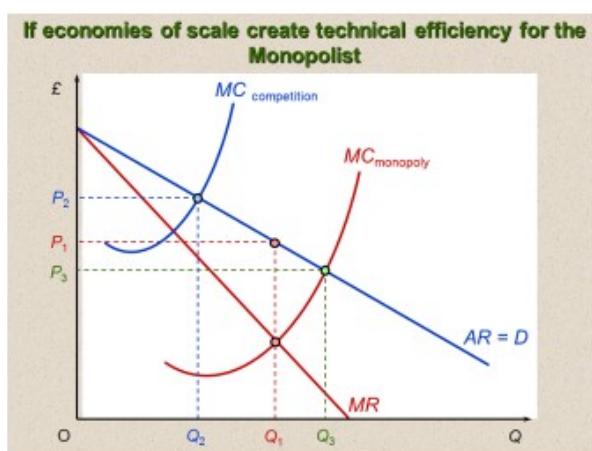
In a natural monopoly, economies of scale are such that it is efficient to have 1 producer:

- LRAC is always falling
- Therefore MC is always below LRAC
- So P=MC would result in a loss
- Monopolies would exit and economies would lose the good

Regulators force P=LRAC

- 2nd best allocative efficiency
- Normal profit for monopolist
- But what if the regulators rely on monopolies for information on cost?

Regulators must weigh the technical benefits of scale vs the allocative benefits of competition. Even if no a natural monopoly, regulators may prefer monopolies. This is because competition puts downward pressure on prices. But this may be an offset of higher costs.



P2=price of competition

P1 = price of monopoly

P3 = price they never get

As it is possible that monopoly is desirable each case is judged on its own merits. It becomes an empirical question, so most regulators are sceptical of scale efficiency. So creating a burden of proof.

Application

For a long time Microsoft looked a monopoly

- 95% share in operating systems
- Integration with explorer
- Said was essential and added value to consumer
- EU disagreed and fined Microsoft after many legal battles
- How does Microsoft look now?

Oligopoly

Imperfect competition applies to most industries:

- Monopolistic competition= many firms but with product differentiation. This is similar to perfect competition as they still act independently of each other but sell differentiated products and make normal profits.
- Oligopoly = small number of firms with strategic interactions

Strategic interactions occurs in oligopolies

- Firms in perfect competition are price takers
- Monopolies take the demand curve

- Whereas oligopoly actions of one firms impacts another
- This is called “game theory” and starting place for modern microeconomics

What I do depends on what I think my rival will do

- Nash (1951) prisoners dilemma showed oligopoly
- Cournot (1838) and Bertand (1883) defined duopoly

Payoffs and strategies

We need payoff and strategies before we can work out anything

- Strategy is chosen from a set of strategies
- Combination of strategies determines the outcome
- The outcome then determines the payoff
- Rational agents maximise their payoff

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Payoff matrix

Lets say 2 people were taken into custody over a crime, yourself and Jane. You are given the choice whether to talk or stay silent. This can be described below

		JANE	
		Silent	Talk
YOU	Silent	-1,-1	-10,0
	Talk	0,-10	-5,-5

If you talk you are let go and will testify against Jane, however Jane is offered the same. If you both talk, you are both guilty.

If Jane stays silent, it would be best to talk, 0 is better and -1.

If Jane talks, it would be best to talk, 0 is better than -5.

So we can see, no matter what action Jane takes, it is the best outcome to talk.

This shows **strictly dominant strategy** where the payoff is strictly greater, regardless of the strategy played by the rival. “Talking” being the dominant strategy.

A strategy is regarded as **strictly dominated** when the payoff is strictly less, regardless of the strategy played by the rival. “Silence” is strictly dominated as it is worse no matter what Jane does. You should never play a strictly dominated strategy; however 30% do, being a puzzle for economists.

Symmetric payoffs

When payoffs are symmetric, strategy is the same

Therefore we know she should play her dominant strategy and we can delete strictly dominated strategies.

Nash equilibrium

When neither party has an incentive to deviate from their current strategy we are at Nash Equilibrium. In the example this would be both talking. This equilibrium is not always Pareto efficient. It can be sub-optimal without any of the typical causes of market failure. We have perfect information, no externalities, and no public goods.

When looking at the example if neither party has incentive to deviate from their current strategy. YES. If we change from both talking do we do better? NO. Jane would lose 5 and so would I. The Nash equilibrium is not efficient because there is a better outcome for both players. If we both stayed silent are we better off YES -2 is better than -10.

Communication

What is you could discuss with Jane. Would the new equilibrium be efficient?

NO, communication will fail even if I had convinced Jane to be silent, it is still better off for me to talk. The only way is to change the payoffs.

Organised crime gangs change the payoffs in prisoner’s dilemmas, by rewarding silence a punishing talking. Collusion is possible in a repeated game.

Resolved prisoner’s dilemma

	JANE
--	------

YOU		Silent	Talk
	Silent	4,4	-5,-10
	Talk	-10,-5	-15,-15

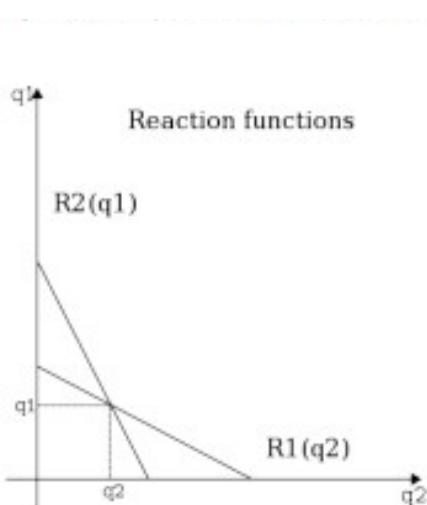
Here we can see that it's better to be silent. If both silent, there is no incentive to deviate as payoffs have changed. This shows that outcomes are NOT payoffs. Real payoffs include non-financial utility. There is a value in not being branded a 'thief'.

Cournot

- Model of duopoly (2 firms)
- Strategy is to choose a quantity of output
- Homogeneous products
- Perfect information
- Constant marginal costs

My profit depends on my quantity and your quantity

- Demand: inverse relation between price and quantity
- Incentive to expand output to increase market share
- But the more that is produced, the lower the price for both players
- How do we work out the equilibrium
- We would try to find it somewhere between monopoly output and perfect competition outcome.
- Work out the same as nash equilibrium



Using coke and pepsi as an example, the more coke/pepsi, more market prices will go down. Profit maximisation choice given quantity of another firm. Nash equilibrium is situation where neither firms have incentive to deviate, this only happens where they cross.

If one is above the other on the reaction curve, then there will be an incentive to deviate output.

Implications

Imperfect competition: lower output than competition, higher output than monopoly.

$$\downarrow Q \gg \uparrow P \gg \uparrow \pi \gg \downarrow CS$$

The pie symbol = profit

CS= consumer surpluses

Quantities are strategic substitutes and the best response slopes downwards.

- Higher profits from collusion
- But BR shows always an incentive to compete
- And even when firms do collude and earn profits others enter
- Historical fixing quantity of 19thC US iron, steel, rubber, paper, railway lines >> new entrants
- And as n increases >> competitive profits

A collusive outcome is where one firm produces nothing and the other produces the monopoly output. The higher the number of firms the equilibrium output will move towards the perfect competition output.

Stackleberg

This is where the advantage will go to the first mover

- If Coke chooses 1st it will receive the advantage
- Coke knows that Pepsi must choose a point on its reaction curve
- Therefore, Coke will choose a point on Pepsi's curve that will maximise profits
- This would mean that they are no worse than the Nash-cournot equilibrium and often better

Betrand

This is where there is the same duopoly but firms set prices instead of quantities. Intuition would say exactly the same outcome

But the result is radically different and doesn't look like imperfect competition

Homogenous products, so lowest price wins the market

- Still downward sloping demand curve
- If the same price, they will share the market

- But what will be the equilibrium?

The best response for Coke

If $P_2 < \text{cost}$ set $P_1 > P_2$ so sells nothing

If $P_2 > \text{cost}$ set $P_1 - \mu = P_2$ $\mu = \text{small as can below the other person}$

If $P_2 > P^m$ set $P_1 = P^m$

If $P_2 = \text{cost}$ set $P_1 = P_2$

Equilibrium

As Pepsi is the same as Coke, the equilibrium will be at $P_1 = P_2 = C$

- So have model of imperfect competition that predicts a perfect competition outcome
- However, result is sensitive to homogenous product assumption
- With differentiated products, model predicts mark up above cost

Adam Smith 1776

He said that when there is a separation ownership and control, run by some people on behalf of others, aren't necessarily going to run in the way the owners want them to do so.

Principal agents

This is for where the neo-classical model hasn't considered the agency costs

There are agency costs to the separation of ownership and control

- 1 person (agent) acts on behalf of another (manager)
- Agents are self-interest seeking with Guile (Williamson)
- Imperfect information (moral hazard) this is when owners can't observe the actions of the managers
- Therefore managers can take actions not in the interest of shareholders

Williamson et al (1975)

Managers don't maximise profits, they maximise utility

- Believes that managerial utility is a function of S, M and D
- S= Staff costs which is the amount of people employed and their pay.
Increases in managerial theory eg empire building
- M= managerial perks which is things that add to managerial utility and not profit maximisation

- D= discretionary cash which is the amount of free cash in the organisation. Many companies will sit on this money and withhold it from dividend to invest in own pet projects

Public limited companies (PLCS)

These are most large companies whose shares can be bought and sold.

- PLCs allocate very significant proportion of economic resources
- Anyone with equity savings or pensions has a pecuniary interest in the performance of the stock market
- Simplest natural environment for studying principal agent problems
- Most of the info we need to perform empirical analysis in public domain

UK PLCs

These have a “unitary” board, where all the directors are on the same board

- Dispersed ownership of cash flow rights
- Control rights delegated to a single board
- CEO and executive directors make up the management team
- Chairman and Non-Executive Directors look after the interest of the shareholders
- They will meet each month and report to shareholders at the AGM

Agency costs

Jensen and Meckling 1976 says you must count up and consider these

- Monitoring expenditure
- Bonding costs
- Residual costs

Monitoring

This is anything that shareholders have to pay for in order to monitor management

- Hiring auditors who ensure managers' report the truth
- Disclosure – annual reports and accounts
- Voting and attending company meetings (small cost)
- Shareholder activism (get involved in decision making process)

Bonding

This is anything that shareholders have to pay to change the behaviours of managers to take more interest in shareholders in the form of compensation

This motivates agents to change actions that are congruent with principle objective

- Contracting costs = contracts must be written to show incentives saying how much entitled to if change behaviour
- Incentive pay

Residual loss

This is the difference between what the managers do and profit maximisation and can be classed as loss remaining due to untreated agency problems

- Managerial empire building
- Managerial consumption of perks
- Managerial complacency “fat cats” = where the CEO of a mining company does nothing just waits for the share price to go up and sell

Why separate?

Why sell any equity if it causes agency problems?

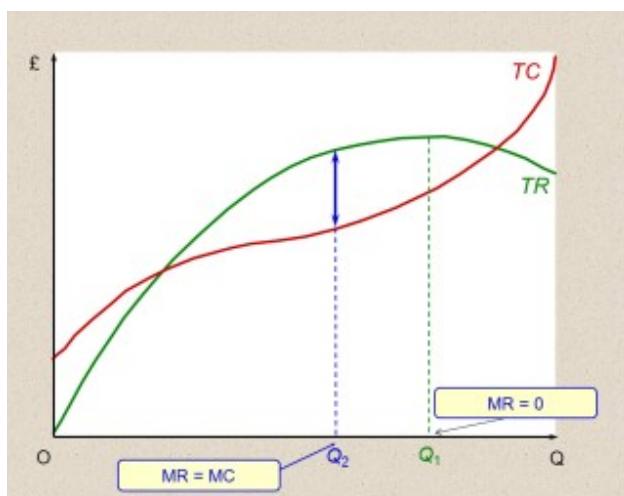
- To raise finance to grow the business, why not debt finance? Or bootstrap? You used to be able to go to the bank for a loan without losing any equity. A bootstrap is where the start-ups are low eg internet
- Specialise the managerial function – if you are 100% owner manager you may realise you need help and will delegate control to an expert
- Risk sharing – if your 100% owner manager and you do well you’re ok, if not you lose everything. And so should invest in a wider portfolio (diversification) to reduce your levels of risk.

Baumol 1959

Manager's problems= how can I maximise sales revenues?

- Simple managerial model
- Increasing sales will increase pay, empire and create more jobs.

Sales revenue maximisation



The biggest gap between TR and TC is where $MR=MC$. If you want TR maximisation, will be where it equals 0 (peak). Difference between Q_1 and Q_2 , is always Q_1 to the right of Q_2 . This is because it will never have a negative MR where $MR=MC$ it will always be positive. Has equilibrium of firm to right of neoclassical model.

Revenue maximisation quantity and profit maximisation quantity aren't the same

- Profit maximisation is at $MR=MC$
- Sales revenue maximisation is at $MR=0$
- If $MR>0$ then can expand and add to TR
- If $MR<0$ then can expand and will reduce TR
- Maximisation must occur at $MR=0$

Market for corporate control (MCC)

The MCC prices agency costs into the current stock price

- 100% owner manager wants to separate ownership and control
- He will incur agency costs
- Investors will anticipate this and reduce offers
- Manager has incentive to limit agency costs

This is because agency costs are priced into the company stocks, too many will lead to takeover

- Assume a firm with very high agency costs
- Price of firm stock will be below its true potential
- Expect an aggressive investor to buy-out firm, reduce the agency costs and leave with a profit
- The threat of this happening should reduce the agency costs

Does MCC work?

- Major debate in financial economics
- If yes, implies there is no need to regulate
- If no, implies market failure and need to regulate

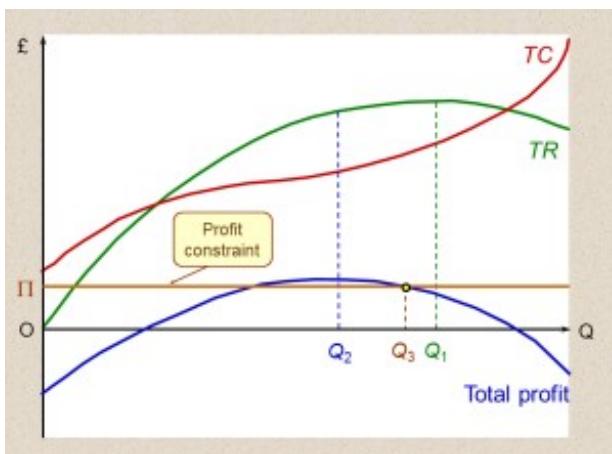
Markets aren't predictable

- All information (including agency costs) at time (t) in priced in at t
- Efficient market hypothesis difficult to reject
- As soon as market is not efficient, there will be huge incentive for traders to exploit inefficiency and in doing so re-price stock

There is little evidence that takeovers increase firm value

- Managers can resist takeovers eg Poison Pill by taking relevant actions. This is where some companies have a single shareholder increases their shares attempting takeover. When they pass a certain percentage, the managers will create more shares and sell to other shareholders at a discount. This is in order to dilute out the shareholder trying to takeover.
- Free riding shareholders. This is the problem shareholders face when they hold a share of an inefficient company. They will keep hold of it though even if it was undervalued and inefficiency because someone will buy out the other shares and increase efficiency. Only problem with this is all shareholders will be hoping to do this. So will end up waiting til prices rise and then sell out.
- Shouldn't bear sterns. This is when we look at whether the bad companies in the financial crisis could have been better priced in the first place to avoid this happening.

Constrained revenue maximisation



Baumol wanted to incorporate MCC into his model. Profit constraint managers have to satisfy. The higher it is, the more the quantity goes back to profit maximisation point. Q1 is revenue maximisation, Q2 is profit maximisation and Q3 is constrained revenue maximisation. If MCC is not working well, profit constraints may be 0 and managers may get more freedom.

Question: *what is predicted to happen to output in a) neo-classical model and b) constrained revenue maximisation?*

- Increase demand
- Increase fixed cost
- Increase flat rate tax
- All these will change output at profit constraint and will be harder to satisfy and so will move back towards profit maximisation which we don't want.

Macroeconomics

This studies the national economy: growth, money, inflation and unemployment.

Division

In microeconomics there is a consensus that markets work well most the time and a fair amount of agreement about when, how and why they don't work well. Much less agreement in macroeconomics and different schools of thought are argued with different political ideologies.

Right vs left

What should a government do to promote growth during a recession?

- Increase public sector to stimulate demand, so cut interest rates and borrow more money. Keynes
- Decrease public sector to encourage the private section. Friedman

Predictions

Macroeconomics tries to predict what will happen to the economic in future?

- Role of expectation will be improved and will change your behaviour
- Very complex mathematical models
- Aggregated historical data. Looks at the total across to nation
- Often criticised.

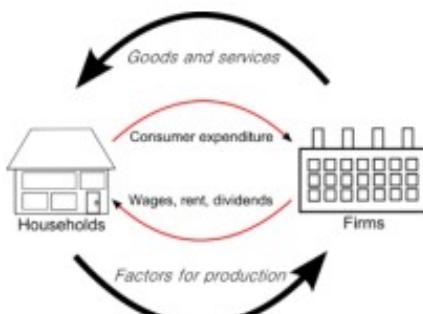
Endogeneity

This is where all the variables are related:

- Changing 'v' eg interest rate can have wide ranging implications
- This changes can create feedback loops
- Models of economics can help up to conceptualise the process

National income

This can measure the size of the economy by the total income (Y)



- Here we would assume a closed economy with no savings
- Income flows from households to firms in form of consumption
- And from firms to household in form of wages or dividends and rent
- The size of economy is in equilibrium (no growth)

Injections

Injections (J) add to national income.

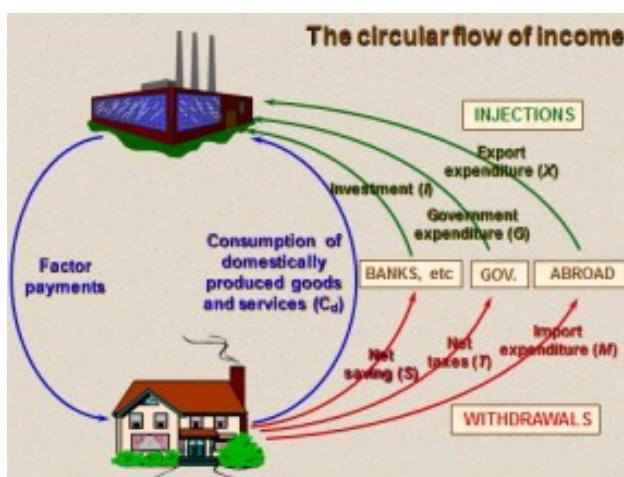
$$J = \text{Investment (I)} + \text{government spending (G)} + \text{Exports (X)}$$

Withdrawals

Withdrawals (W) decrease national income.

$$W = \text{Savings (S)} + \text{Taxation (T)} + \text{Imports (M)}$$

J and W



Growth

If $J > W$, national income Y will increase.

- An increase in J, holding W constant, will add to national income
- This means that the economy has grown
- But by how much? And for how long?
- To answer this we need to consider aggregate demand (AD)

Aggregate demand

This is the sum of all demands in the economy and is the total money spent on goods in the economy.

$$AD = C + J$$

$$AD = C + G + I + [X - M]$$

Equilibrium

National income will increase until $J=W$

- Say we let $J > W$
- It would lead to an increase in AD and an increase in Y
- But this will also increase Price unless the good is elastic
- By the increase in Price then there will be an increase in M and decrease in X, subsequently leading to increase in W and decrease in J
- Which will occur until $J=W$

Injection

By how much has the economy grown?

Did the economy grow by more than the increase in J?

Did the economy grow less than the increase in J?

Or did the economy grow by the same proportion as the increase in J?

To answer this we need to think about the MULTIPLIER

Keynesian Economics

An increase in J will increase Y by more than the increase in J.

If we recall that the increase in J will increase AD, we will ask ourselves what consumers will do with the extra income. If they consume it, there will be further stimulation of output and increase AD.

The propensity to save and consume will determine the multiplier.

- If consumers consumer all their extra income, output will increase
- This output will create jobs and more income
- Which then happens again and again

Whereas:

- If consumers save all their extra income, there will be NO multiplier
- But Keynes expects some will be saved and some consumed
- How much is called the marginal propensity to save (MPS) and marginal propensity to consumer (MPC).
- MPS may also be referred to as MPW, marginal propensity to withdraw

The propensity to save and consume determines the multiplier as

$MPS+MPC=1$. So we can use the following formula:

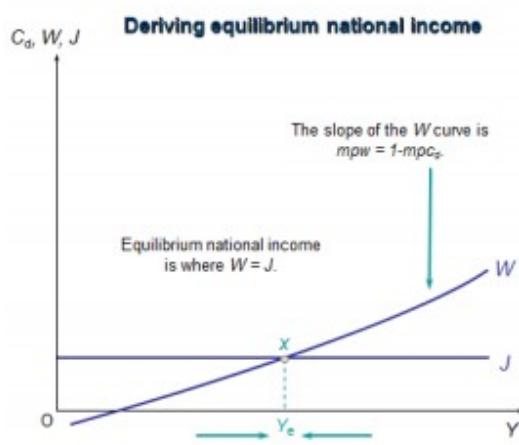
$$\frac{1}{MPS} = \frac{1}{1-MPC}$$

The greater the propensity to consume, the greater the multiplier.

Injection and withdrawal

Equilibrium is where $J=W$. J is determined by the current national income, W is upward sloping, where the slope of W determines the multiplier.

Graphs showing the multiplier



This version looks at the J and W approach

The y-axis show J and W , and the X-axis shows Y .

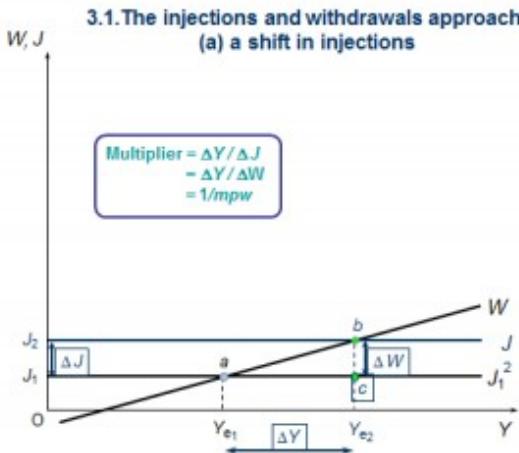
Point X is the equilibrium, at the level of national income point Y_e . J is independent of W . As MPS gets steeper it means MPS is increasing, and so will J .

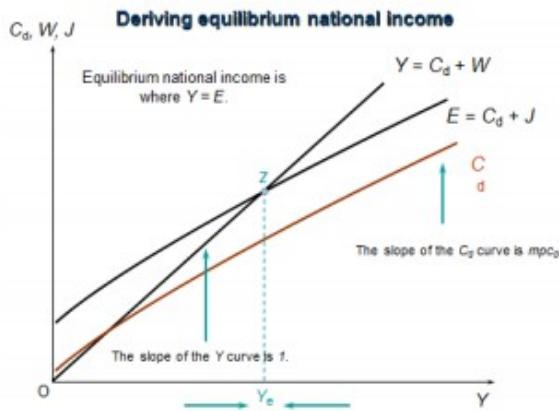
When comparing to graph 2, below, the national income has increased to point ye_2 , as for the change from point $a-b$, which is a bigger proportion than the increase in J . This is the change in Y .

$$\text{Multiplier} = \frac{\Delta Y}{\Delta J} = \frac{\Delta Y}{\Delta W} = \frac{1}{MPS} \dots \text{in both cases}$$

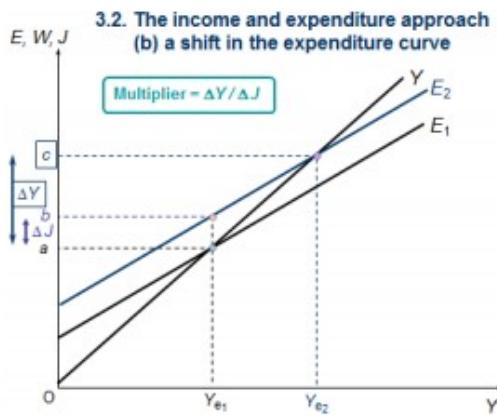
$$\Delta J = \Delta W.$$

From this we can say that the flatter the W slope, the bigger the multiplier effect. So the steeper the slope, the lower the multiplier effect.





The following 2 graphs take a national income approach, however will illustrate the same picture. This shows that $Y=E$ is the national income because: as national income increases, consumption increases, due to $W=J$. The slope of $Y=1$, due to the 45 degree angle.



This shows the multiplier effect. Expenditure increases, when you add J .

The multiplier is: $\frac{\Delta Y}{\Delta J}$

Where y_{e2} is the new national income. But by how much? It will differ in the expenditure curve. A positive multiplier, greater than the proportion increase in Y .

Prices

We expect price responses to change in AD

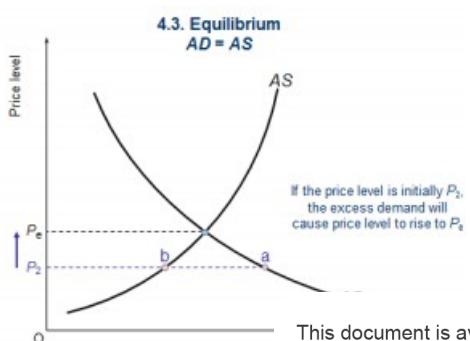
- Keynes believed that in some prices, eg wages were “sticky”
- But even so, if demand increased we would expect some price increase
- This complicates our model
- To solve we use AD AS analysis

AS

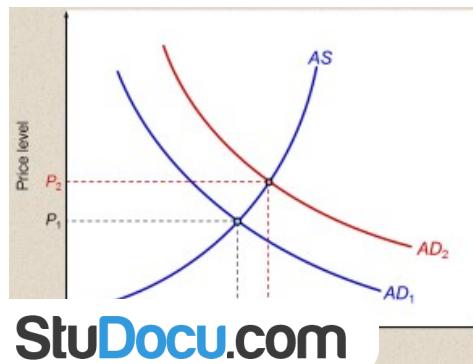
The AS curve slopes upwards in the short run .. or does it?

- Assume diminishing returns
- Assume bottleneck in production

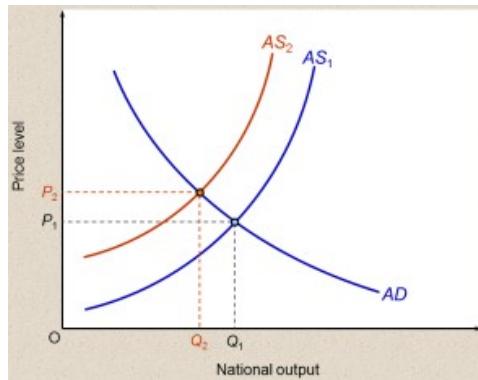
Equilibrium



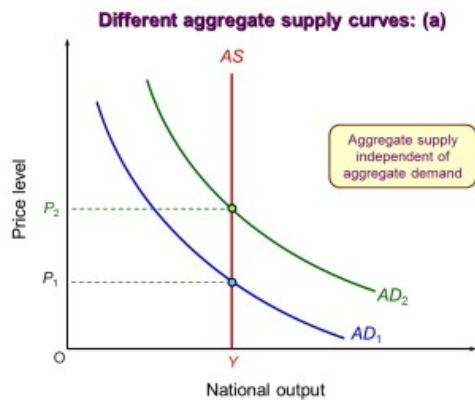
Increasing AD



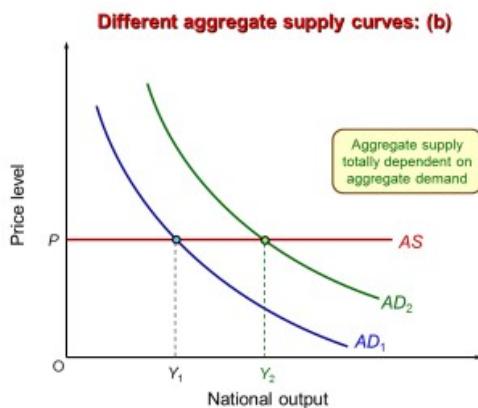
Decreasing AS



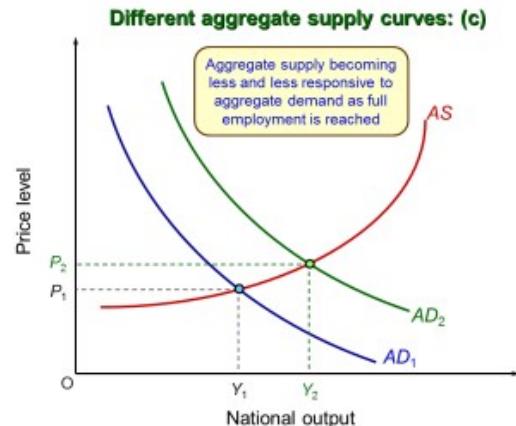
Increasing AS



Increasing AS



Increasing AS



Implications

Price response means that multiplier effect is reduced

- Prices may take time to adjust
- If spare capacity, AS will be horizontal so no price response
- Long run supply curve may be very steep
- Expectations may increase the rate at which prices adjust

Example

Table: AD-AS schedules for May 2008

Price Level	ADBn	ASBn
95	1000	950
100	970	970
105	950	1000
110	930	1030
115	915	1060
120	900	1100

What is the equilibrium level of national income?
What is the equilibrium price level?

Table: Let AD increase by £70Bn at all price levels and that AS rises by £20Bn at all price levels.

Price Level	AD ₁ £Bn	AD ₂ £Bn	AS ₁ £Bn	AS ₂ £Bn
95	1000	1000	950	950
100	970	970	970	970
105	950	950	1000	1000
110	930	930	1030	1030
115	915	915	1060	1060
120	900	900	1100	1100

Find the new equilibrium.

Money

This is not income

- A medium of exchange – if you didn't have money, how would we exchange? With food? Money is easy in proportions
- A means of storing wealth
- A means of evaluation

The interplay of supply and demand for money influences our main macroeconomics variables:

- Price level and inflation, lead to change in Y
- Interest rate lead to change in (I and S) leading to change in Y
- Exchange rate leads to change in (X and M) leading to change in Y

Supply

The money supply combines cash and broad money

- Cash printed by central bank (BoE)
- Banking deposits known as broad money
- Broad money far exceeds cash in circulation

Credit creation

Banks take deposits and supply credit through loans

- Say there were 10 savers each depositing £1
- How much can the bank loan out?
- £10? Possibly not if saver wants it back, they can't then give it back
- Deposits on how risky bank is. But is this right?

Banks trade off profitability and liquidity

- Banking behaviour is driven by profitability and liquidity
- They profit on the loans as a $R^1\% > Rd\%$
- But can't recover loans instantly 'illiquid assets'
- Must hold some cash 'liquid' at central bank (BoE)

A bank's balance sheet is driven by trade off profitability and liquidity

- Total assets (loans) = total liabilities (deposits)
- The liquidity ratio is then = $\frac{\text{liquid assets}}{\text{total assets}}$
- There is a legal requirement to satisfy the liquidity ratio

Banks want to loan out as much as the LR will allow them to:

- Back to 10 savers each depositing £1
- Say the bank believes only 20% of savers will withdraw at any 1 time
- So the bank loans out £8. What happens to this £8?
- This creates £8 of new deposits
- So they will loan out another 80% of the £8 deposit = £6.40
- Creating another £6.40 of deposits, loaning out 80% again = £5.12
- And so on

Example

Table: The banking multiplier = $\frac{1}{LR}$

Deposits	Liquidity Ratio	Fraction to loan	Loans
10	0.2	0.8	8
8	0.2	0.8	6.4
6.4	0.2	0.8	5.12
5.12	0.2	0.8	4.01
4.01	0.2	0.8	3.23
3.23	0.2	0.8	2.62
...			...
		Total New Loans	50

$$\text{Total new loans} = \Delta \text{Deposits} * \frac{1}{LR}$$

From a little bit of money, the can create more through this.

Moral

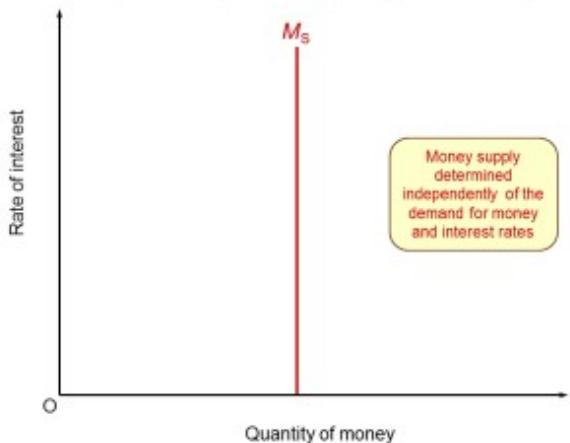
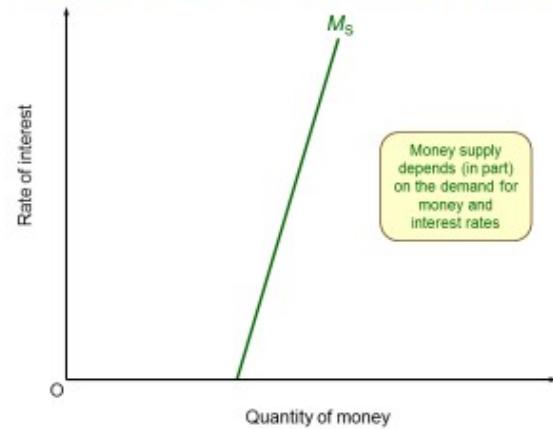
If you care about money supply, you must care about the behaviour of banks with respect to their LR.

- But why was there a run on Northern Rock in 2007?
- Savers didn't believe they could get their money back
- Initially thought it was a liquidity problem
- Actually, there were financial derivatives based on US 'sub-prime' mortgage markets
- Which were worthless due to mass defaults

Interest rates

How does money supply vary with interest rates?

- If exogenously fixed then it doesn't (this means that the money supply is independent of interest rates)
- But could be endogenous
- Upward sloping relation with r%

The supply of money curve: (a) exogenous money supply**The supply of money curve: (b) endogenous money supply**

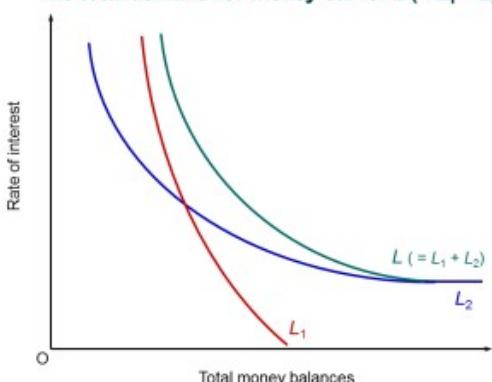
Why is it sloping? The increase in interest rates, means a greater different between loan interest and savings interest. So there is an incentive to expand credit even further. The rate of interest is the price of holding money supplies.

Shifts in MS

What causes it to shift?

- Banks reduce LR (so will shift to the right)
- Non-bank private sectors chose to hold less cash (so reduces MS)
- Public sector deficits (increase MS because the way the governments fund the deficit, is by issuing government bonds)
- Inflows of fund from abroad

Money demand

The total demand-for-money curve: $L = L_1 + L_2$ 

This is more complicated and is made up of 2 things:

L_1 – the simple idea of the role of money and why people want money: to conduct transactions and to hold wealth. This is known as transactionary and precautionary demand for money. It is downward sloping because of the trade-offs with the interest rates. At lower levels of money, there is a higher rate of interest, so bonds will be more attractive.

L_2 – this is the demand for money in Keynesian Economics. It comes to perfect elastic relationship with interest rates where it flattens out. This is because of investors tendencies to speculate about what will happen in the future, driving behaviour of today. When interest rates are low, investors expect future interest rates to be higher than the current rate. So there is an inverse relationship with the value of bonds. As interest rate rises, the price of bonds will fall. So wouldn't want to hold any bonds in the future and so will get into money instead so at perfect elasticity you will get into liquidity trap.

In Keynesian economics, speculative demand for money leads to a 'liquidity trap':

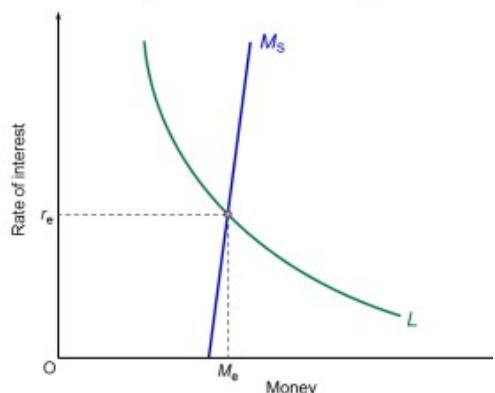
- L_1 : Transactions and precautionary
- L_2 : Speculative ! 'Liquidity-trap'
- L_2 : Further increases in M_s don't impact $r\%$
- Hence Keynes prefers fiscal over monetary expansion to boost AD

Money Demand shifts if...

- L_1 : Increase in National Income
- L_1 : Decrease in frequency with which people are paid
- L_2 : The expected future $r\%$ increases relative to the current $r\%$
- An increase in E (at future rate%), will reduce price of bonds and increase money demanded
- 'Animal Spirits'

Money equilibrium

Equilibrium in the money market



L = liquidity preference, and the intersect determines the interest rate in the economy. This is achieved through changes in interest rates. Any point above the interest rate is a greater excess of money. Which will depress the interest rate until back at the equilibrium.

If $M_s > M_d$ it will increase bonds. Leading to an increase price of a bond and reduce the $r\%$. This will occur until $M_s = M_d$

Quantitative easing

Why has the BoE engaged in QE? BoE buys financial assets with newly created money, thus increased MS. So how does the MS affect the AD?

There are again 2 views on this... the monetarist view which BoE views and Keynesian vies which expects it not to work due to the liquidity trap.

AD

An increase in MS will result in an increase in AD. Due to interest rate transmission mechanism, where the interest rate is as low as it could go.

An increase in MS, will lead to a fall in $r\%$, leading to increase in I and decrease in S, subsequently increasing AD.

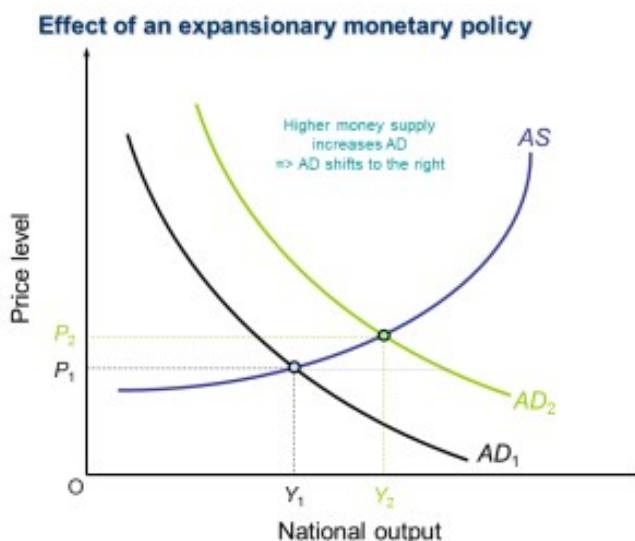
However the bank expects:

An increase in MS, will reduce the $r\%$, reducing e, increasing X but decreasing M, subsequently increasing AD. Which is the exchange rate (e) transmission mechanism. Additionally this can be said as follows:

An increase in MS, increase *Dfa, reducing e, increasing X, decreasing , subsequently increasing AD.

*demand for foreign assets

Expansion monetary policy



Inflation and unemployment

Inflation

- It is the rate of change in price levels
- A decrease in inflation means the prices are still rising, just at a slower rate
- BoE has a current target inflation of 2%

There are 2 ways to measure inflation: consumer price index or retail price index. BoE uses CPI.

This can be costly for the economy

- A decrease in purchasing power
- Value of savings are eroded
- Weaker balance of payments
- Increased uncertainties

Its not all bad though..

- Value of debt is eroded
- Historically wage have risen faster than prices
- Greases the wheels

Unemployment

This is people of working age, available for work, actively seeking employment and without a job.

- The rate is the ratio of unemployed to labour force

It is a dormant factor of production

- Wasteful lost output
- Personal costs
- Social costs

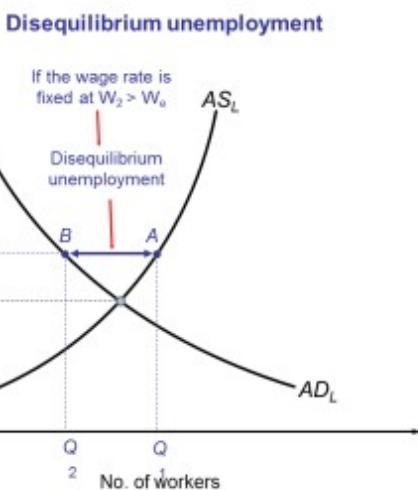
Its not all bad though..

- If pain of working exceeds the benefits then it is better for an individual to be unemployed

- Unemployed individuals within households may increase total household utility
- A disciplinary device to work hard

Disequilibrium unemployment

The supply of labour us greater than the demand for labour



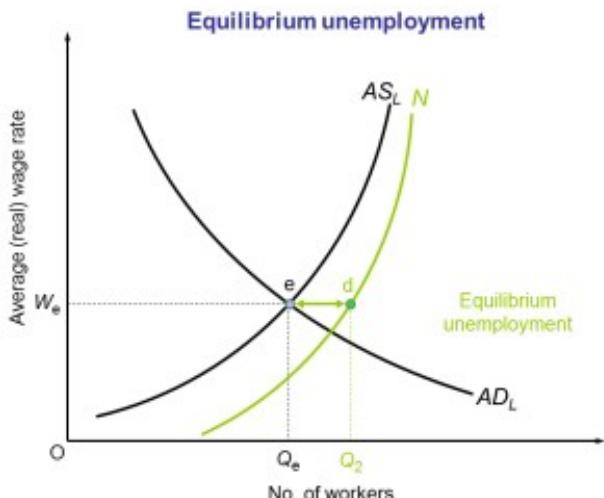
1. demand deficient, fall in AD and sticky wages
2. an increase in AS with sticky wages
3. classical, unions and governments drive up wages
4. insider power, inside employees drive up wages
5. efficiency wages, firms pay premium wages to motivate employees

Equilibrium unemployment

The excess of people looking for work over those willing and able to take a job

The difference is called the natural rate of employment. Any surpluses and shortages in the microeconomics aggregate out in macroeconomics.

1. Frictional and search between jobs
2. Structural, changing ADL, between individuals and regions



Summary

Equilibrium and disequilibrium unemployment have different causes:

Equilibrium: imperfect information, technology shocks and regional variation

Disequilibrium: unions, governments and sticky wages with AD

Policy implications

Equilibrium and disequilibrium unemployment imply different solutions

Equilibrium: improve information and retraining programs

Disequilibrium: improve wage flexibility and boost AD

Question

Unemployment in Costa Del Sol is much higher in winter than in the summer

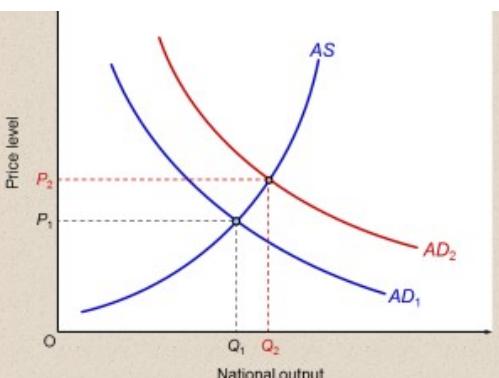
1. What type of unemployment is this? *Disequilibrium*
2. How could you measure the economic cost of unemployment? *Look at the lost output*
3. What could you do to reduce this unemployment? *Try to find a more balance economy*

Quantity theory of money

"Inflation is always and everywhere a monetary phenomenon"

- $MV=PQ$
- M is the money supply, V is the velocity of money, P is the price and Q is the real output
- Hold V and Q constant, an increase in M will cause an increase in P
- *"Too much money changing too few goods"*

Demand pull inflation



The AD-AS framework makes for clearer marginal analysis

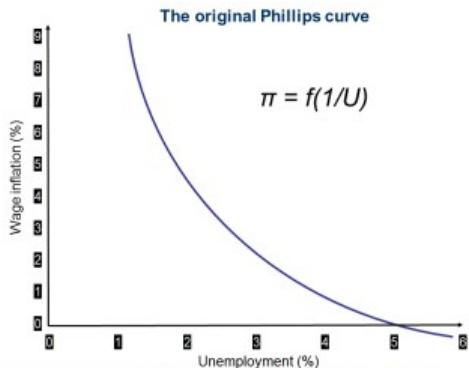
- Inflation caused by increases in AD so long as AS is upward sloping
- This may be through monetary expansion
- But may also be caused by an increase in C, I, G or X
- Clear output-inflation trade off

Phillips curve

Output is correlated with employment so we expect employment-inflation trade off

- Empirical evidence by A.W. Phillips
- As AD expanded, firms could initially employ extra labour without raising wage rates much
- But as labour became scarce, firms had to offer higher wages

The original Phillips curve



The Pi symbol is the rate of inflation

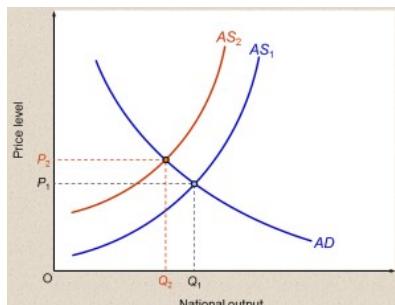
F being the function

And 1/U being the inverse relationship with unemployment

In the 60's-70's the curve broke down

- Stagflation – inflation was increasing and employment was increasing
- This was problematic for Keynes's theory

Cost push inflation



Instead of there being a change in AD, it shows the change in AS.

Maybe if people expect a rise in inflation, they will put in for higher wages.

Rising costs independent of demand

- Contraction of output (and employment) in response to higher costs
- Import price shocks
- Especially oil, cereal and metal shocks
- Uncompetitive labour, unions
- Inflationary Expectations

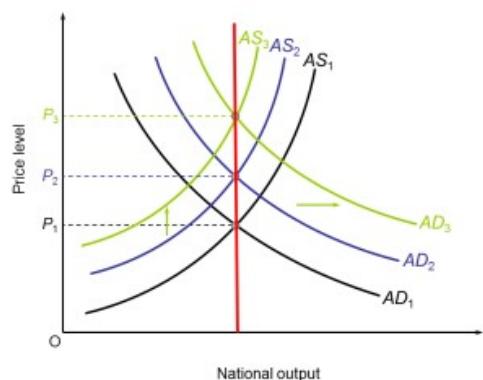
Inflationary expectations

In the long-run there may be no inflation-employment trade-off

- Expectations of future higher prices, cause higher wages today
- The higher wages contracts aggregate supply

- Therefore the long-run AS curve is vertical
- Any increases in AD just end up in higher prices]

Long run AS



Here you can see that you can't get away from the natural rate of output. The best that we can hope for is the short run trade-off between unemployment and inflation.

Expected augmented Phillip's curve

Inflation expected to drive up wages

$$\pi = f\left[\frac{1}{U}\right]$$

$$\pi = f\left[\frac{1}{U}\right] + \pi_e$$

Inflation today is driven by these expectations

Un = NAIRU (non-accelerating inflation rate of unemployment)

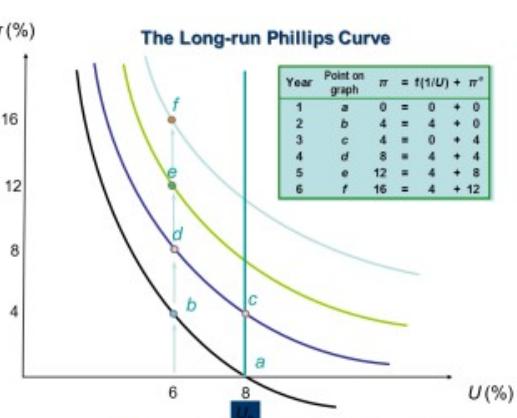
Long run Phillips

On the x-axis we have unemployment rate, and on the y-axis inflation rate. We

can see that at the u of 8%, we have 0% i. As we increase inflation, we decrease unemployment. People will adopt their expectations of inflation, and will put in for higher wages, changing the AS. This will shift the curve to a new curve so a new point (c). And will have gone from a, to b, to c. it is at the same point of unemployment, but at a new inflation rate. And will continually happen to get to point e.

We can say from this to not try and manage AD as it will always lead to rises in prices.

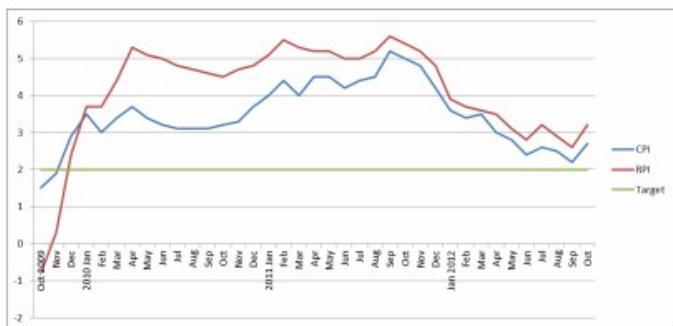
Rational expectations



Chicago economist expect no inflation-employment trade-off even in the short run

- Rise in AD, immediately off set by inflationary expectations
- Mathematically sound, but behaviourally questionable
- Major policy driver of Regan-Thatcher years in 1980's

Targeting inflation



The BoE is supposed to target inflation at 2% by setting the interest rates.

- Politicians can't be trusted
- If BoE miss the target they must explain why
- Has averaged 2.9% since 1997 when they decided to be independent and free of political interest

- Is BoE really independent? Probably not

Keynesian response

Expectations are important but also impact investments and employment decisions

- Investments driven by confident "animal spirits"
- Increases to I and G could also shift AS to the right
- Eg infrastructure and technology innovation
- Commitment to steady sustained AD growth will encourage investment

Expectations are important but volatile

- Expectations aren't always rational
- Small amounts of new information can cause big swings in AD
- Hence 'Boom and Bust' cycles
- Volatility increases fear and discourages investment growth
- Need to steer markets to tame the animal spirits

Supply side policies

Aim to boost AS over the long run

- Investments in infrastructure and education

- Incentive for innovation eg patents and tax breaks on research and development technology
- Labour supply growth

Better for the private sector to invest than governments?

- Increase in G 'crowd out' private increases in investment
- Private investments superior information and expertise
- Some public investments are wasteful
- But more direct: the lost output whilst waiting for the private sector to move is also wasteful