English for Student of Economics

Mc Graw Hill Education

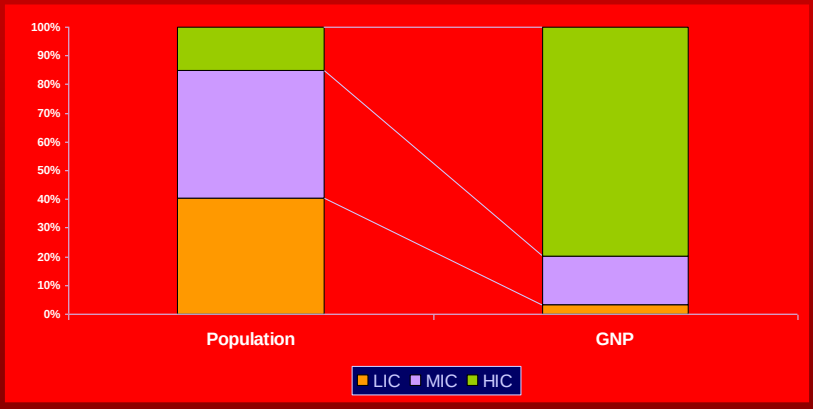
What is Economics?

- **ECONOMICS …**
- **is the study of how society decides:**
  - **What**
  - **For whom**
  - **How**

to produce…

Mc Graw Hill Education

The distribution of world population and GNP, 2003



Mc Graw Hill Education

Scarcity forces choices to be made

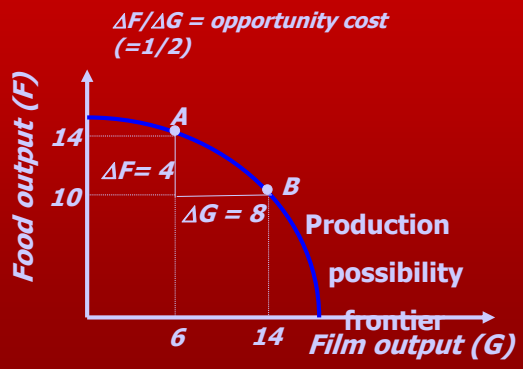
- Opportunity cost
- a crucial concept in economic analysis
- the quantity of other goods that must be sacrificed to obtain another unit of a good

Mc Graw Hill Education

The production possibility frontier (1)

- For each level of the output of one good, the *production possibility frontier* shows the *maximum* amount of the other good that can be produced.

The production possibility frontier (2)



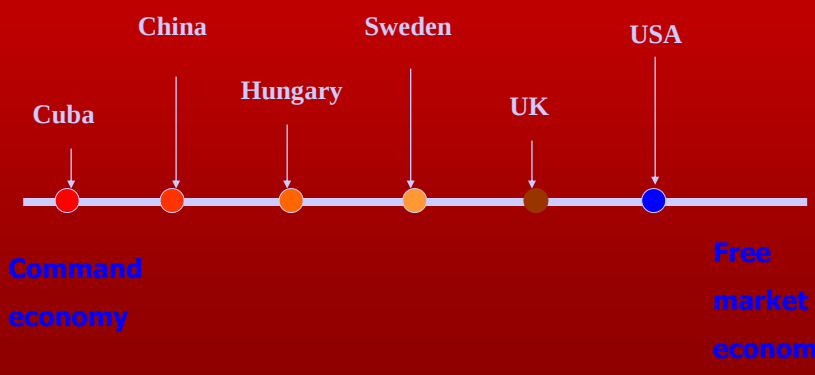
The operation of markets

- Market
- a shorthand expression for the process by which …
  - households' decisions about consumption of alternative goods
  - firms' decisions about what and how to produce
  - and workers' decisions about how much and for whom to work
- … are all reconciled by adjustment of prices

Resource allocation

- Resource allocation is crucial for a society
- and is handled in different ways in different societies, e.g.:
  - Command economy
  - Mixed economy
  - Free market

Market orientation



Normative and Positive Economics

- Positive economics deals with objective explanation
  - e.g. if a tax is imposed on a good its price will tend to rise
- Normative economics offers prescriptions based on value judgements
  - e.g. a tax *should* be imposed on tobacco to discourage smoking

Micro and Macro (1)

- Microeconomics
  - offers a detailed treatment of individual economic decisions concerning particular commodities
  - Footballers' wages and the price of oil, for example, are both microeconomic issues

Micro and Macro (2)

- Macroeconomics
  - emphasises the interactions in the economy as a whole
  - Gross domestic product, the aggregate price level and unemployment, for example, are all macroeconomic issues

Models and data

- Model
  - a framework based on simplifying assumptions
  - helps to organise our economic thinking
- Data
  - the economist's link with the real world
  - time series
  - cross section

Real and nominal

- Many economic variables are measured in money terms
- Nominal values
  - measured in current prices
- Real values
  - adjusted for price changes compared with a base year
  - measured in constant prices

Diagrams

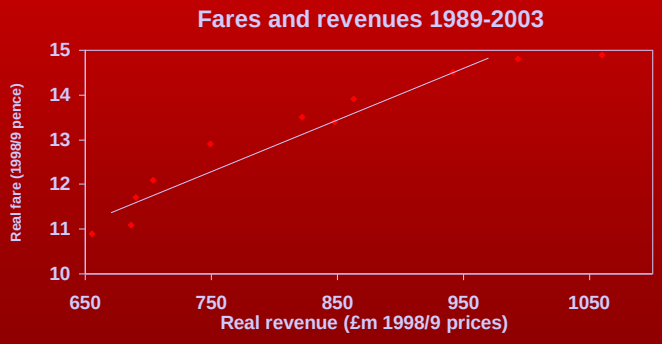
… help to analyse patterns and trends in data

Economic models: an example

- To organise our thinking we need a simplified picture of reality
- focusing on key elements
- Quantity of tube journeys demanded = f(Prices, income, preferences)

Relationships

Diagrams help economists to explore relationships between economic variables



Mc Graw Hill Education

Evidence in economics

- Scatter diagrams help us to confront economic theory with empirical reality
- *Econometrics* takes this further using statistical techniques
- Evidence may allow us to reject a theory
- or accumulate support for it

Mc Graw Hill Education

Some key terms

- Market
  - a set of arrangements by which buyers and sellers are in contact to exchange goods or services
- Demand
  - the quantity of a good buyers wish to purchase at each conceivable price
- Supply
  - the quantity of a good sellers wish to sell at each conceivable price
- Equilibrium price
  - price at which quantity supplied = quantity demanded

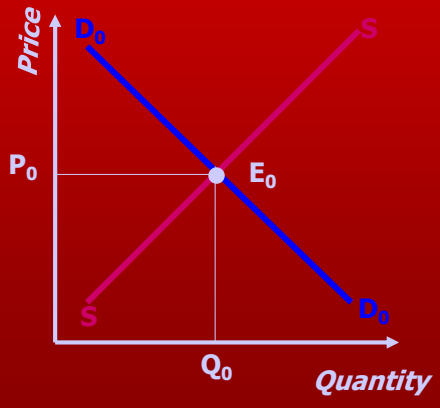
The Demand curve shows the relation between price and quantity demanded holding other things constant

- **"Other things" include:**
  - **the price of related goods**
  - **consumer incomes**
  - **consumer preferences**
- **Changes in these other things affect the position of the demand curve**

The Supply curve shows the relation between price and quantity supplied holding other things constant

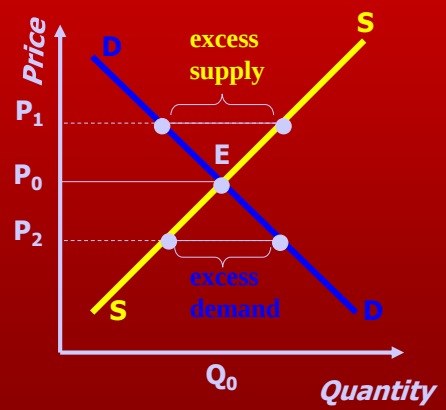
- "Other things" include:
  - technology
  - input costs
  - government regulations
- Changes in these other things affect the position of the supply curve

Market equilibrium (1)



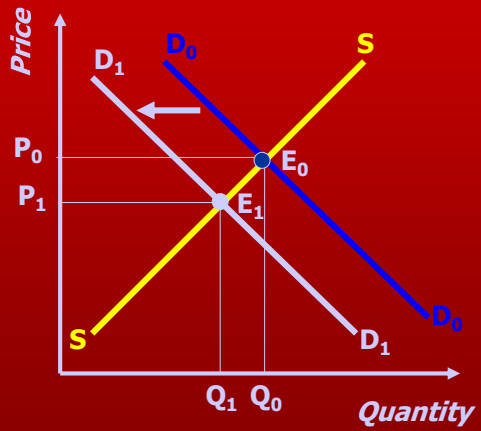
- Market equilibrium is at E_0 where quantity demanded equals quantity supplied
  - with price P_0 and quantity Q_0

Market equilibrium and disequilibrium



- If price were below P_0 there would be excess demand
  - consumers wish to purchase more than producers wish to supply
- If price were above P_0 there would be excess supply
  - producers wish to supply more than consumers wish to purchase

A shift in demand



If the price of a substitute good decreases ...

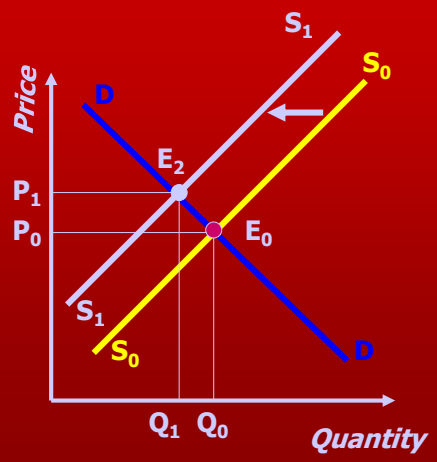
less will be demanded at each price.

The demand curve shifts from D_0D_0 to D_1D_1.

If price stayed at P_0 there would be excess supply.

So the market moves to a new equilibrium at E_1.

A shift in supply



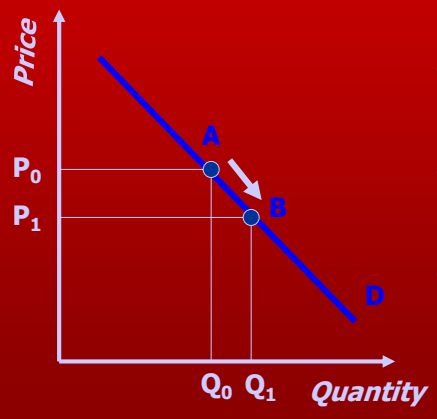
Suppose safety regulations are tightened, increasing producers' costs

The supply curve shifts to S_1S_1

If price stayed at P_0 there would be excess demand

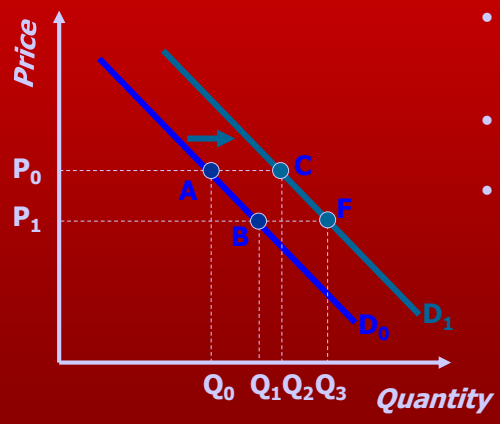
So the market moves to a new equilibrium at E_2

Two ways in which demand may increase (1)



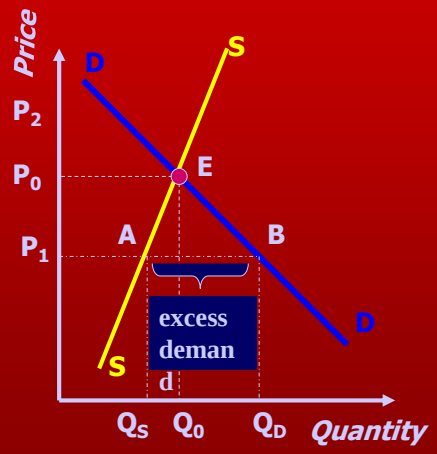
- (1) A movement *along* the demand curve from A to B
- represents consumer reaction to a price change
- could follow a supply shift

Two ways in which demand may increase (2)



- (2) A movement *of* the demand curve from D_0 to D_1
- leads to an increase in demand at each price
- e.g. at P_0 quantity demanded increases from Q_0 to Q_2: at P_1 quantity demanded increases from Q_1 to Q_3

A market in disequilibrium



- Suppose a disastrous harvest moves the supply curve to SS
- government may try to protect the poor, setting a *price ceiling* at P_1
- which is below P_0, the equilibrium price level
- The result is excess demand

RATIONING is needed to cope with the resulting excess demand

Price and quantity changes

- In practice, we cannot plot *ex ante* demand curves and supply curves
- So we use historical data and the supposition that the observed values are equilibrium ones
- Since other things are often not constant, some detective work is required
- This is where our theory comes in useful

What, how and for whom

- The market:
  - decides *how much* of a good should be produced
    - by finding the price at which the quantity demanded equals the quantity supplied
  - tells us *for whom* the goods are produced
    - those consumers willing to pay the equilibrium price
  - determines *what* goods are being produced
    - there may be goods for which no consumer is prepared to pay a price at which firms would be willing to supply

The price elasticity of demand

…measures the sensitivity of the quantity demanded of a good to a change in its price

It is defined as:

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

Elastic demand

- Demand is ELASTIC
  - when the price elasticity (ignoring the negative sign) is greater than -1
  - i.e. when the % change in quantity demanded exceeds the change in price
    - e.g. if quantity demanded falls by 7% in response to a 5% increase in price
    - elasticity is -7 ÷ 5 = -1.4

Inelastic demand

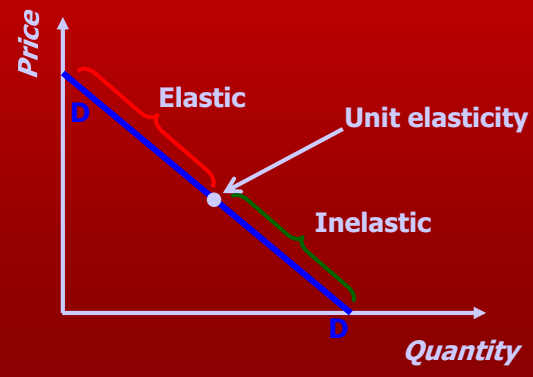
- Demand is INELASTIC
  - when the price elasticity lies between -1 and 0
  - i.e. when the % change in quantity demanded is smaller than the change in price
    - e.g. if quantity demanded falls by 3.5% in response to a 5% increase in price
    - elasticity is -3.5 ÷ 5 = - 0.7

Unit elastic demand

- Demand is UNIT ELASTIC
  - when the price elasticity is exactly -1
  - i.e. when the % change in quantity demanded is equal to the change in price
    - e.g. if quantity demanded falls by 5% in response to a 5% increase in price
    - elasticity is -5 ÷ 5 = -1

Price elasticity for a linear demand curve

The price elasticity varies along the length of a straight-line demand curve.



Mc Graw Hill Education

What determines the price elasticity?

- The ease with which consumers can substitute another good.
- EXAMPLE:
  - consumers can readily substitute one brand of detergent for another if the price rises
  - so we expect demand to be elastic
  - but if *all* detergent prices rise, the consumer cannot switch
  - so we expect demand to be inelastic

Mc Graw Hill Education

Elasticity is higher in the long run

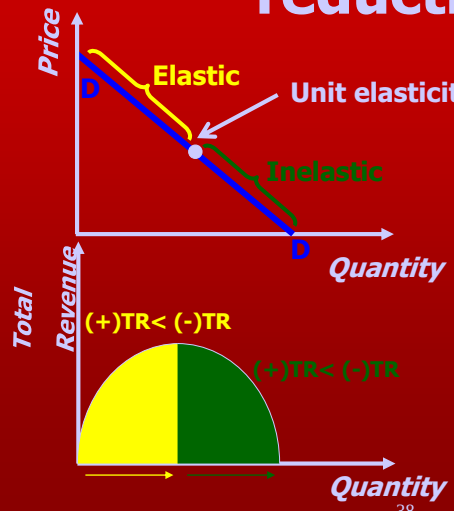
- In the short run, consumers may not be able (or ready) to adjust their pattern of expenditure.
- If price changes persist, consumers are more likely to adjust.
- Demand thus tends to be
  - more *elastic* in the long run
  - but relatively *inelastic* in the short run.

Elasticity and revenue

When price is changed, the impact on a firm's total revenue (TR) will depend upon the price elasticity of demand.

	For a price increase	For a price decrease
Demand is elastic	TR decreases	TR increases
Demand is unit elastic	TR does not change	TR does not change
Demand is inelastic	TR increases	TR decreases

Elasticity and price reductions



For a price fall: if demand is elastic, revenue from new sales will exceed the fall in revenue from existing sales - total revenue will rise;

if demand is inelastic, revenue from new sales will be less than the fall in revenue from existing sales - total revenue will fall

Elasticity and tube fares

How should tube fares be changed to increase revenues?

- Passengers can use buses, taxis, cars etc
  - so demand may be *elastic* (e.g. -1.4)
  - and an increase in fares will reduce the number of journeys demanded and total spending
- If passengers do *not* have travel options
  - demand may be inelastic (e.g. -0.7)
  - so raising fares will have less effect on journeys demanded
  - and revenue will improve

The cross price elasticity of demand

The cross price elasticity of demand for good i with respect to the price of good j is :

$$\frac{\%\text{ change in quantity demanded of good i}}{\%\text{ change in the price of good j}}$$

This may be positive or negative

The cross price elasticity tends to be positive

– if two goods are *substitutes*: e.g. tea and coffee

The cross price elasticity tends to be negative

– if two goods are *complements* e.g. tea and milk.

The income elasticity of demand

The income elasticity of demand measures the sensitivity of quantity demanded to a change in income:

$$\frac{\%\text{ change in quantity demanded of a good}}{\%\text{ change in consumer income}}$$

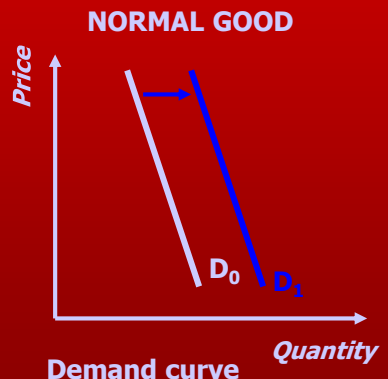
The income elasticity may be positive or negative.

Normal and inferior goods

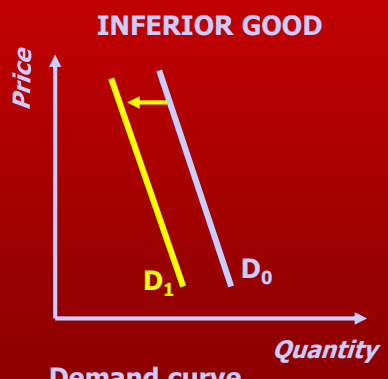
- A NORMAL GOOD has a positive income elasticity of demand
  - an increase in income leads to an increase in the quantity demanded
    - e.g. dairy produce
- An INFERIOR GOOD has a negative income elasticity of demand
  - an increase in income leads to a fall in quantity demanded
    - e.g. coal
- A LUXURY GOOD has an income elasticity of demand greater than 1
    - e.g. wine

Income and the demand curve

For an increase in income:



Demand curve moves to the right



Demand curve moves to the left

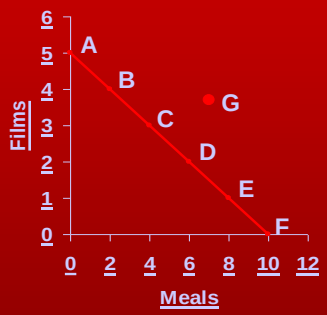
Four key elements in consumer choice

- Consumer's income
- Prices of goods
- Consumer preferences
- The assumption that consumers maximise utility

The budget line

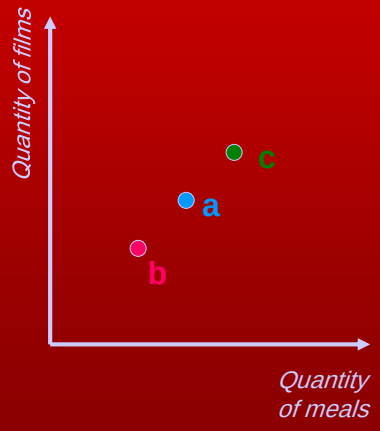
Consider a student with a budget of £50 to spend on meals and films.

- Income and prices together determine the combinations of the goods that the consumer can afford.
- The budget line separates the affordable from the unaffordable.



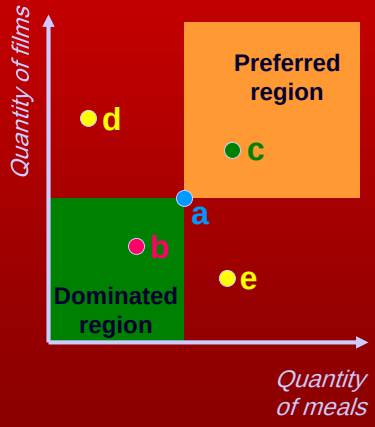
Price of meals is £5; price of films is £10.

Modelling consumer preferences



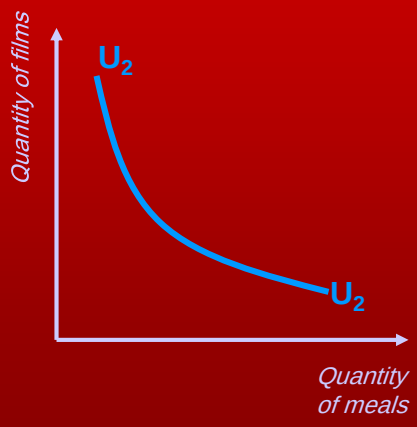
- ***Assume*** **the consumer prefers more to less.**
- **Compared with point a:**
  - **the consumer would prefer to be to the north-east, e.g. at c**
  - **but prefers a to such points as b to the south-west.**

Modelling consumer preferences (2)



- **a is preferred to all points in the dominated region**
- **but the consumer would prefer any point in the preferred region to a**
- **points like d and e involve more of one good and less of the other compared with a.**

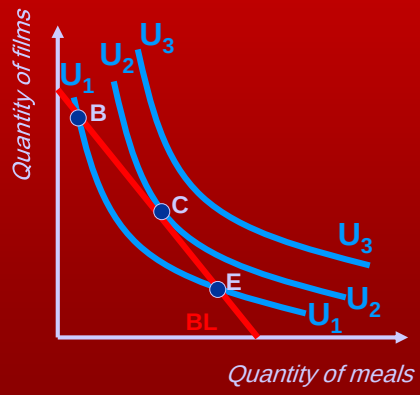
Modelling consumer preferences (3)



- An *indifference curve* like U_2U_2 shows all the consumption bundles that yield the same utility to the consumer
  - ICs slope downwards (given our assumptions)
  - their slope gets steadily flatter to the right
  - ICs cannot intersect

The consumer's choice

The point at which utility is maximised is found by bringing together the indifference curves (U) and the budget line (BL)

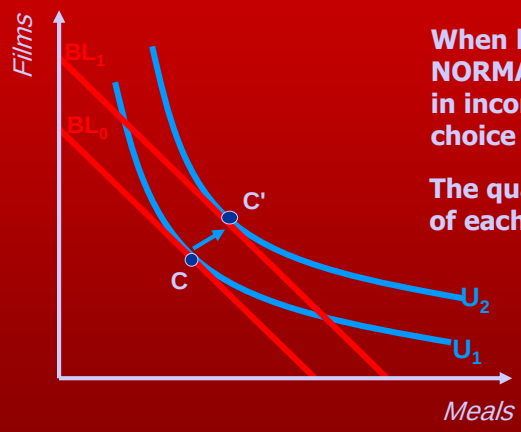


- The choice point is at C
- where the budget line is at a tangent to an IC
- Points B and E are also affordable
- but give lower utility,
- being on a lower IC.

Adjustment to an income change

- A change in the consumer's income shifts the budget line
- without changing the slope
- The change in the pattern of consumer choice depends on the nature of the two goods

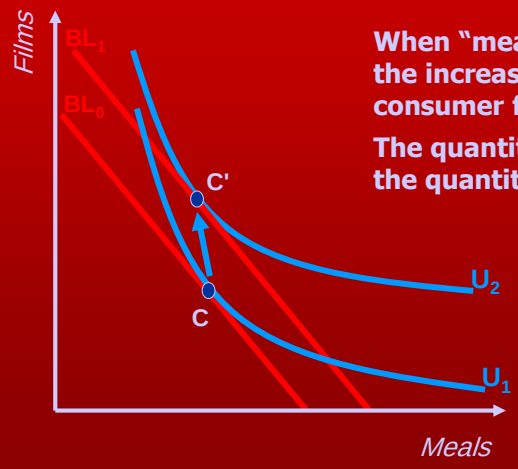
Normal goods



When both goods are NORMAL, an increase in income induces a new choice point at C'

The quantity demanded of each good increases

An inferior good and a normal good



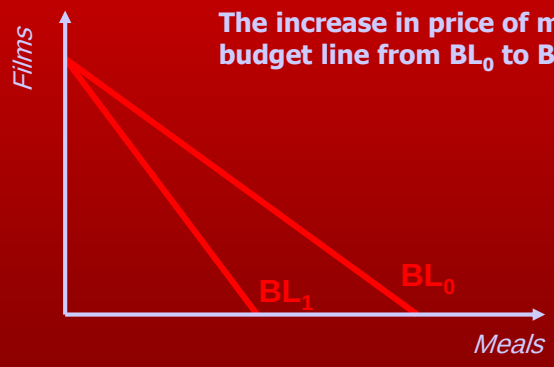
When "meals" is an inferior good the increase in income takes the consumer from C to C'

The quantity of meals falls and the quantity of films increases

Adjustment to a price change

- An increase in the price of one good shifts the budget line
  - altering its slope
  - which reflects relative prices.

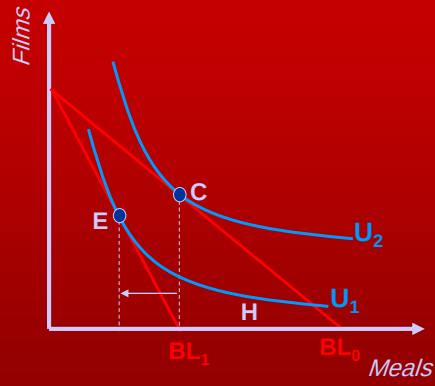
An increase in the price of meals (1)



The increase in price of meals shifts the budget line from BL_0 to BL_1

The increase in price reduces purchasing power.

An increase in the price of meals (2)



The consumer moves from C to E as the price of meals rises

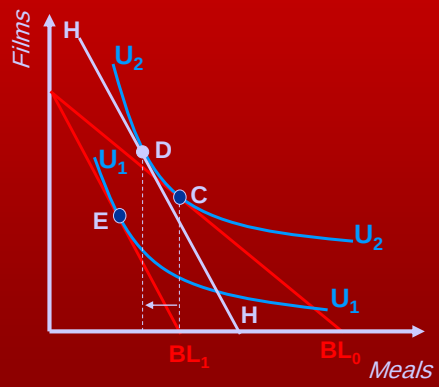
The overall effect is a reduction in quantity of meals demanded

Tracing out more of such points at different prices enables us to identify the Demand curve.

Response to a price change

- The response to a price change comprises two effects:
- The SUBSTITUTION EFFECT
  - is the adjustment to the change in *relative* prices
- THE INCOME EFFECT
  - is the adjustment to the change in real income.

The substitution effect

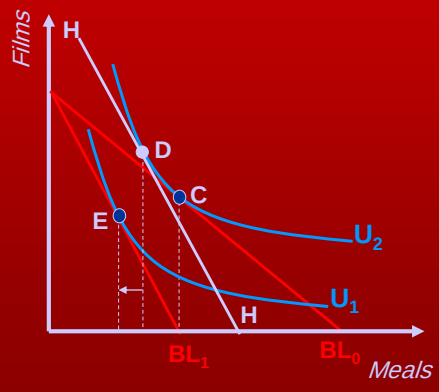


The hypothetical budget line HH has the slope of the NEW relative prices and is tangent to the OLD indifference curve at D.

The SUBSTITUTION EFFECT is from C to D along U_2U_2.

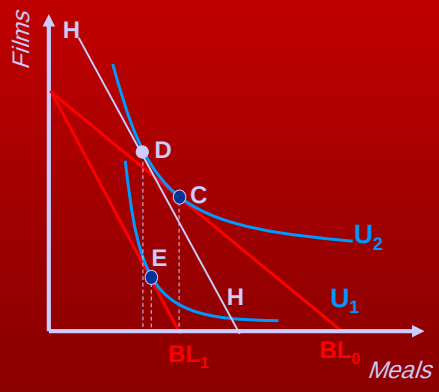
It is always negative. In this case an increase in the price of meals leads to a fall in demand as we move from C to D.

The income effect



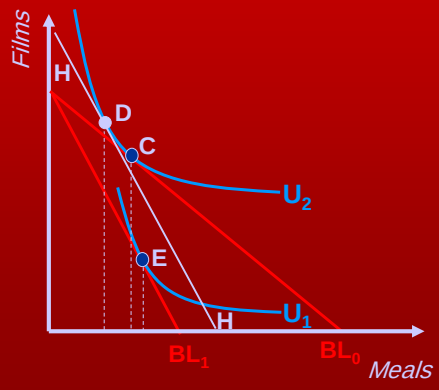
- The INCOME EFFECT is from D to E
  - it reflects the fall in real income at constant relative prices
  - it may be positive or negative
  - depending on whether the good is normal or inferior

Income and substitution effects for an inferior good



- The INCOME EFFECT is from D to E
  - in this case, it is positive because the good is inferior
  - and income and substitution effects therefore have opposite effects on demand
  - but the substitution effect is greater, so the overall effect is a fall in demand

Income and substitution effects for a Giffen good



- **The INCOME EFFECT is from D to E**
  - **in this case, it is positive because the good is inferior**
  - **and income and substitution effects therefore have opposite effects on demand**
  - **but the substitution effect is smaller, so the overall effect is an increase in demand**

Forms of business organisation

- Sole trader
  - owned by an individual entitled to income and responsible for losses
- Partnership
  - jointly owned by two or more people
  - unlimited liability
- Company
  - ownership divided among shareholders
  - legal entitlement to produce and trade
  - limited liability
  - shares of public companies resold on the stock exchange

Some key terms

- Revenues
  - the amount a firm earns by selling goods and services in a given period
- Costs
  - the expenses incurred in producing goods and services during the period
- Profits
  - the excess of revenues over costs

Some accounting terms

- Cash flow
  - the net amount of money received (by the firm) during the accounting period
- Physical capital
  - machinery, equipment and buildings used in production
- Depreciation
  - the loss in value of a capital good during the accounting period
- Inventories
  - goods held in stock by the firm for future sales

A firm's balance sheet

- Assets
  - what the firm owns
- Liabilities
  - what the firm owes
- Balance sheet
  - lists a firm's assets and liabilities at a point in time

Costs and the economist

- Accounting cost
  - actual payments made by a firm in a period
- Opportunity cost
  - amount lost by not using a resource in its best alternative use
- Supernormal profit
  - profit over and above the return earned at the market rate of interest
- Economists include opportunity cost in a firm's total costs

Will firms try to maximise profits?

- Large firms are not run by their owners
  - there is separation of ownership and control
- Managers may pursue different objectives
  - e.g. size, growth
- But firms not maximising profits may be vulnerable to takeover
  - or managers may be given share options to influence their incentive to maximise profits

The production function

- The amount of output produced depends upon the inputs used in the production process
- A *factor of production* ("input") is any good or service used to produce output
- The *production function* specifies the maximum output which can be produced given inputs

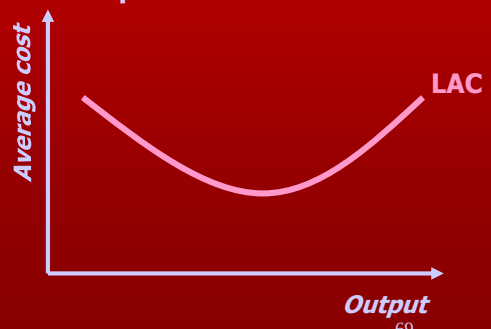
Short run vs. long run

- The *short run* is the period in which a firm can make only partial adjustment of inputs
  - e.g. the firm may be able to vary the amount of labour, but cannot change capital.
- The *long run* is the period in which a firm can adjust *all* inputs to changed conditions.
- The *long run total cost curve* describes the minimum cost of producing each output level when the firm is free to vary all input levels.

Average cost

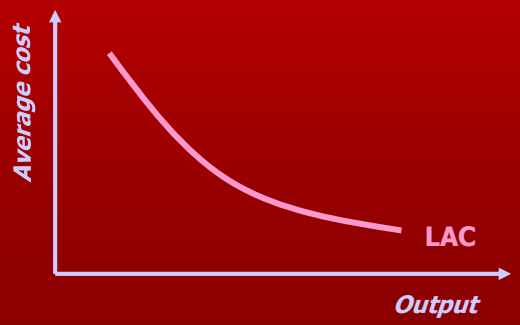
The average cost of production is total cost divided by the level of output.

Long-run average cost (LAC) is often assumed to be U-shaped:



Economies of scale

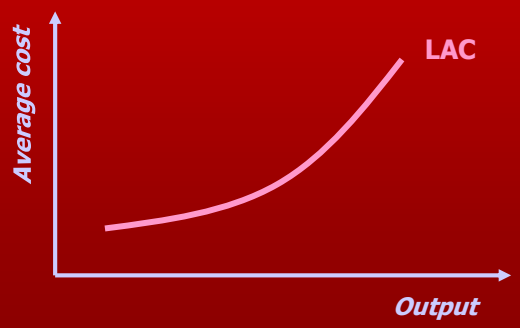
Economies of scale – or increasing returns to scale – occur when long-run average costs decline as output rises:



Mc Graw Hill Education

Decreasing returns to scale

occur when long-run average costs rise as output rises:



Mc Graw Hill Education

Constant returns to scale

occur when long-run average costs are constant as output rises:

The short run

- Fixed factor of production
  - a factor whose input level cannot be varied
- Fixed costs
  - costs that do not vary with output levels
- Variable costs
  - costs that do vary with output levels
- STC = SFC + SVC

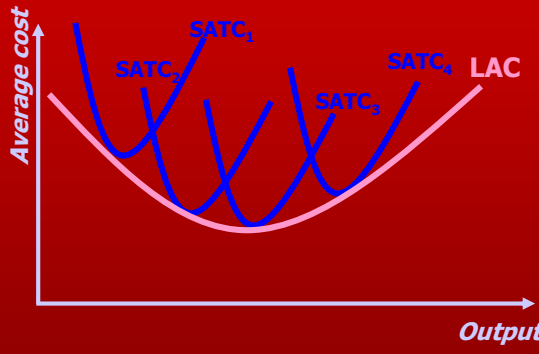
The marginal product of labour

- The marginal product of labour is the increase in output obtained by adding 1 unit of the variable factor but holding constant the inputs of all other factors.
- Labour is often assumed to be the variable factor
  - with capital fixed.

The law of diminishing returns

- Holding all factors constant except one, the law of diminishing returns says that:
- beyond some value of the variable input
- further increases in the variable input lead to steadily decreasing marginal product of that input.
  - e.g. trying to increase labour input without also increasing capital will bring diminishing returns.

The long-run average cost curve LAC



Each plant size is designed for a given output level

So there is a sequence of SATC curves, each corresponding to a different optimal output level.

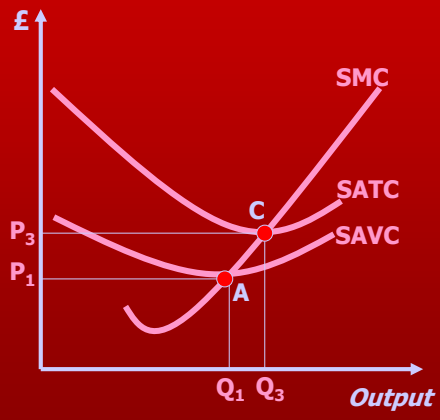
In the long-run, plant size itself is variable, and the long-run average cost curve LAC is found to be the 'envelope' of the SATCs

Perfect competition

Characteristics of a perfectly competitive market

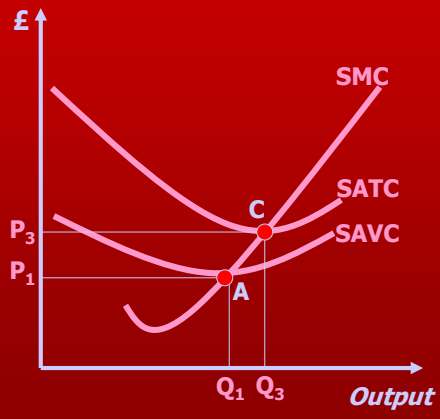
- many buyers and sellers
  - so no individual believes that their own action can affect market price
- firms take price as given
  - so face a horizontal demand curve
- the product is homogeneous
- perfect customer information
- free entry and exit of firms

The supply curve under perfect competition (1)



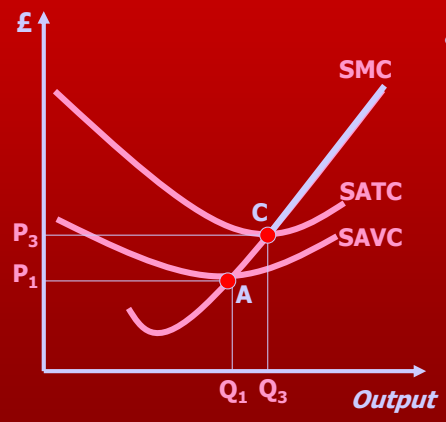
- ***Above*** **price P_3 (point C), the firm makes profit above the opportunity cost of capital in the short run**
- ***At*** **price P_3, (point C), the firm makes NORMAL PROFITS**

The supply curve under perfect competition (2)



- **Between P_1 and P_3, (A and C), the firm makes short-run losses, but remains in the market**
- ***Below*** **P_1 (the SHUT-DOWN PRICE), the firm fails to cover SAVC, and exits**

The supply curve under perfect competition (3)

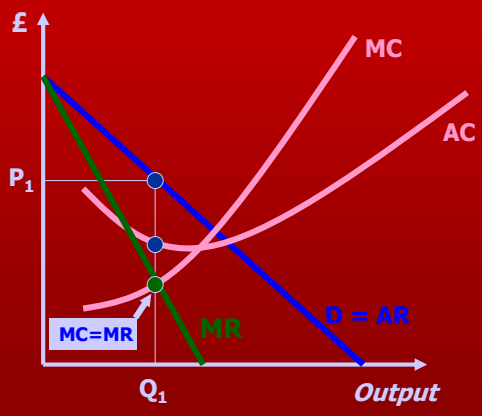


- **So the SMC curve above SAVC represents the firm's SHORT-RUN SUPPLY CURVE**
  - showing how much the firm would produce at each price level.

Monopoly

- A monopolist:
  - is the sole supplier of an industry's product
    - and the only potential supplier
  - is protected by some form of barrier to entry
  - faces the market demand curve directly
  - Unlike under perfect competition, MR is always below AR.

Profit maximisation by a monopolist



Profits are maximised where MC = MR at Q_1P_1.

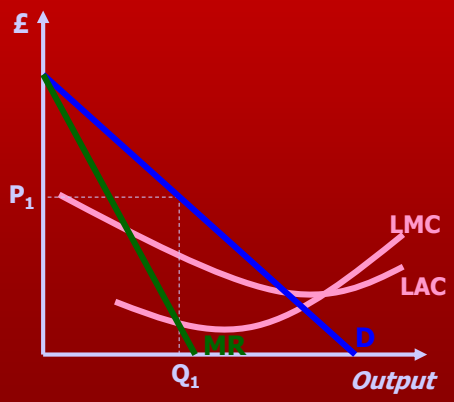
In this position, AR is greater than AC so the firm makes profits above the opportunity cost of capital shown by the shaded area.

Entry barriers prevent new firms joining the industry.

Comparing monopoly with perfect competition (3)

- So we see that monopoly compared with perfect competition implies:
  - higher price
  - lower output
- Does the consumer always lose from monopoly?
  - Among other things, this depends on whether the monopolist faces the same cost structure
  - there may be the possibility of economies of scale.

A natural monopoly



- This firm enjoys substantial economies of scale relative to market demand
- LAC declines right up to market demand
- the largest firm always enjoys cost leadership
- and comes to dominate the industry
- It is a NATURAL MONOPOLY.

Discriminating monopoly

- Suppose a monopolist supplies two separate groups of customers
  - with differing elasticities of demand
  - e.g. business travellers may be less sensitive to air fare levels than tourists.
- The monopolist may increase profits by charging higher prices to the businessmen than to tourists.
- Discrimination is more likely to be possible for goods that cannot be resold
  - e.g. dental treatment.

Most markets fall between the two extremes of monopoly and perfect competition

- An imperfectly competitive firm
  - would like to sell more at the going price
  - faces a downward-sloping demand curve
  - recognises its output price depends on the quantity of goods produced and sold

Imperfect competition

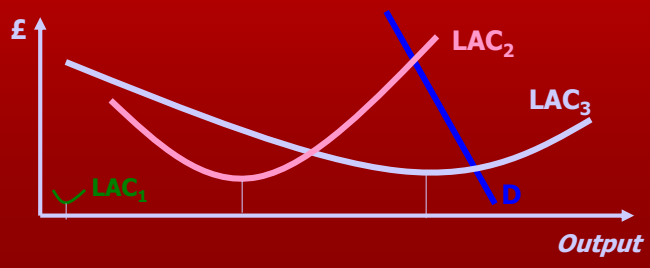
- An oligopoly
  - an industry with a few producers
  - each recognising that its own price depends both on its own actions *and* those of its rivals.
- In an industry with monopolistic competition
  - there are many sellers producing products that are close substitutes for one another
  - each firm has only limited ability to influence its output price.

Market structure

	Number of firms	Ability to affect price	Entry barriers	Example
Perfect competition	Many	Nil	None	Fruit stall
Imperfect competition:				
Monopolistic competition	Many	Small	None	Corner shop
Oligopoly	Few	Medium	Some	Cars
Monopoly	One	Large	Huge	Post Office

The minimum efficient scale and market demand

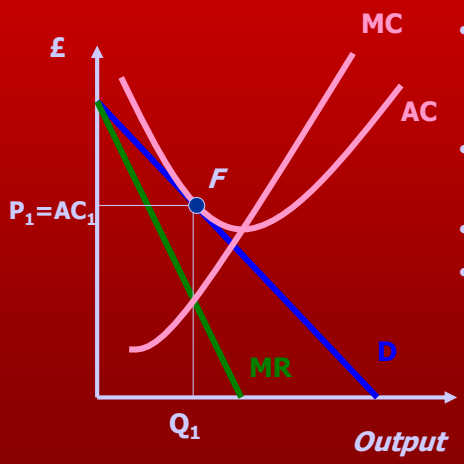
- The minimum efficient scale (mes) is the output at which a firm's long-run average cost curve stops falling.
- The size of the mes relative to market demand has a strong influence on market structure.



Monopolistic competition

- Characteristics:
  - many firms
  - no barriers to entry
  - product differentiation
    - so the firm faces a downward-sloping demand curve
  - The absence of entry barriers means that profits are competed away...

Monopolistic competition (2)



- **Firms end up in TANGENCY EQUILIBRIUM, making normal profits.**
- **Firms do not operate at minimum LAC.**
- **Price exceeds marginal cost.**
- **Unlike perfect competition, the firm here is eager to sell more at the going market price.**

Oligopoly

- A market with a few sellers.
- The essence of an oligopolistic industry is the need for each firm to consider how its own actions affect the decisions of its relatively few competitors.
- Oligopoly may be characterised by *collusion* or by *non-co-operation.*

Collusion and cartels

- COLLUSION
  - an explicit or implicit agreement between existing firms to avoid or limit competition with one another.
- CARTEL
  - is a situation in which formal agreements between firms are legally permitted.
    - e.g. OPEC

Collusion is difficult if

- There are many firms in the industry
- The product is not standardised
- Demand and cost conditions are changing rapidly
- There are no barriers to entry
- Firms have surplus capacity

Introduction to macroeconomics

David Begg, Stanley Fischer and Rudiger Dornbusch, *Economics*,
8th Edition, McGraw-Hill, 2005
PowerPoint presentation by Alex Tackie and Damian Ward

Macroeconomics is ...

- the study of the economy as a whole
- it deals with broad aggregates
- but uses the same style of thinking about economic issues as in microeconomics.

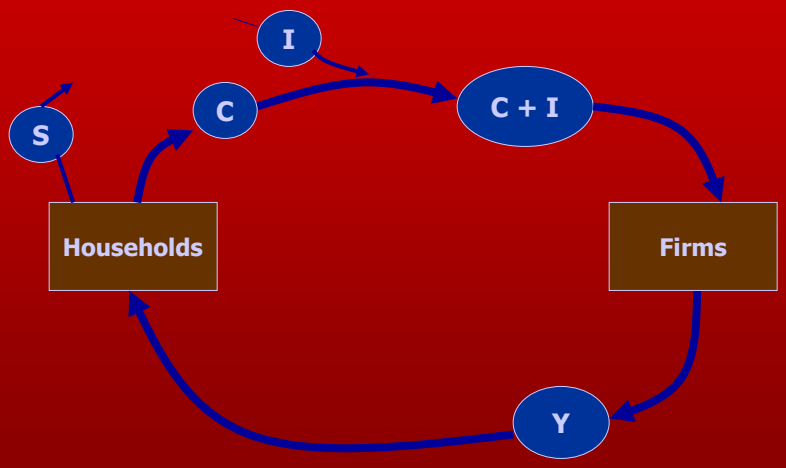
Some key issues in macroeconomics

- Inflation
  - the rate of change of the general price level
- Unemployment
  - a measure of the number of people looking for work, but who are without jobs
- Output
  - real gross national product (GNP) measures total income of an economy
    - it is closely related to the economy's total output

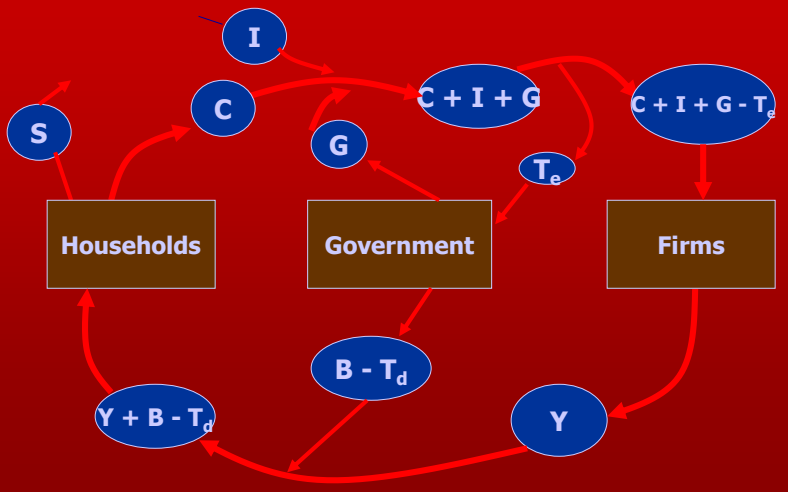
More key issues in macroeconomics

- Economic growth
  - increases in real GNP, an indication of the expansion of the economy's total output
- Macroeconomic policy
  - a variety of policy measures used by the government to affect the overall performance of the economy

The circular flow of income, expenditure and output



Government in the circular flow



Adding the foreign sector

- To incorporate the foreign sector into the circular flow
- we must recognise that residents of a country will buy imports from abroad
- and that domestic firms will sell (export) goods and services abroad.

GDP and GNP

- Gross domestic product (GDP)
  - measures the output produced by factors of production located in the domestic economy
- Gross national product (GNP)
  - measures the total income earned by domestic citizens
- GNP = GDP + net income from abroad

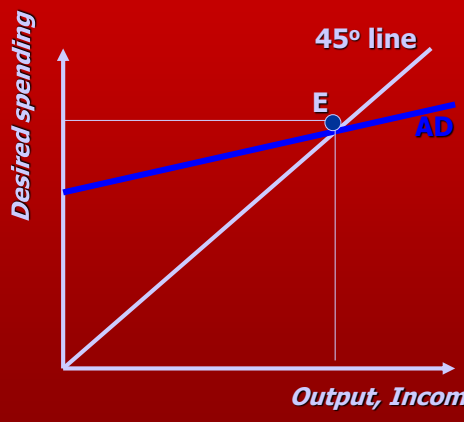
Three measures of national output

- Expenditure
  - the sum of expenditures in the economy
  - Y = C + I + G + X - Z
- Income
  - the sum of incomes paid for factor services
  - wages, profits, etc.
- Output
  - the sum of output (value added) produced in the economy

What GNP does and does not measure

- Some care is needed:
  - to distinguish between *real* and *nominal* measurements
  - to take account of population changes
  - to remember that GNP is not a comprehensive measure of everything that contributes to economic welfare

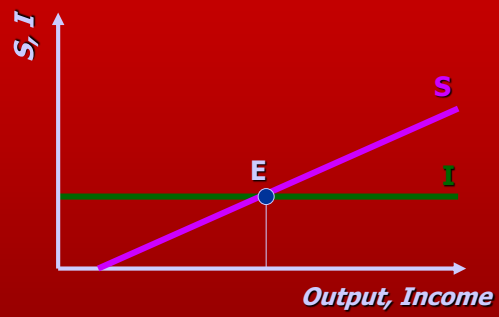
Equilibrium output



The 45° line shows the points at which desired spending equals output or income.
Given the AD schedule, equilibrium is thus at E.

This the point at which planned spending equals actual output and income.

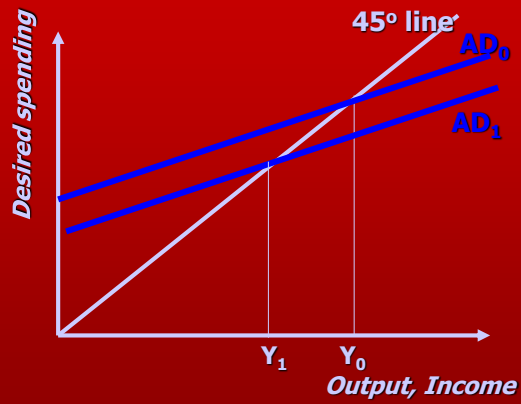
An alternative approach



An equivalent view of equilibrium is seen by equating planned investment (I) to planned saving (S) again giving us equilibrium at E

The two approaches are equivalent.

Effects of a fall in aggregate demand



Suppose the economy starts in equilibrium at Y_0.

a fall in aggregate demand to AD_1

leads the economy to a new equilibrium at Y_1.

Notice that the change in equilibrium output is larger than the original change in AD.

The multiplier

- The multiplier is the ratio of the change in equilibrium output to the change in autonomous spending that causes the change in output.
- The larger the marginal propensity to consume, the larger is the multiplier.
  - The higher is the marginal propensity to save, the more of each extra unit of income 'leaks' out of the circular flow.

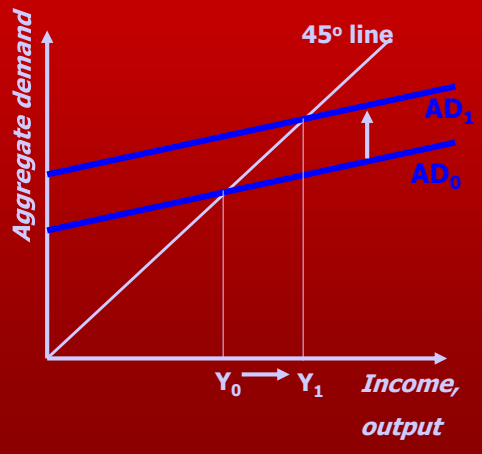
Some key terms

- Fiscal policy
  - the government's decisions about spending and taxes
- Stabilisation policy
  - government actions to try to keep output close to its potential level
- Budget deficit
  - the excess of government outlays over government receipts
- National debt
  - the stock of outstanding government debt

Government in the income-expenditure model

- Direct taxes
  - affect the slope of the consumption function
  - and hence the *slope* of the AD schedule.
- Government expenditure affects the *position* of the AD schedule.

Fiscal policy?



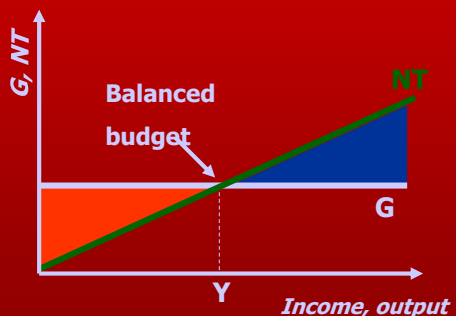
This seems to suggest that the government could influence aggregate output in the economy by raising AD from AD_0 to AD_1, thus raising equilibrium output from Y_0 to Y_1.

But this ignores some important issues – prices, interest rates, and the need to fund the government spending.

The government budget

The budget deficit equals total government spending minus total tax revenue.

If government spending is independent of income, but net taxes depend on income, then the budget will be in deficit at low levels of income but in surplus at high levels.



The *balanced budget multiplier* states that an increase in government spending plus an equal increase in taxes leads to higher equilibrium output.

Deficits and the fiscal stance

- The size of the budget deficit is not a good measure of the government's fiscal stance.
- The *structural budget* shows what the budget would have been if output had been at the full-employment level.
- The inflation-adjusted budget uses real not nominal interest rates to calculate government spending on debt interest.

Automatic stabilisers

- mechanisms in the economy that reduce the response of GNP to shocks
  - for example, in a recession:
    - payments of unemployment benefits rise
    - and receipts from VAT and income tax fall

Limits on active fiscal policy

Why can't shocks to aggregate demand immediately be offset by fiscal policy?

- Time lags: it takes time
  - to diagnose the problem
  - to take action
  - for the multiplier process to operate
- Uncertainty
  - the size of the multiplier is not known
  - aggregate demand is always changing
- Induced effects on autonomous demand
  - changes in fiscal policy may induce offsetting effects in other components of aggregate demand

Limits on active fiscal policy (2)

Why doesn't the government expand fiscal policy when unemployment is persistently high?

- The budget deficit
  - concern about inflation if the budget deficit grows
- Maybe we're at full employment!
  - unemployment may be (at least partly) voluntary

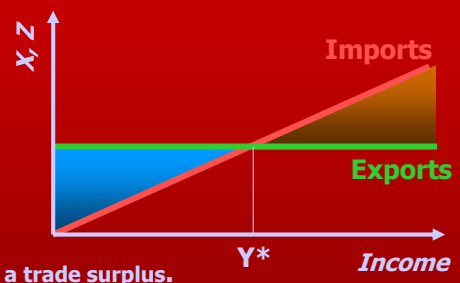
Foreign trade and income determination

- Introducing exports (X) & imports (Z)
- TRADE BALANCE
  - the value of net exports (X - Z)
- TRADE DEFICIT
  - when imports exceed exports
- TRADE SURPLUS
  - when exports exceed imports
- Equilibrium is now where
  - Y = C + I + G + X - Z

Exports, imports and the trade balance

Assume that exports are independent of income,

but that imports increase with income.



At relatively low income, exports exceed imports – there is a trade surplus.

At higher income levels, there is a trade deficit.

There is trade balance at income Y*, but there is no guarantee that this corresponds to full employment.

Foreign trade and the multiplier

- The marginal propensity to import
  - is the fraction of additional income that domestic residents wish to spend on additional imports.
- The effect of foreign trade is to reduce the size of the multiplier
  - the higher the value of the marginal propensity to import, the lower the value of the multiplier.

A beginner's guide to the financial markets

- Financial asset
  - a piece of paper entitling the owner to a specified stream of interest payments over a specified period
- Cash
  - notes and coin, paying no interest
  - the most liquid of all assets
- Bills
  - financial assets with less than one year until the known date at which they will be repurchased by the original owner
  - highly liquid
- Bonds
  - longer term financial assets – less liquid because there is more uncertainty about the future income stream

A beginner's guide to the financial markets (continued)

- Perpetuities
  - an extreme form of bond, never repurchased by the original issuer, who pays interest forever
    - e.g. Consols
- Gilt-edged securities
  - government bonds in the UK
- Industrial shares (equities)
  - entitlements to receive corporate dividends
  - not very liquid

Credit creation by banks

- Commercial banks need to hold only a proportion of assets as cash reserves
  - this enables them to create credit by lending
- EXAMPLE
  - suppose the public needs a fixed £10m for transactions
  - and the commercial bank maintains a 10% cash reserve

The monetary base and the money multiplier

- The monetary base or stock of high-powered money
  - the quantity of notes and coin in private circulation plus the quantity held by the banking system
- The money multiplier
  - the change in the money stock for a £1 change in the quantity of the monetary base

The central bank

- acts as banker to the commercial banks in a country
- and is responsible for setting interest rates.
- In the UK, the Bank of England fulfils these roles.
- Two key tasks:
  - to issue coins and bank-notes
  - to act as banker to the banking system and the government

The bank and the money supply

- Three ways in which the central bank MAY influence money supply:
  - Reserve requirements
    - central bank sets a minimum ratio of cash reserves to deposits that commercial banks must meet
  - Discount rate
    - the interest rate that the central bank charges when the commercial banks want to borrow
    - setting this at a penalty rate may encourage commercial banks to hold more excess reserves
  - Open market operations
    - actions to alter the monetary base by buying or selling financial securities in the open market

The demand for money

- The opportunity cost of holding money is the interest given up by holding money rather than bonds.
- People will only hold money if there is a benefit to offset that opportunity cost.

Motives for holding money

- Transactions
  - payments and receipts are not perfectly synchronised:
    - so money is held to finance known transactions
    - depends upon income and payment arrangements
- Precautionary
  - because of uncertainty:
    - people hold money to meet unforeseen contingencies
    - depends upon the (nominal) interest rate

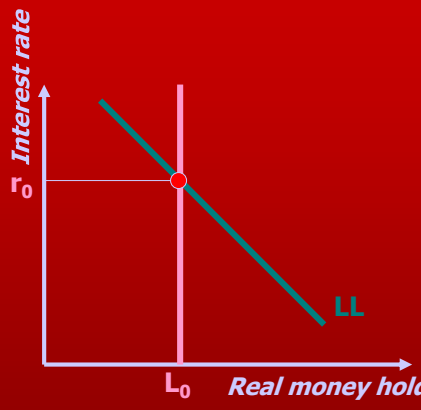
Motives for holding money (2)

- Asset
  - people dislike risk
  - so may hold money as a low-risk component of a mixed portfolio
    - depends upon opportunity cost (the nominal interest rate)
- Speculative
  - people may hold money rather than bonds
  - if bond prices are expected to fall
  - i.e. the interest rate is expected to rise
    - depends upon the rate of interest and on expectations about bond prices

The demand for money: summary

- The demand for money is a demand for *real* money balances
- It depends upon:
  - real income
  - nominal interest rate (the opportunity cost of holding money)
  - the price level (currently assumed fixed)
  - expectations about future interest rates

Money market equilibrium

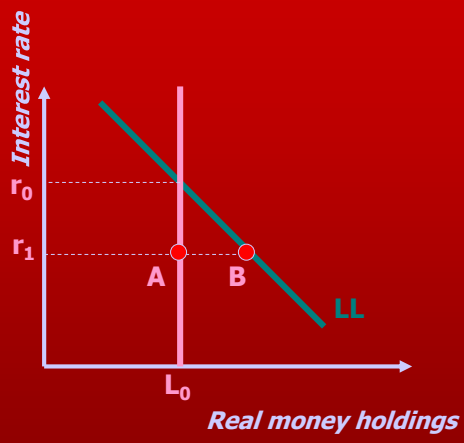


Other things being equal, the demand for real money balances will be lower when the opportunity cost (the rate of interest) is relatively high.

The position of this schedule depends upon real income and the price level.

When money supply is L_0, money market equilibrium occurs when the rate of interest is at r_0.

Reaching money market equilibrium



If the rate of interest is set below the market equilibrium – say at r_1 – there is excess demand for money (the distance AB).

This implies an excess supply of bonds – which reduces the price of bonds and thus raises the rate of interest until equilibrium is reached.

Monetary control – some provisos

- Monetary control cannot be precise unless the authorities know the shape and position of money demand and can easily manipulate the money multiplier.
- Controlling money supply is especially problematic
  - and the Bank of England has preferred to work via interest rates
  - this involves fixing the interest rate and accepting (ie supplying) the equilibrium level of money

Targets and instruments of monetary policy

- Monetary instrument:
  - the variable over which the central bank exercises day to day control
  - e.g. interest rate
- Intermediate target
  - the key indicator used as an input to frequent decisions about when to set interest rates
- The financial revolution has reduced the reliability of money supply as an indicator
  - and central banks increasingly use inflation forecasts as the intermediate target

The transmission mechanism

- … is the channel through which monetary policy affects output and employment.
- In a closed economy, monetary policy works through the impact on interest rates on consumption and investment demand.

Consumption demand

- A simple version of the consumption function is:
  - $C = a + bY_d$
- monetary policy can affect *a* household wealth
  - this is called a *wealth effect*
- the wealth effect occurs in two ways:

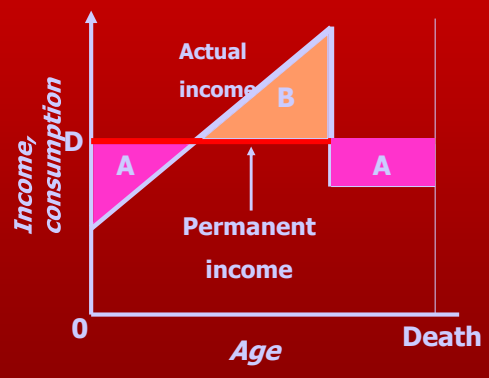
Consumption demand - the wealth effect

- The wealth effect occurs in two ways:
  - directly, through an increase in the real money supply (part of wealth is kept in the form of money)
  - indirectly, through the effect of interest rates on share prices: as interest rates fall, the price of bonds and shares rises making stock holders feel wealthier

Consumption demand - consumer credit and durable goods

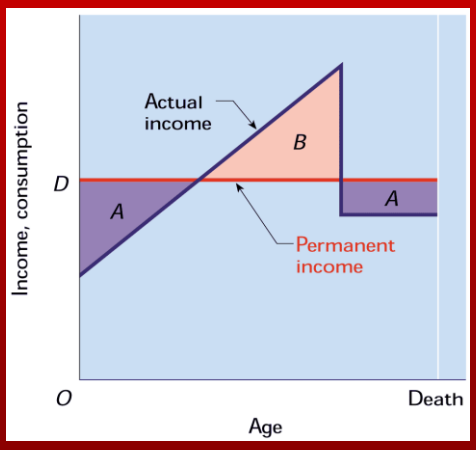
- Consumption is affected by two aspects of consumer credit
  - the quantity of credit: an increase in the quantity of credit increases *a* and *vice versa*
  - the cost of credit: households will borrow less at higher interest rates thus reducing *a* and *vice versa*
- these points are well illustrated by the UK housing market.

Consumption and the life-cycle

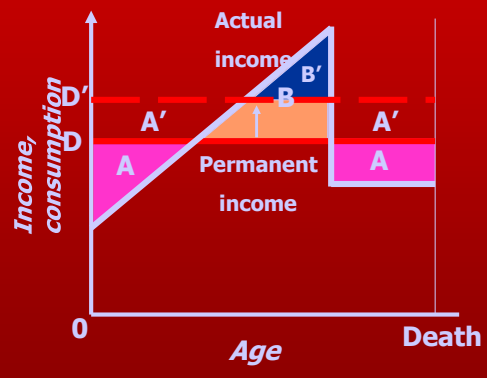


Income varies over an individual's lifetime.
Individuals try to smooth their consumption, based on expected lifetime income.
Saving (B) occurs during middle age
and dissaving (A) in youth and old age.

Figure 23.4: Consumption and the life-cycle



Consumption, wealth and the life-cycle



Given the household's initial estimation of his/her wealth, permanent income is OD.

Say the household consumes its permanent income. Then the two A's (*plus* any interest) would be offset by B.

With higher wealth, permanent income is revised upwards to OD′ so that 2(A+A′) exceeds B′ This shortfall can be met from the extra wealth.

Thus wealth and interest rates may influence consumption.

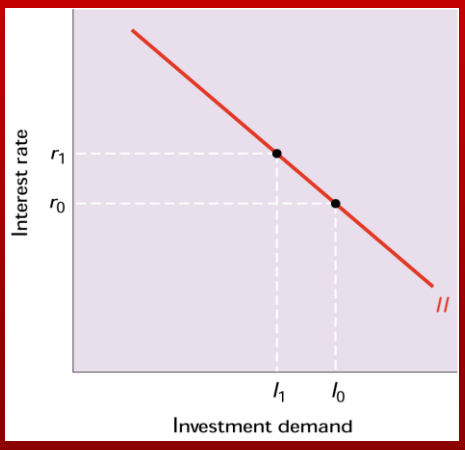
Investment demand

- Investment spending includes:
  - fixed capital
    - Transport equipment
    - Machinery & other equipment
    - Dwellings
    - Other buildings
    - Intangibles
  - working capital
    - stocks (inventories)
    - work in progress
- and is undertaken by private and public sectors

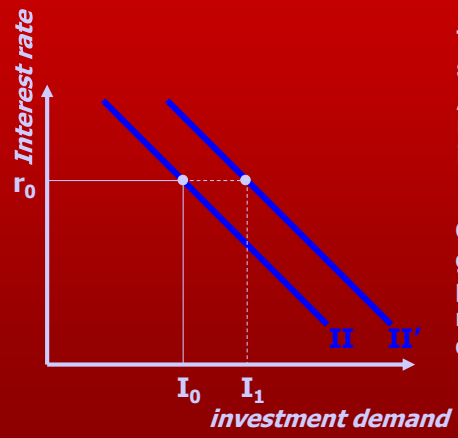
The demand for fixed investment

- Investment entails present sacrifice for future gains
  - firms incur costs in the short run
  - but reap gains in the long run
- Expected returns must outweigh the opportunity cost if a project is to be undertaken
- so at relatively high interest rates, less investment projects are viable.

Figure 23.5: The investment demand schedule



The investment demand schedule



The investment demand schedule suggests that *ceteris paribus* higher interest rates reduce the volume of investment projects and *vice versa.*

Changes in the price of capital goods and expectations about profit streams at given interest rates shift the schedule up or down.

The credit channel of monetary policy

- An emphasis of recent research has been on how the credit channel affects the real value of collateral and hence the supply of credit.
- There are two *credit* channels:
  - changes in goods prices alter the real value of nominal assets
  - policy induced changes in the interest rate alter the market value of assets which may be used as collateral

Inflation is ...

- Inflation is a rise in the price level.
- *Pure* inflation is when goods *and* input prices rise at the same rate.
- One of the first acts of the Labour government in 1997 was to make the Bank of England independent
  - with a mandate to achieve low inflation.

Some questions about inflation

- What are the causes of inflation?
- What are the effects and hence costs of inflation?
- What can be done about it?
- These are the questions we seek to answer in what follows.

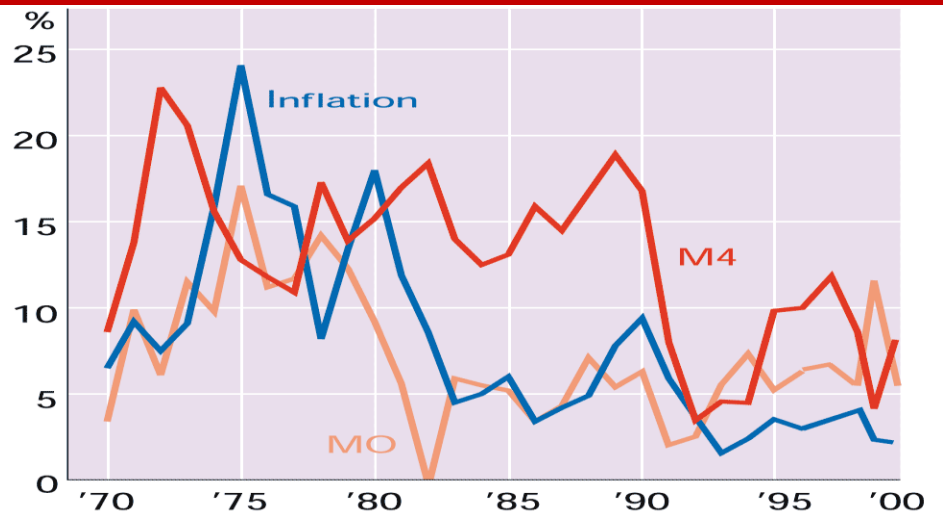
The quantity theory (1)

- The quantity theory of money says:
- "Changes in the nominal money supply lead to equivalent changes in the price level (and money wages) but do not have effects on output and employment."

The quantity theory (2)

- We can state it algebraically as:
  - MV = PY
  - where V = velocity of circulation
    Y = potential level of real GDP
    P = the price level
    M = nominal money supply
  - Given constant velocity, if prices adjust to maintain real income at the potential level
  - an increase in nominal money supply leads to an equivalent increase in prices.

Figure 26.3 Inflation and money growth (%)



Money, prices and inflation (1)

- Milton Friedman famously claimed

  "Inflation is always and everywhere a monetary phenomenon."
  - i.e. it results when money supply grows more rapidly than real output.
- But notice that the quantity theory equation does not tell us whether prices determine quantity or vice versa.

Money, prices and causation (a)

- In money market equilibrium, the supply of real money equals the demand for money i.e.
  - $M/P = Y/V$
- If the demand for real money is constant, M/P is constant.
- Monetary policy can fix M, in which case $\Delta M \rightarrow \Delta P$

Money, prices and causation (b)

- OR monetary policy can try and fix P over time, in which case $\Delta P \rightarrow \Delta M$
- This latter approach is known as inflation targeting
- in contrast to the former approach which indirectly targets the money supply.

Money, prices and inflation (2)

- In any case, in the long run, potential real GDP and interest rates will significantly alter real money demand
- Therefore, in the long-run there may not be a perfect correspondence between excess monetary growth and inflation.

Money, prices and inflation (3)

- Also, in the short run, the link between money and prices may be broken if:
  - the velocity of circulation is variable
  - prices are sluggish.
- For all the above reasons, we must therefore interpret the quantity theory with care.

Inflation and interest rates

- FISHER HYPOTHESIS
  - a 1% increase in inflation will be accompanied by a 1% increase in interest rates
- REAL INTEREST RATE
  - Nominal interest rate *minus* inflation rate
  - i.e. the Fisher hypothesis says that *real* interest rates do not change much
  - but the nominal interest rate is the opportunity cost of holding money
  - so a change in nominal interest rates affects *real* money demand.

Table 26.2 Inflation and interest rates 2001 (% per annum)

	Inflation	Interest rate
Turkey	62	57
Russia	20	25
Venezuela	12	15
Hungary	8	11
Chile	4	3
Switzerland	1	2
Japan	-1	0

Source: The Economist.

Hyperinflation

- Hyperinflations are periods when inflation rates are very large
- During such periods there tends to be a 'flight from cash', i.e. people hold as little cash as possible
  - e.g. Germany in 1922-23, Hungary 1945-46, Brazil in the late 1980s.
- Large government budget deficits help to explain such periods
  - persistent inflation must be accompanied by continuing money supply growth

Table 26.3 The German hyperinflation, 1922–23 (January 1922 = 1)

	Money	Prices	Real money	Inflation, % monthly
Jan 1922	1	1	1.00	5
Jan 1923	16	75	0.21	189
Jul 1923	354	2 021	0.18	386
Sept 1923	227 777	645 946	0.35	2 532
Oct 1923	20 201 256	191 891 890	0.11	29 720

Source: Data adapted from C.L. Holtfrerich, *Die Deutsche Inflation 1914–23*, Walter de Gruyter, 1980.

The Phillips curve (1)

- In 1958, Prof. A W Phillips demonstrated a statistical relationship between annual inflation and unemployment in the UK.
- The Phillips curve relates higher unemployment to lower inflation.
- It implies we can trade-off higher inflation for lower unemployment and *vice versa.*

The Phillips curve

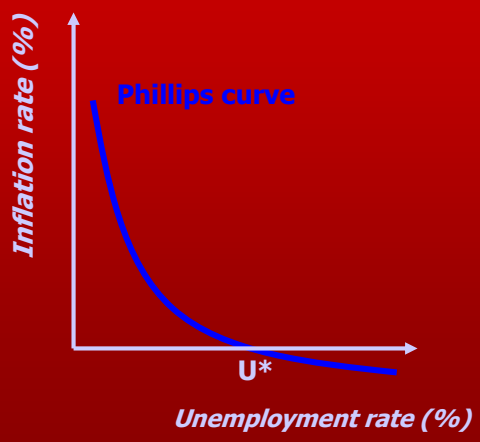
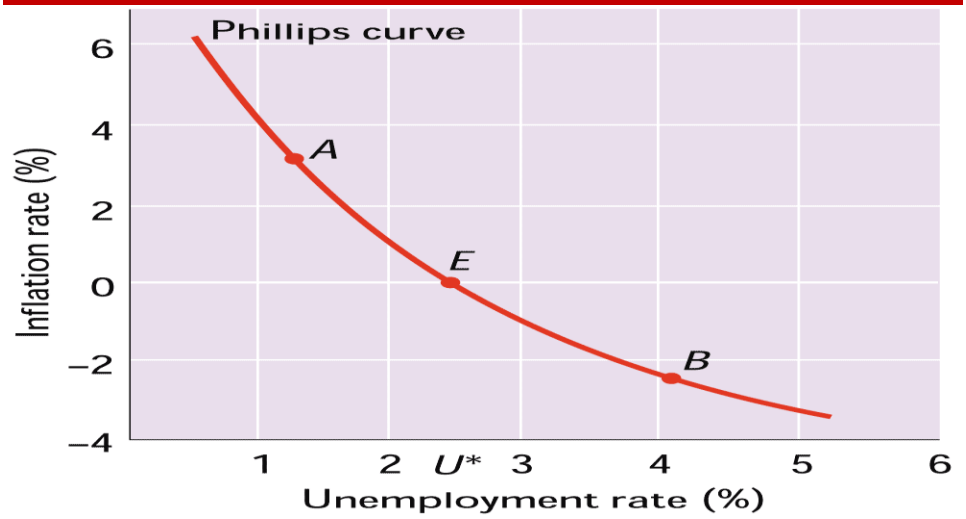


Figure 26.4: The Phillips curve



The long-run Phillips curve (1)

- The vertical long-run Phillips curve implies that sooner or later, the economy will return to U* whatever the inflation rate.
- The position of the short-run Phillips curve depends on expected inflation.

The long-run Phillips curve (2)

- The long-run and short-run curves intersect when actual and expected inflation are equalised.
- The long run Phillips curve shows that in the long-run there is no trade-off between unemployment and inflation.

Supply-side economics

- entails the use of microeconomic incentives to alter
  - the level of full employment
  - the level of potential output
  - the natural rate of unemployment.
- In the long run the performance of the economy can only be changed by affecting the level of full employment and the corresponding level of potential output.

Other supply-side policies

- Trade union reform
  - reducing the power of trade unions may limit distortions in the labour market
- Other labour supply policies
  - training and retraining measures
  - improving the efficiency of the labour market
    - such measures may affect frictional and structural unemployment
- Investment
  - higher investment may increase the demand for labour
    - may be achieved via tax incentives or low interest rates

Economic growth is

- Often measured by the rate of change of real GDP
  - although this has many deficiencies
  - it omits output that is not bought/sold
    - e.g. leisure, pollution, congestion
  - it also neglects income distribution
- so higher GDP per capita does not necessarily mean greater happiness
  - but it helps.

The production function...

- shows the maximum output that can be produced using specified quantities of inputs, given existing technical knowledge
- Output = f(capital
  - labour
  - land
  - raw materials
  - technology)

Increasing output

- Capital
  - output per worker may increase with capital per worker
- Labour
  - population growth
  - participation rates
  - human capital
- Land
  - fixed supply, but quality may be improved

Increasing output (2)

- Raw materials
  - important distinction between
    - depletable resources (coal, oil)
    - renewable resources (timber, fish)
- Technical knowledge
  - inventions, R&D
- Economies of scale may reinforce the long-run growth process

Technical knowledge

- The state of technical knowledge changes through time because of:
  - inventions
  - embodiment of knowledge in capital
  - learning by doing
- Research and development (R&D)
  - patent systems address a market failure which otherwise would lead to there being too little R&D.

Growth and accumulation

- Suppose Y = A × f(K, L)
  - i.e. variable inputs capital (K) and labour (L) combine to produce a given output
  - A represents technical knowledge
- At very low levels of income, savings may be zero as all resources are needed for consumption
- so capital cannot be created through investment
- and output may not be able to grow through time.

Theories of growth: some key terms

- Along a *steady-state path*
  - output, capital and labour are all growing at the same rate, so output per worker and capital per worker are constant.
- Capital-widening
  - extends the existing capital per worker to new extra workers.
- Capital deepening
  - raises capital per worker for all workers.

The costs of economic growth

- Malthus in the 18th century warned of limits to growth
  - but he underestimated the potential impact of technical change
- The price system helps to ensure a proper use of finite resources
- Growth may bring costs
  - pollution, congestion, poor quality of life
- But lack of growth may impose costs also
- The assessment of the desirable growth rate remains a normative issue

Floating exchange rates

- Under pure/clean floating, forex markets are in continuous equilibrium
- the exchange rate adjusts to maintain competitiveness
- but in the short run, the level of floating exchange rates is determined by speculation
  - given that capital flows respond to interest rate differentials.

Fixed versus floating exchange rates

- Robustness
  - Bretton Woods system was abandoned because it could not cope with real and nominal strains
  - a flexible rate system is probably more robust
- Volatility
  - fixed rate system offers fundamental stability
  - flexible rate system is potentially volatile
  - but instability must be accommodated in other ways under a fixed rate system
- Financial discipline
  - fixed rate system imposes discipline and policy harmonisation.

The European Monetary System

- Established by members of the European Community (including the UK) in 1979
- A system of monetary and exchange rate co-operation.
- Included the Exchange Rate Mechanism (ERM)
  - which the UK did not join until 1990
  - and it left again in 1992.
- The system had some success in reducing exchange rate volatility
  - through co-ordination of monetary policy
  - plus exchange rate controls
  - even if it did not work for the UK.