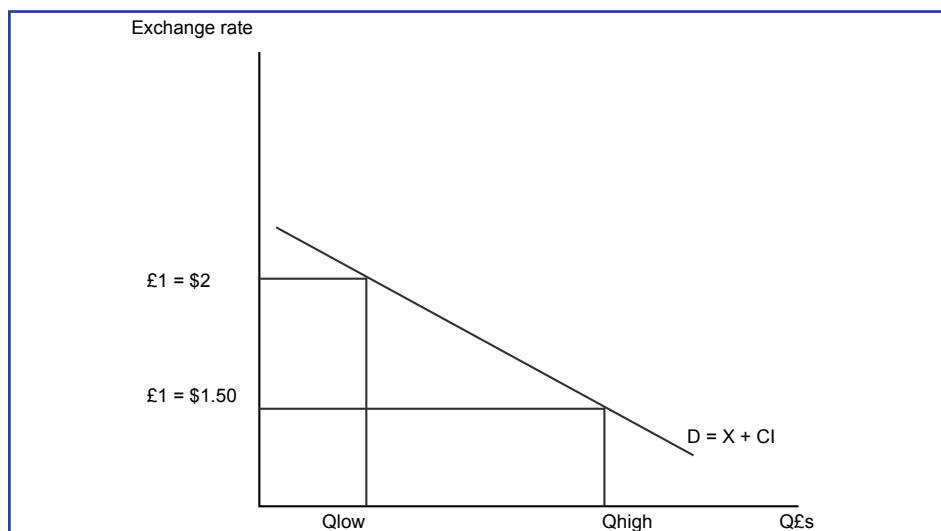# Exchange rate determination - the basics:

The exchange rate is the external price of the £ - it shows how much foreign currency must be exchanged to acquire £1 of sterling (or alternatively how much foreign currency is received in exchange for selling £1). Since the exchange rate is a price, it can be explained using supply and demand.

a) Demand for £s

The demand for £s comes from those wishing to buy £s on the foreign exchange market - to do this, they will require foreign currency. There are two main motivations for this:

1) To buy UK exports (X) of goods and services.

2) To invest money short or long term into the UK - Capital Inflows (CI). Short term flows are generally for speculation or to take advantage of higher short run rates of return on financial assets (e.g. responding to higher interest rates), whereas longer term flows are generally direct foreign investment.

At a higher exchange rate (£1=$2 rather than say £1=$1.50), UK exports will be less competitive, and more dollars will have to be given up to buy £s - therefore the demand for £s will be lower.
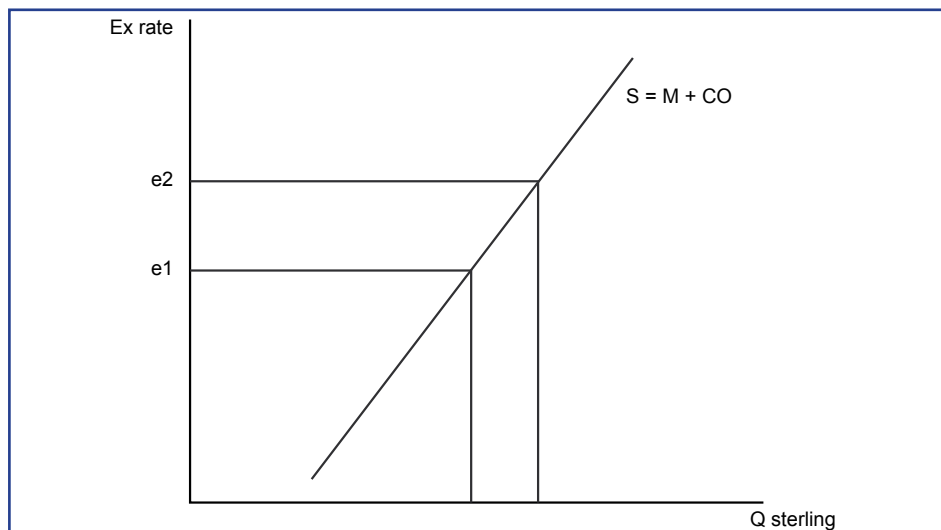
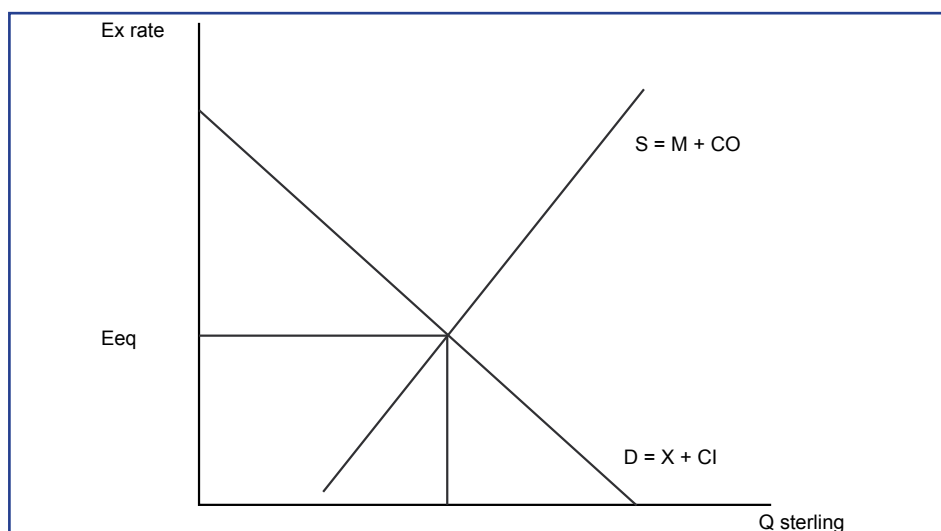# Exchange rate determination - the basics(continued):

b) Supply of £s

The supply of £s is the mirror image of the demand - holders of £s who wish to sell them to buy foreign exchange (therefore this is not the same as the entire UK money supply - it is only that portion of the money supply that is used to buy foreign currency). Again, there are two main motivations:

1)   To buy Imports (M) of goods and services.

2)   To invest money short or long term overseas - Capital Outflows (CO).

Generally, the more foreign exchange that can be gained for £1, the more likely we are to invest/buy abroad. Therefore the supply of £s will be greater at a high exchange rate than at a low one:


Following the usual rules of supply and demand, in a freely floating system, the equilibrium exchange rate will occur where S£=D£:

Exchange rate determination - the basics(continued):

Changes in the exchange rate, are therefore caused by changes in anything affecting demand and supply of/for £s. For example, the £ appreciated strongly after the Asian crisis of 1997, reflecting investors desire to hold a safe currency - D for £s increased, therefore pushing up the exchange rates.

Changes in interest rates, or expected changes, can also influence the exchange rate. If interest rates rise, UK banks become more attractive to international investors, who will transfer money into sterling to take advantage. At the same time, as speculators see the exchange rate begin to rise, they will buy sterling in the hope that it will continue to rise further increasing the demand for £s:

£ exchange rate

S = M + Cap. outflows

$D_{£2}$ = X + Cap. Inflows

$D_{£1}$ = X + Cap. Inflows

Quantity of £s
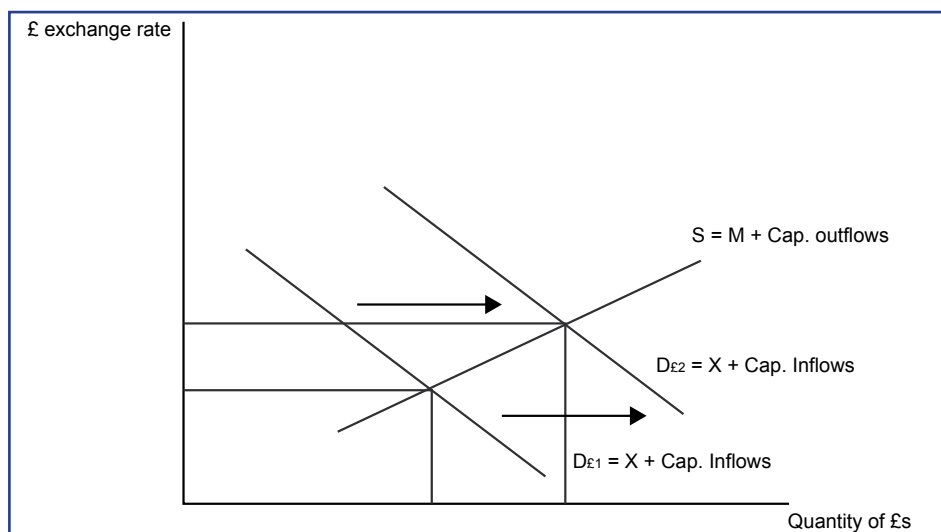
In the diagram, the increase in UK interest rates leads to an inflow of short term capital from abroad ('hot money'), which increases the demand for sterling on international money markets. As a result, brokers will push up the exchange rate to encourage supply and choke off excess demand.

Changes in exchange rates - depreciation

This will obviously depend to an extent on the size of the depreciation and the actions of the economic actors involved. In general terms, however there will be an impact in three major areas:

Exchange rate determination - the basics(continued):

1) The current account of the balance of payments

If the sterling exchange rate falls, this means that the pound costs fewer units of a foreign currency. This should lead to a fall in the price of exports and a rise in the price of imports. For example, suppose the £ falls from £1=$2 to £1=$1.50. A product selling for £30 in the UK might originally have sold for $60 in the US. Following the fall in the exchange rate, the UK firm could charge $45 and still get the £30 back. Of course, the alternative would be to leave the $ price unchanged, and simply take higher profits. There is some evidence that this occurred following sterling's exit from the ERM in 1992.

An importer would face the reverse problem. A product costing $90 in the US would have cost £45 before the depreciation. Afterwards, the importer would have to pay £60 for the same product.

Therefore the impact is to make imports less competitive in the UK and to make UK exports more competitive abroad. In principle, this should therefore lead to an increase in the overall value of exports and a fall in the value of imports, leading to an improvement in the current account of the balance of payments. This however is subject to certain conditions holding.

Firstly, the Marshall-Lerner condition must hold. If the demand for imports (for example) is highly price inelastic, then we may end up buying approximately the same number at a higher price. This might mean that the current account balance would actually deteriorate. The Marshall-Lerner condition states that this will not happen, provided that the sum of PED for exports and PED for imports is greater than 1 (ignoring signs).


The Marshall-Lerner condition

A depreciation in the sterling exchange rate will lead to an improvement in the UK current account balance provided that:

PEDx + PEDm >1 in total.

Therefore -0.7 and -0.6 would be fine, because they add up to -1.3.

Exchange rate determination - the basics(continued):

Research suggests that in the medium term, the Marshall-Lerner condition generally does hold. In the short run, however, it might not. This is because firms may have pre-existing contracts that they must fulfil, and in any case, it takes people time to adjust to higher prices. As a consequence, it may be that a depreciation of the exchange rate will cause the current account balance to worsen in the short term, while demand is very inelastic, before ultimately improving in the medium term, when the Marshall-Lerner condition holds. This gives the well known J-curve effect, showing what might happen to the current account balance over time:

Current a/c balance

+

Current account balance over time

Td   T1   Time

-

T= time of depreciation of currency
T1= Marshall-Lerner condition begins to hold
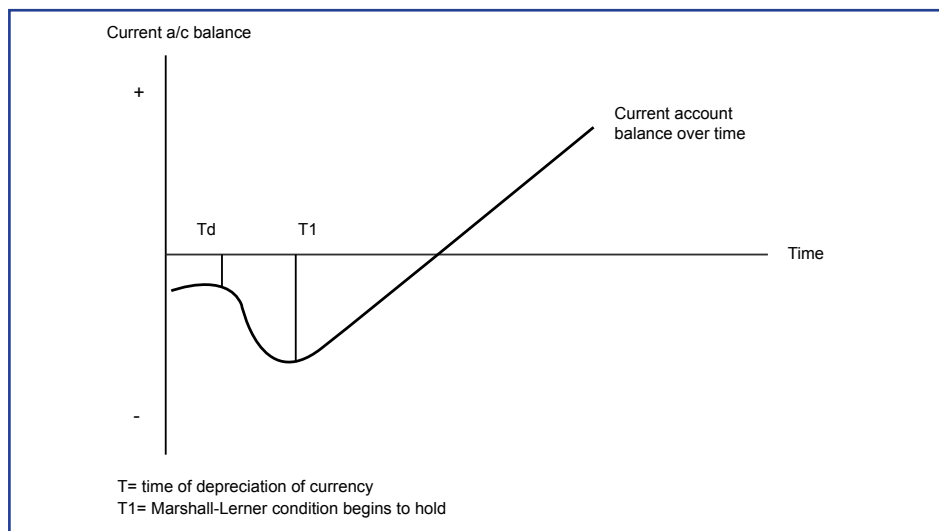
Secondly, the economy must have spare capacity. The depreciation should lead to an increase in export demand, increasing AD in the economy generally. If the economy is at some sort of supply side constraint (NAIRU, Full employment etc.), then the increase in AD will simply cause inflation. This will increase prices in the UK economy, making UK firms uncompetitive again, nullifying the impact of the depreciation. The existence of spare capacity is the primary reason that the depreciation of sterling in 1992 (when the £ was forced out of the ERM) did not lead to inflationary pressure in the UK.

Thirdly, the economy also needs to avoid the danger of cost push inflation. As the prices of both imported raw materials and imported finished products rise, it is likely that the cost of living is going to increase in the UK. The impact of this is to reduce real wages for UK employees. As a consequence, it is likely that pay demands will increase. If employers in general accommodate these pay claims, and then seek to pass on the increase in costs in the form of higher prices, there is a danger of a wage price spiral, that will push up UK inflation, again eroding the increase in competitiveness brought about by the depreciation in the exchange rate.

# Exchange rate determination - the basics(continued):

2) Output and employment

As noted previously, the depreciation in the exchange rate should lead to an increase in both export demand and domestic demand (as consumers substitute UK made products for higher priced imports). Therefore AD will increase.

AD = C + I + G + X - M

Assuming that the economy is not close to a supply side constraint, this should lead to a positive multiplier effect, as firms seek to expand output to meet the higher demand. In order to do this, firms will need to employ more factors of production (including labour), therefore reducing unemployment. These factors of production will be paid factor incomes, out of which a proportion (depending on the mpc) will be spent. This will lead to a further increase in AD and a further increase in output:
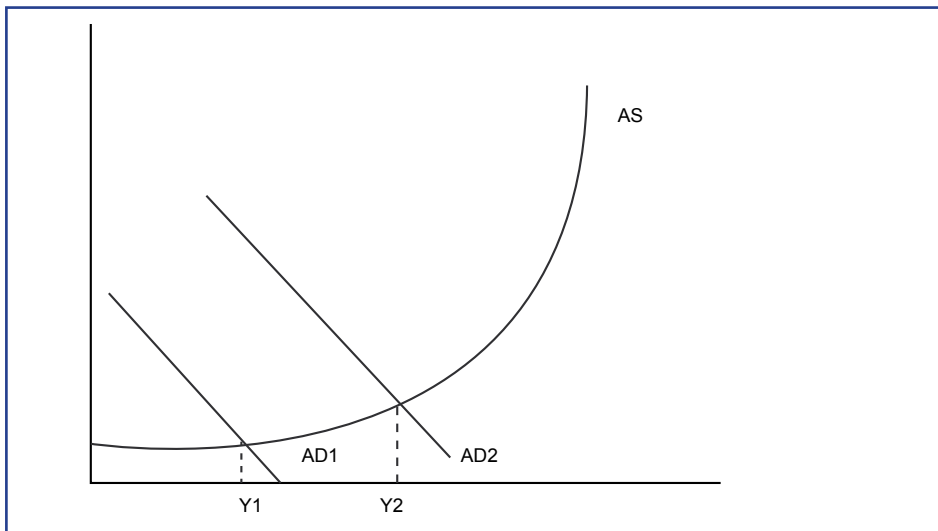
Initially, the economy is in equilibrium at Y1. Then the depreciation leads to an increase in AD to AD2. This causes producers to want to increase output to meet demand. To do this more factors of production are employed and paid factor incomes, creating a higher level of real output at Y2. Therefore, the depreciation can have a role in reducing cyclical unemployment in the economy.

However, if unemployment is primarily supply side, such as structural unemployment, then the increase in AD might not have this effect. Instead, firms would be unable to acquire the factors of production that they need very easily, creating both lengthening order books and spiralling wage claims. Firms' training costs are likely to rise, and this situation may result in the creation of both demand pull and cost push inflation:

Exchange rate determination - the basics(continued):
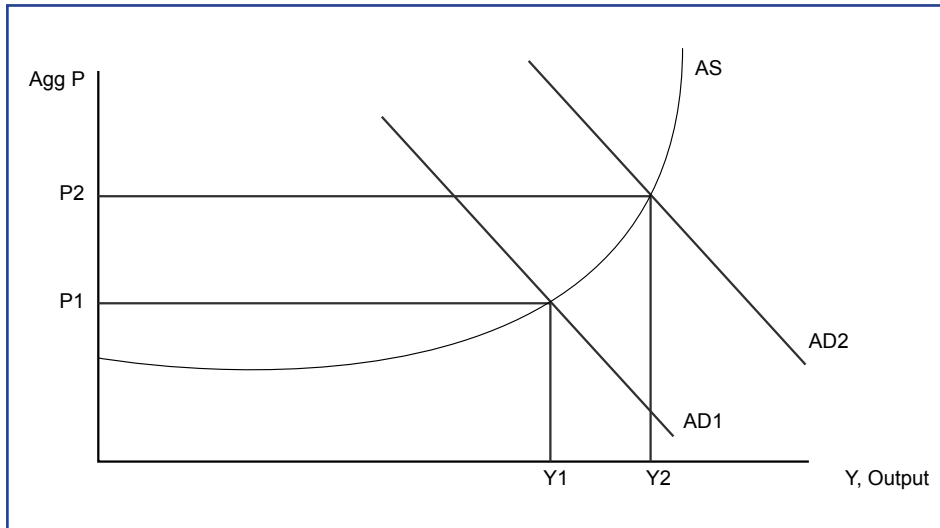
In the diagram, the economy is initially in equilibrium at Y1, P1. The depreciation causes AD to increase to AD2, but because the economy is close to a supply side constraint, AS is comparatively inelastic. Therefore although output rises to Y2 in the short run, the primary effect is to substantially increase the price level from P1 to P2, representing inflation.

Therefore, the ultimate effect of a depreciation depends on four main variables.

- Firstly the size of the initial depreciation,

- Secondly the general reaction of firms,

- Thirdly whether or not the Marshall-Lerner condition holds, and

- Fourthly on the current state of the supply side of the economy.

Exchange rate determination - the basics(continued):

3) Inflation

As noted, the fall in export prices may well push up export demand and the rise in import prices may cause UK consumers to switch to domestic alternatives. Hence AD may rise, creating demand-pull pressures if the economy is close to some form of supply side constraint. At the same time, the increase in import prices will increase the price of final goods directly imported as well as the price of imported components, driving up firms' costs and possibly triggering cost-push inflation: