MUST READ

Macroeconomics II - Popular Exam Q's MEMO

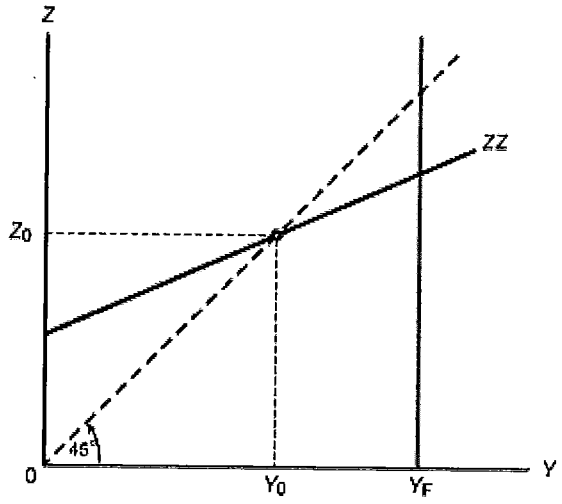
1. ***Using the Goods Market model explain how a balanced budget can still lead to an increase in output and income. [OR] Using the Goods Market model explain how a simultaneous increase in government spending and increase in taxes can lead to an increase in output and income.***

A balanced budget still increases output. The difference between the initial impact of a change in government spending and a change in taxes implies that even if the change in G is equal to the change in T, $\Delta G = \Delta T$, it will still have an expansionary effect on the economy.

By way of an example, assume that the increase in government spending is 100 (which is identical to that of the amount received in taxes) i.e. $\Delta G = \Delta T = 100$. And that the marginal propensity to consume (c or MPC) = 0.8. Applying the Goods Market model, the effect on income through government spending is given by $\Delta Y = \alpha \Delta G$ where $\alpha = \frac{1}{1-c}$ and c being the marginal propensity to consume (found as the slope on the ZZ curve).

Therefore $\alpha = \frac{1}{1-0.8} = 5$ therefore $\Delta Y = (5)(100) = 500$ i.e. $\Delta G = 100$ resulted in a $\Delta Y = 500$ i.e. G is autonomous and not influenced by c. Similarly the $\Delta T = 100$ yields a decrease in $\Delta Y = \alpha c \Delta T = (5)(0.8)(100) = 400$. Note the effect of c. The net effect is 500 minus 400 = 100 i.e. a growth in output.

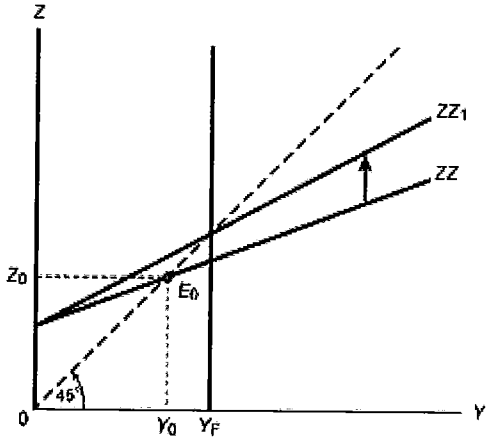
2. ***Using the Goods Market model explain how an increase in government spending [OR] the use of fiscal policy can achieve full employment.***



The equilibrium level of output and income, given the marginal propensity to consume and autonomous spending, is at Y_0, which is less than the level of full employment (Y_F). At this point, the economy is experiencing unemployment i.e. the unemployment gap is $Y_F - Y_0$ and there are no forces present to ensure that a movement to full employment will occur.

Using Keynes, this gap can be eliminated by increasing the demand for goods, ZZ, since it is the demand for goods that determines the level of output and income. This can be achieved by increasing autonomous spending e.g. ↑C and/or the marginal propensity to consume, c.

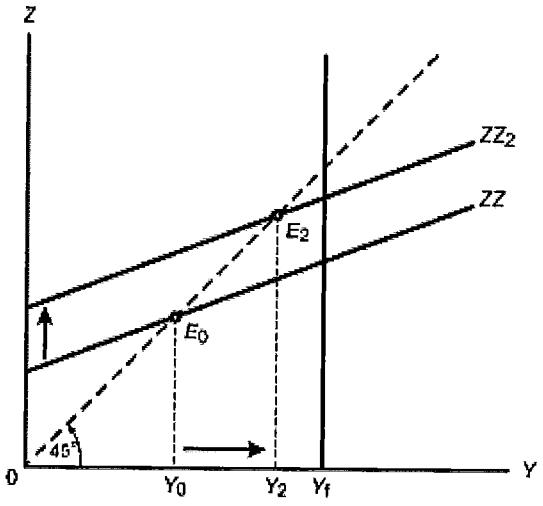
An increase in the MPC leads to a rise in consumer spending, C, the demand for goods, and the equilibrium level of output and income, Y. An increase in autonomous spending, c_0, causes an increase in the demand for goods, which increases the level of output and income and moves the economy closer to full employment. Finally an increase in the MPC implies that households spend a larger proportion of every additional rand on consumption. The term, c, in our consumption equation is therefore larger and the slope of the consumption curve steeper.



3. ***Explain and illustrate by using two different diagrams the impact of expansionary fiscal policy in the Goods Market model and the IS-LM model. Also compare the results between the two.***

The Goods Market Model: Fiscal policy is the government's policy on the level and composition of government spending, taxation and borrowing. The main instrument of fiscal policy is the budget and the main policy variables are government spending and taxation.

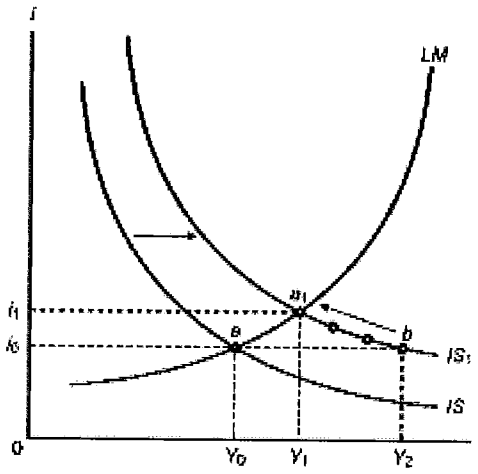
An expansionary policy is used to stimulate economic activity by increasing the demand for goods (aggregate demand). An expansionary fiscal policy means that government spending has to be increased and/or taxes have to be decreased such that using the Goods Market model results in the following chain of events,



$G\uparrow \Rightarrow Z\uparrow \Rightarrow Y\uparrow \Rightarrow C\uparrow \Rightarrow Z\uparrow \Rightarrow Y\uparrow$ and, or

$\downarrow T \Rightarrow Y_D\uparrow \Rightarrow C\uparrow \Rightarrow Z\uparrow \Rightarrow Y\uparrow$.

This leads to an output closer to full employment. Note, too, that investment, interest rate and inflation are unchanged as they are considered to be exogenous.



The IS-LM Model: (Tip: Fiscal Policy has three movements a → b → c and Monetary Policy has two moves, a → b on my mindmaps.) The impact of expansionary fiscal policy impacts the IS curve.

Also given that the stimulus appears in the Goods market this will be the first for the chain of events.) Expansionary Fiscal Policy according to the IS-LM model clearly shows that a decrease in taxation causes a rise in the interest rate and an increase in output and income.

In the Goods Market: A decrease in the tax rate increases the disposable income. The increase in disposable income causes an increase in consumption spending i.e. $C=c_0 + cY^{(+)}$. This increase in consumption causes an increase in the demand for goods, Z, since Z= C + I + G. (Tip: In the chain of events; whenever C, I, G, Z or IM appears, the next change will be Z or ZZ. ZZ is generally used for open economies.) The increase in demand increases the level of output and income. The chain of events is $\downarrow T \Rightarrow Y_D \uparrow \Rightarrow C \uparrow \Rightarrow Z \uparrow \Rightarrow Y \uparrow$.

The increase in output and income causes a further increase in consumption spending, demand for goods and output via the multiplier effect i.e. $Y \uparrow \Rightarrow C \uparrow \Rightarrow Z \uparrow \Rightarrow Y \uparrow$. The increase in output and income also increases investment spending because the level of sales increases by firms since $I=I(Y^{(+)},i)$. The chain of event is $Y \uparrow \Rightarrow I \uparrow \Rightarrow Z \uparrow \Rightarrow Y \uparrow$. Once again via the multiplier effect. Representing this in terms of the IS-LM model, the IS curve shifts to the right and the output increases from $Y_0$to Y_2 above. (Note that interest rates have not changed since this is the Goods market!)

Impact on the Financial Market: The increase in the level of output increases the demand for money, M^d, i.e. Keynes' Liquidity Preference Theory (LPT) the demand for Active Balances (the Transaction Motive), because there is a higher level of transactions. The increase in the demand for money leads to an increase in the interest rate in the financial market i.e. $\Rightarrow Y \uparrow \Rightarrow M^d \uparrow \Rightarrow i \uparrow$.

Back to the Goods Market: The increase in the interest rate decreases investment spending because investment spending is a negative function of the interest rate i.e. $I=I(Y,i^{(-)})$. (Tip: Changes in interest rate will ALWAYS affect planned investments in the Goods Market.) This decrease in investment spending decreases the demand for goods and the level of output and income decreases. In terms of the IS-LM model, this is represented by a movement along the IS curve from point b to point a_1. The chain of events: $\Rightarrow i \uparrow \Rightarrow I \downarrow \Rightarrow Z \downarrow \Rightarrow Y \downarrow$. (Note now that point a_1 represents a higher interest rate.)

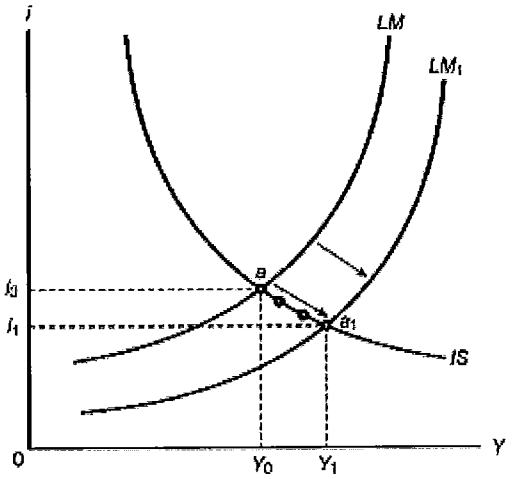
The end result is a increase in the equilibrium level of output and income ($Y_0$to Y_1) and a higher interest rate. This is the result of the increase in the demand for goods. Bear in mind that it is the demand for goods that determines the level of output and income. Looking at the demand for goods, $Z \uparrow = C \uparrow + I \uparrow \downarrow + G$, consumption spending increases because a decrease in taxes and an increase in output both increase disposable income. The impact on investment spending is uncertain. Note that all other exogenous variables (government spending and money supply) except taxation remain unchanged.

Often a spin on this question is posed. The question may read,

> ***"What stabilisation policies could be employed by a country to get out of a recession using the IS-LM model?"***

Now the answer above deals with the use of Expansionary Fiscal Policy. The other stabilisation "tool" is Expansionary Monetary Policy.

From this diagram it is clear that an increase in nominal money supply causes a decrease in the interest rate and an increase in output and income. (Tip: NB!!! Since the stimulus occurred in the Financial Markets, the chain of events must start here.)



Impact on the Financial Market: The initial impact is in the financial market where the increase in the nominal money supply, M, which increases the real money supply i.e. $\frac{M}{P}$ (since that $\frac{M}{P} = M^{(+)}$) causes the interest rate to decline i.e. M↑ ⇒M/P↑ ⇒i↓ and in terms of our IS-LM model, the LM curve shifts to the right.

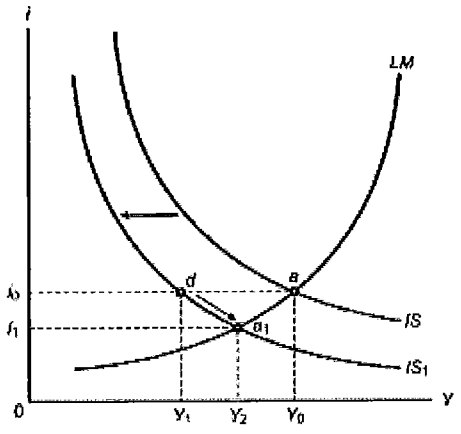
Impact on the Goods Market: The decrease in the interest rate increases investment spending, the demand for goods and the level of output and income. The rise in the level of output and income further increases investment as well as consumption spending i.e. ⇒i↓ ⇒I↑ ⇒Z↑ ⇒Y↑ and now for the multiplier process: Y↑ ⇒I↑ and Y↑ ⇒C↑. In terms of the IS-LM model, this is represented by a movement from point a to point a_1.

The end result is that the equilibrium level of output and income is higher and the interest rate is lower. Both consumption spending and investment spending are higher. Note that government spending and taxation remain unchanged i.e. Z↑= C↑+ I↑+ G.

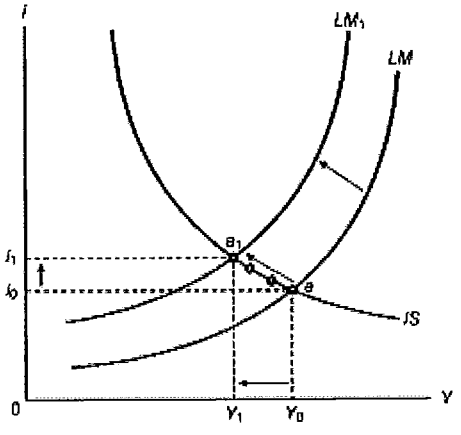
Additional Notes:

Diagrams

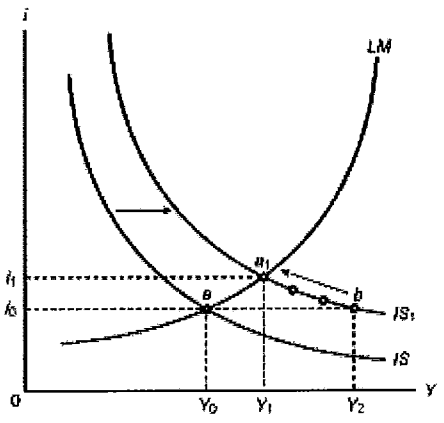
Decrease in autonomous spending (contractionary fiscal policy)



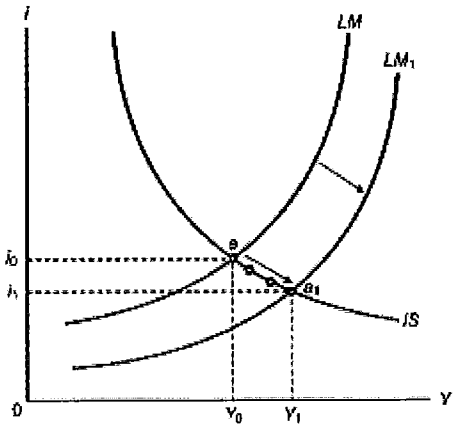
Decrease in money supply (contractionary monetary policy)



Increase in autonomous spending (expansionary fiscal policy)

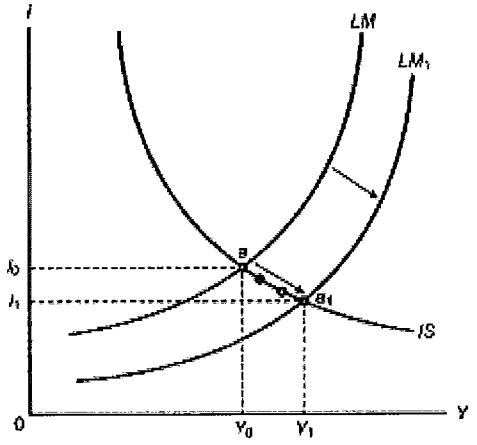


Increase in money supply (expansionary monetary policy)

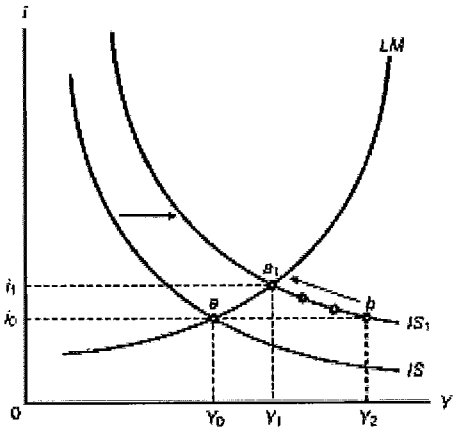


4. ***Comparing Fiscal to Monetary Policy:***

Expansionary monetary policy



Expansionary fiscal policy



In an expansionary monetary policy, the interest rate is lower, while in an expansionary fiscal policy it is higher. The reason for this is that in an expansionary monetary policy, there is an increase in the nominal money supply which reduces the interest rate. In an expansionary fiscal policy, the money supply remains unchanged, and the increase in the demand for money caused by the rise in the level of output and income, increases the interest rate.

The Impact on other variables:

Variable	Expansionary monetary policy	Expansionary fiscal policy
Consumption spending	Increases because Y is higher	Increases because Y is higher
Investment spending	Higher because i is lower and Y is higher	Indeterminate: increases because Y is higher but decreases because i is higher
Government spending	Unchanged	Increases if the expansionary fiscal policy is the result of an increase in government spending
Taxation	Unchanged	Decreases if the expansionary fiscal policy is the result of a decline in taxation
Money supply	Increases	Unchanged

Other variables often asked in the exams...

The Budget Balance of government:

An increase in the level of government spending and/or decrease in taxes will result in an increase in the budget deficit (in absolute terms and as a percentage of GDP).

Unemployment:

The economy will have moved closer to the level of full employment which means that the unemployment rate will be lower.

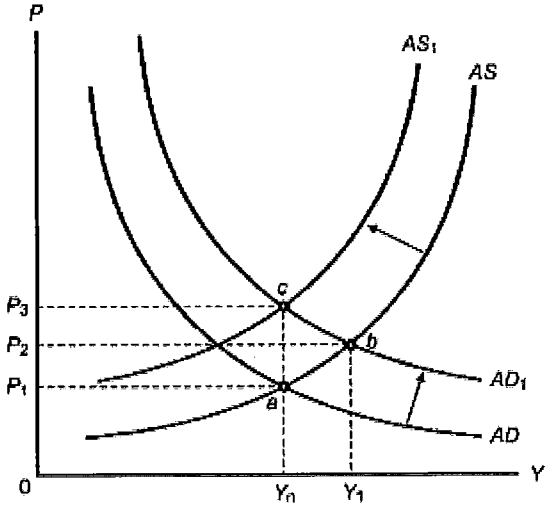
Impact on the Trade Balance:

Discussed later under IS-LM and the Open Economy.

5. ***Discuss the impact of an expansionary fiscal policy in the AD-AS model in the medium to long run.***

<u>In the Short Run</u> (In first year macro, the AD curve shifts to the right causing an increase in price levels and output and income i.e. AD to AD_1.)

A distinction is made between the short and medium run. In the short run, it is possible to be at a position away from the natural level of production and employment, Y_n. In the medium run, however, the economy returns to the natural level of output and employment. Always. (Aside: The LRAS is perfectly inelastic i.e. vertical at Y_n.)



Also note that the short run will last for as long as the expected price level remains unchanged. Once the expected price level changes, the medium run starts. A position away from the natural level of production and employment implies that the actual price level and the expected price level differ. At a position such as point "b", the expected price level is lower than the actual price level ($P^e < P$). (Remember that the original AD curve on the diagram shows points of equal P^e and real wages, $\frac{W}{P}$, so at "b" $P^e < P$). Because of $P^e < P$ prices are revised upward which impacts on nominal wages, W, that eventually moves the economy back to the natural level of production and employment in the medium to long run.

At a production and employment level of Y_1, which is higher than the natural level of production, Y_n and employment, N_n, the unemployment rate, u, is lower than the natural unemployment rate, u_n. In terms of the wage-setting relation, this implies that workers will try to achieve a higher real wage implied by price setting i.e. $P = (1 + \mu)W$. This now brings us to the medium run.

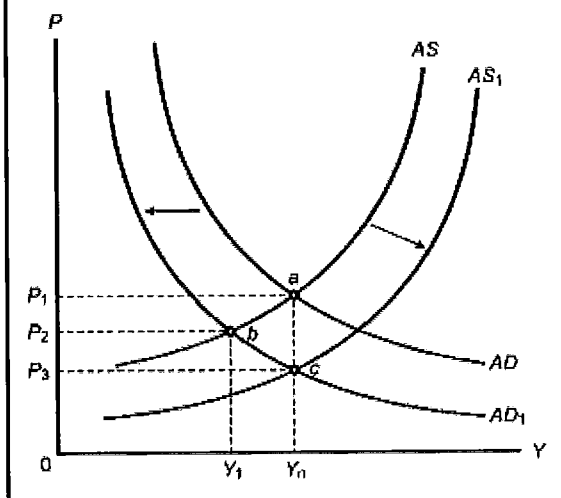
From Short to Medium to Long Run: As workers revise their price expectations upwards, they increase their nominal wage demands. Firms react to this rise in the nominal wages by increasing the prices of goods and services. This increase in the price level, however, affects the financial market, where an increase in the price level reduces the real money supply, which in turn causes an increase in the interest rate and a decrease in investment spending, which lowers the demand for goods and the level of output declines i.e. $P^E\uparrow \Rightarrow W\uparrow \Rightarrow P\uparrow \Rightarrow M/P\downarrow \Rightarrow i\uparrow \Rightarrow I\downarrow \Rightarrow Z\downarrow \Rightarrow Y\downarrow$.

This process continues until the natural level of output and employment is reached, where the expected price level equals the actual price level i.e. the formation of a new AS curve. This then is the long run position. In terms of the AS-AD model, the increase in the expected price level is represented by a shift of the AS curve to the left. The impact on the financial and goods market is represented by an upward movement along the AD curve from "b" to "c".

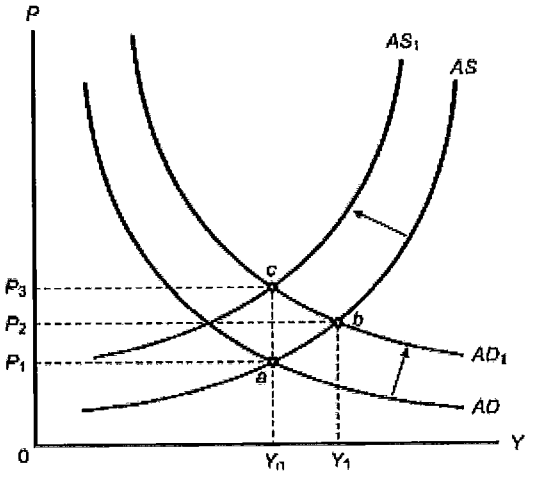
Additional:

Diagrams

Impact of a contractionary monetary policy



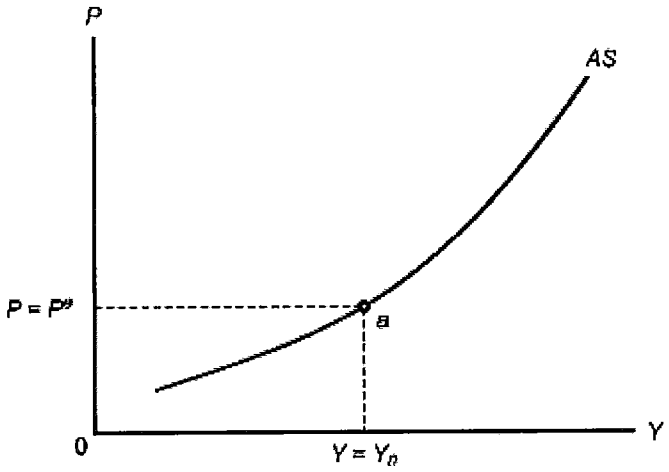
Impact of an expansionary monetary policy



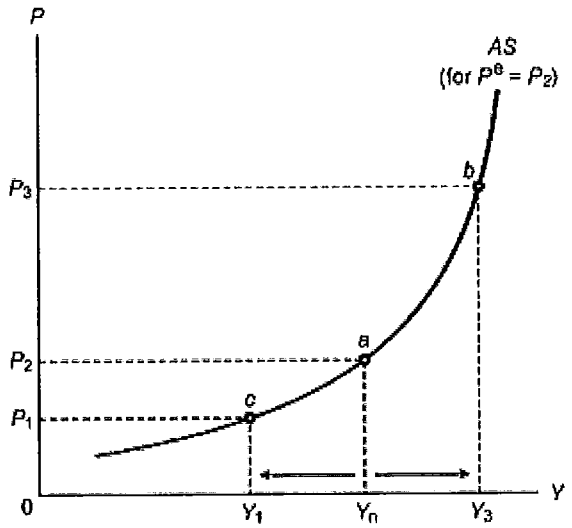
6. *Properties of the AS Curve*

$$P = P^e(1+\mu)F(1 - Y/L, Z)$$

- The aggregate supply curve has a positive slope i.e. Y↑ ⇒N↑ ⇒u↓ ⇒W↑ ⇒P↑.



- The expected price level is the same along a given aggregate supply curve i.e. The AS curve is derived from the wage-setting and price-setting relationships where it was assumed that the expected price level is given.
- A given AS curve passes through a point where the level of output is equal to the natural level of output ($Y = Y_n$) and the actual price level = the expected price level ($P=P^e$) i.e. in terms of our labour market, this is the point where the unemployment rate is such that the bargained real wage is equal to the real wage implied by price setting.
- At points to the right of the natural level of output, the actual price level is higher than the expected price level ($P > P^e$) (See also discussion of Medium Run)and at points to the left, the actual price level is lower than the expected price level ($P < P^e$).



At an output level such as point b, which is higher than the natural level of output, the actual price level is, say, P3, but the expected price level is P2.

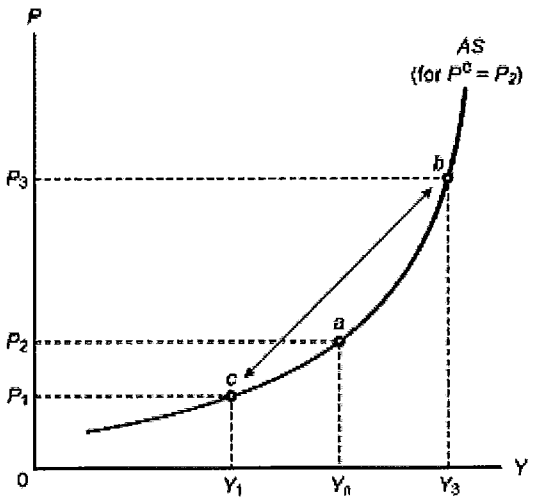
At an output level such as point c, which is lower than the natural level of output, the actual price level is P1, while the expected price level is P2.

- At any point on the AS curve the real wage is the same e.g. if an increase in output and employment leads to a 10% increase in nominal wages, then prices will also rise by 10% and the real wage will remain unchanged.

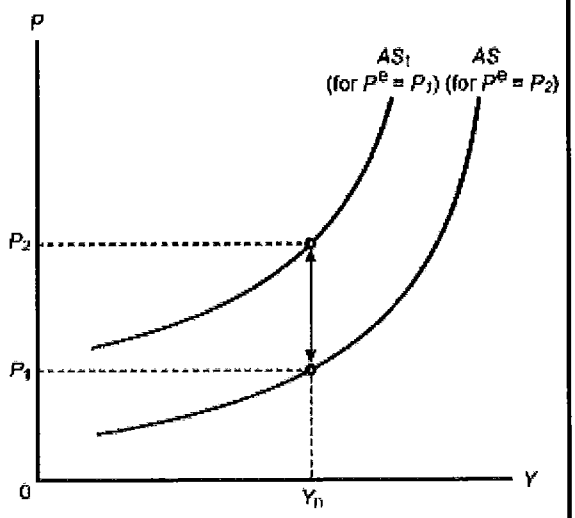
Shifts in AS:

Diagrams

Movement along an AS curve



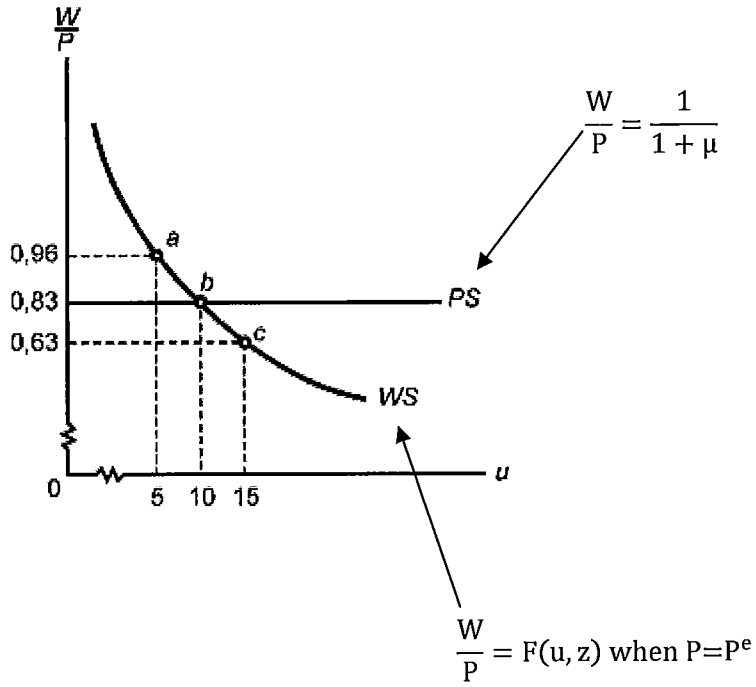
Shift of an AS curve



Y↑ ⇒N↑ ⇒u↓ ⇒W↑ ⇒P↑

P^e↑ ⇒W↑ ⇒P↑

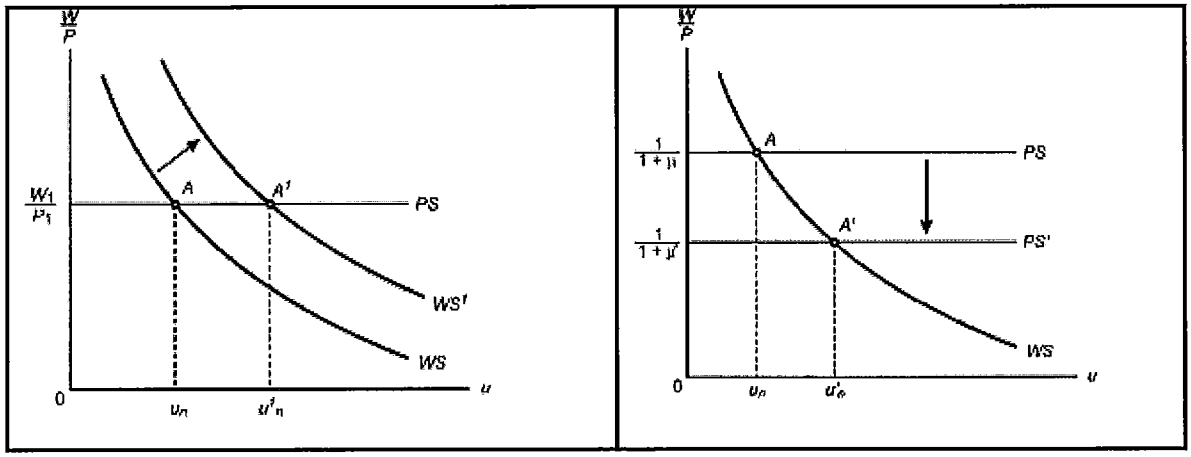
7. Labour: Questions on factors that will affect the natural level of unemployment.



The Natural rate of Unemployment : It is only at an unemployment rate of 10% that the real wage implied by wage setting is equal to the real wage implied by price setting, and this unemployment rate is called the natural rate of unemployment. At any other unemployment rate, the real wage implied by wage setting differs from the real wage implied by price setting. For instance, at an unemployment rate of 5%, which is lower than the natural rate of unemployment, workers will bargain for a real wage that is higher than the implied real wage.

Factors that will cause a change in the natural rate of unemployment (or the equilibrium unemployment rate)	
A change in the bargaining position of workers owing to factors other than the unemployment rate (such as unemployment insurance and benefits to workers who lose their jobs, minimum wages, labour laws and regulations to protect employment, collective bargaining).	A change in the markup
An increase in the worker's bargaining position shifts the WS curve to the right and the natural rate of unemployment increases. It now takes a higher natural rate of unemployment to ensure that the bargained real wage is equal to the implied real wage.	An increase in the markup shifts the PS curve downwards and the natural rate of unemployment increases. It now takes a higher rate of unemployment to ensure that the bargained real wage is equal to the implied real wage.

Graphically,



Obtaining an increase in the real wage: The implication of this particular model of the labour market is that there are only two ways in which labour can obtain a higher real wage:

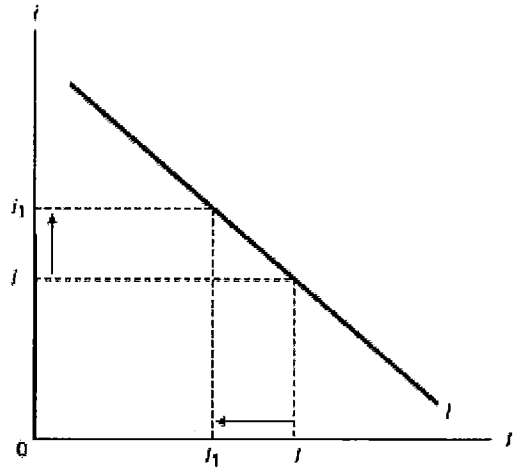
1. If firms decrease their markup. This causes a lower price level, and for a given nominal wage, a higher real wage. This is referred to as the battle for the markups.
2. If productivity increases. If more goods are produced per unit of labour then more goods are available to be divided between firms and labour.

8. ***Derivations of the various relationships. This is adequately explained in the Study Guides and as such I have only showed the "starting points" in graphical format.***

The Derivation of the IS Curve:

Note that the starting point for the derivation of the IS curve is a change in the interest:

Figure a



This then is our IS curve showing combinations of interest rates and income levels where the goods market is in equilibrium, given that all autonomous variables remain unchanged. This means that when the IS curve was derived, we assumed that variables such as government spending, taxation and consumer and investor confidence remained unchanged.

Chain of events:

$i\uparrow \Rightarrow I\downarrow \Rightarrow Z\downarrow \Rightarrow Y\downarrow$

and through the multiplier effect:

$Y\downarrow \Rightarrow C\downarrow$

$Y\downarrow \Rightarrow I\downarrow$

Figure b

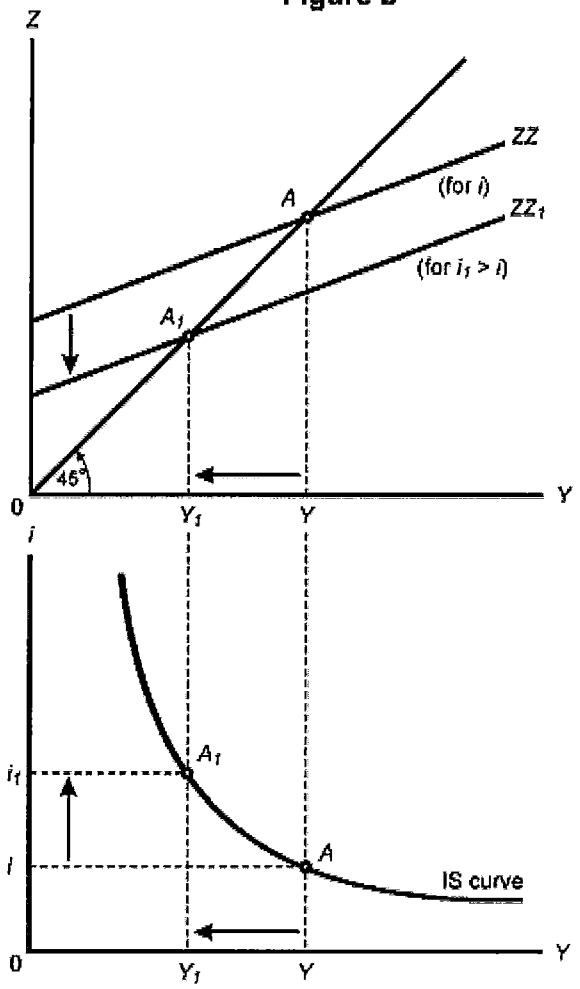


Figure c

Another spin on this "derivation" can come in the form of a calculation where you apply the Goods Market model to find the new equilibrium incomes based on changes in investment caused by changes in interest rate. See specifically M/J2013 – the example I did with you:

> ***"Use the following information to derive the IS Curve: A decrease in the interest rate from 8% to 7% increases investment by 400. The autonomous level of spending before the decrease in interest rate is 2000. The multiplier is 4."***

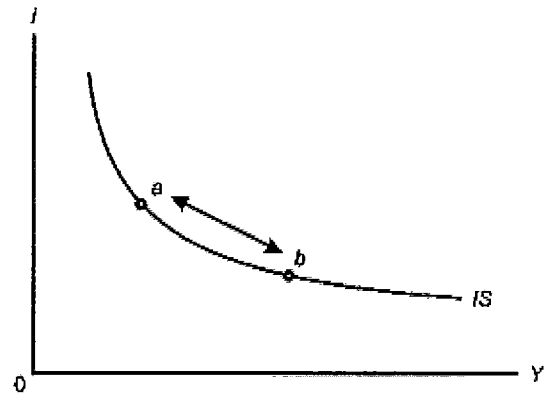
ANSWER: The two points A and B on the IS curve is at A(8000,8%) and B(9600,7%) respectively.

Shifts in IS:

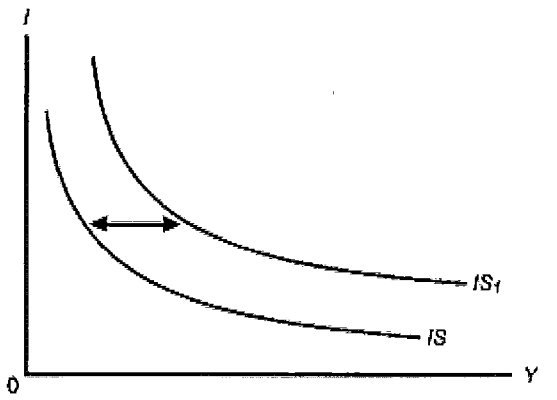
Movement along	Rightward shift	Leftward shift
upward: interest rate increases	increase in autonomous consumption spending (c_0) because of, say, an increase in consumer confidence	decrease in autonomous consumption spending (c_0) because of, say, a decrease in consumer confidence
downward: interest rate decreases	increase in autonomous investment spending ($\bar{I}$) because of, say, an increase in investor confidence	decrease in autonomous investment spending ($\bar{I}$) because of, say, an increase in investor confidence
	increase in autonomous government spending (G)	decrease in autonomous government spending (G)
	decrease in autonomous taxation (T)	increase in autonomous taxation (T)

Diagrams

Movement along an IS curve



Shift of an IS curve



The Derivation of the LM Curve:

The first point is the equilibrium in the Financial Market between M^S and M^d at $\frac{M}{P}$.

The second point is a new equilibrium when M^D is increased by an increase in output and income, Y, i.e. a shift to the right of M^D.

(I don't think a mathematical derivation would be required as with the IS curve.)

Figure a

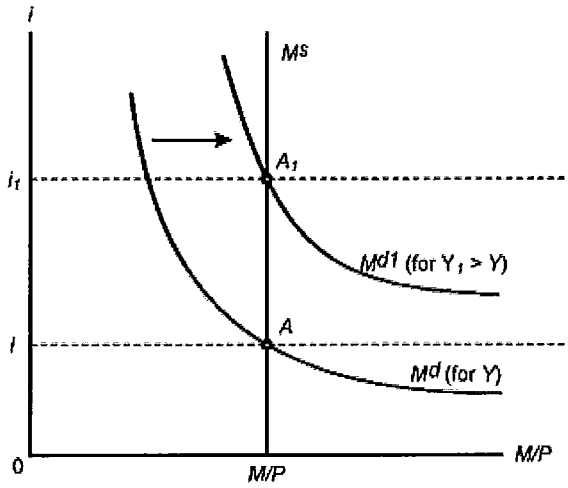
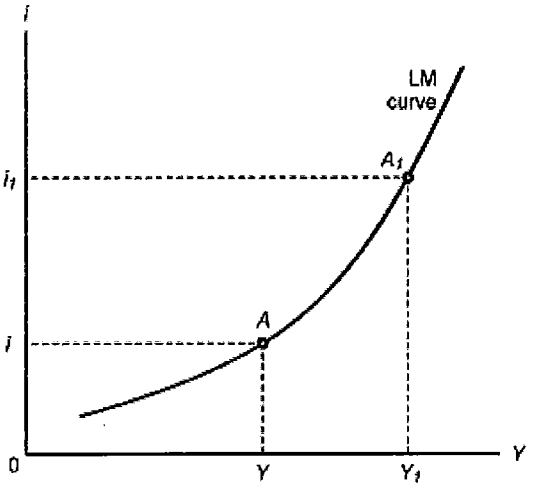


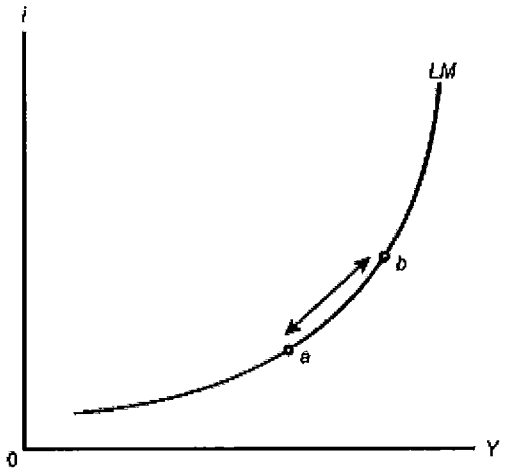
Figure b



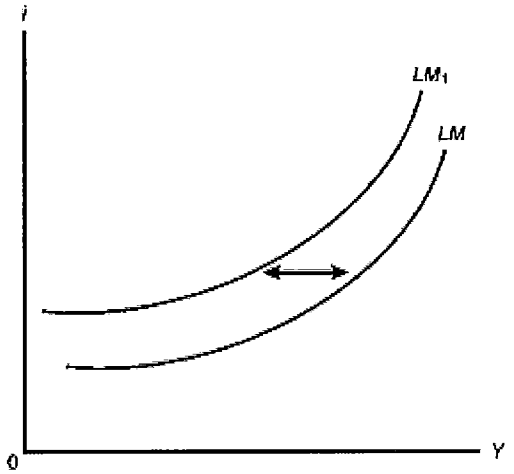
Movement along	A rightward shift	A leftward shift
upward: output and income increases and the interest rate rises	increase in nominal money supply	decrease in nominal money supply
downward: output and income decreases and the interest rate falls		

Diagrams

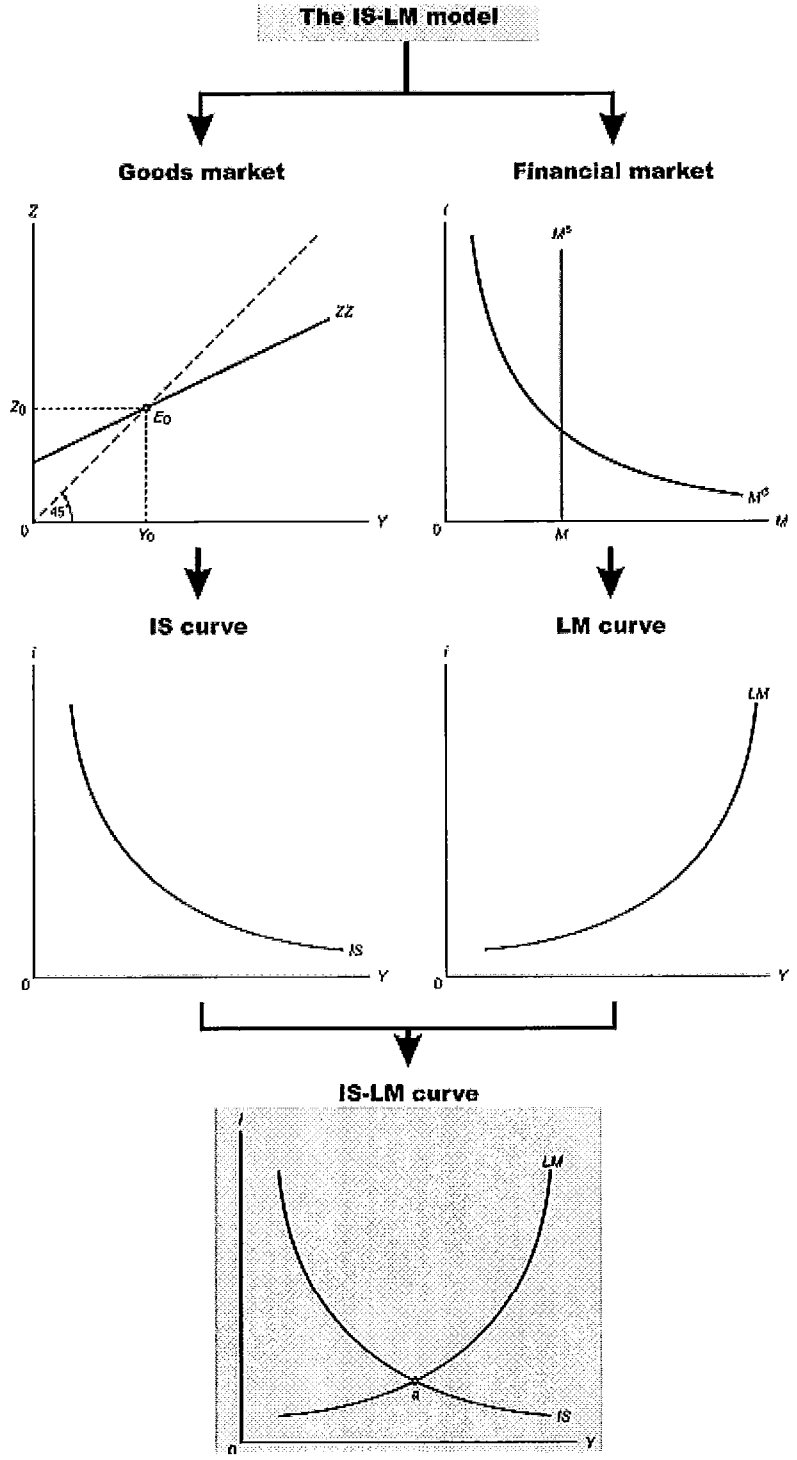
Movement along a LM curve



Shift of a LM curve



The following is a schematic representation of what this involves:



Note that it is only at point a that both the goods market and the financial market are in equilibrium.

The Derivation of the AD Curve: Note that when the AD curve is derived it is done by assuming a change in the price i.e. P↑ ⇒M/P↓ ⇒i↑ ⇒I↓ ⇒Z↓ ⇒Y↓.

Figure a

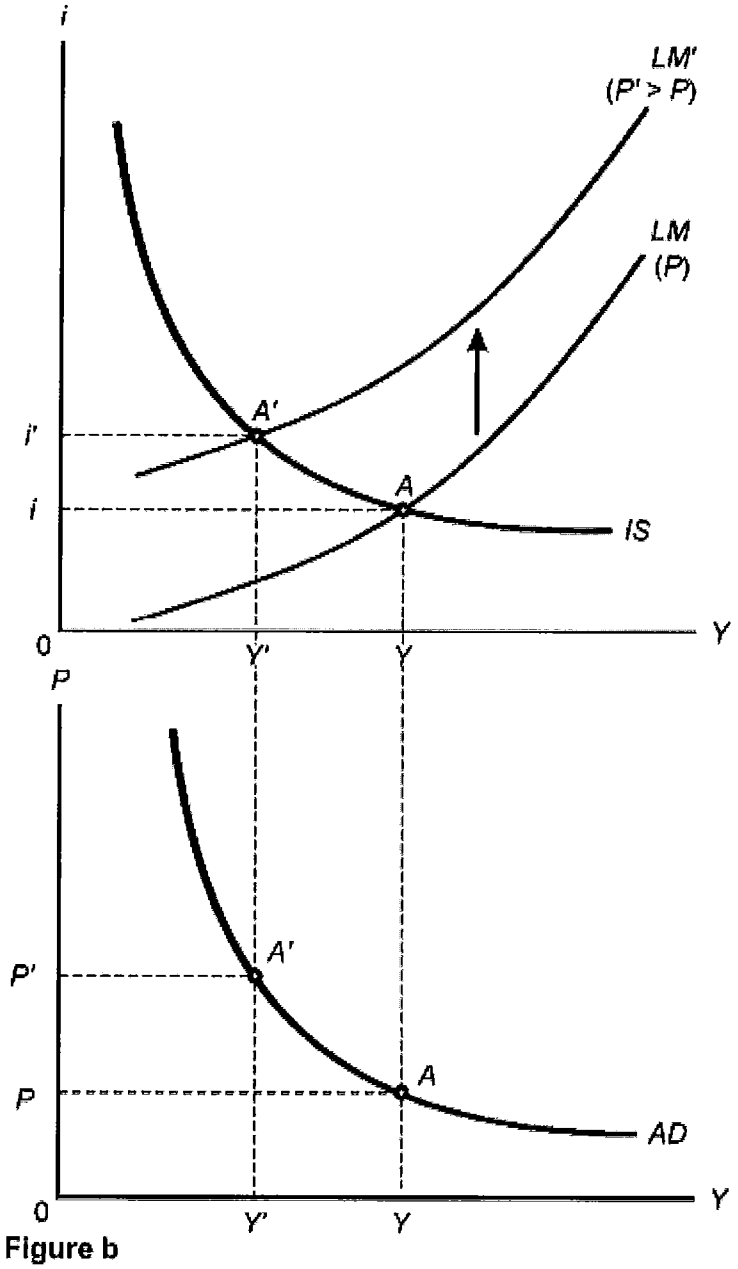


Figure b

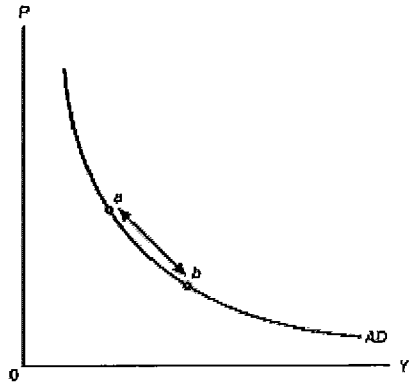
The AD curve shows a negative relationship between the price level and the level of output and represents combinations of the price level and the level of output and income where the goods and financial markets are in equilibrium.

Shifts in AD:

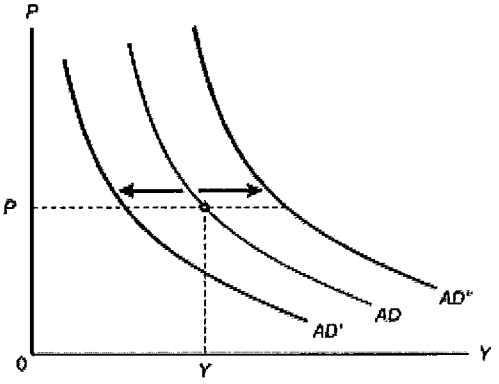
Movement along	Rightward shift	Leftward shift
a change in the price level (Δ in P)	increase in autonomous government spending (G)	decrease in autonomous government spending (G)
P↑: upwards	decrease in autonomous taxation (T)	increase in autonomous taxation (T)
P↓: downwards	increase in the nominal money supply (M)	decrease in the nominal money supply (M)

Diagrams

A **movement along** the AD curve



A **shift of** the AD curve



9. Use the IS-LM for an Open Economy to explain the impact on the Trade Deficit/Balance using various Expansionary/Contraction Policies.

(Tip: When you see IS-LM and Open Economy in one sentence, think INTEREST PARITY RELATION, IPR!

This question is also an extension of the Balance of Payment Dilemma/Constraint from 1st year Macro which says that that you "cannot" have full employment AND a balanced trade situation i.e. the one is an "opportunity cost" of the other. So it's a trade-off between internal stability polices i.e. full employment and external stability policies i.e. trade balance.

Also the derivation of the NX = X-IM curve is very important!)

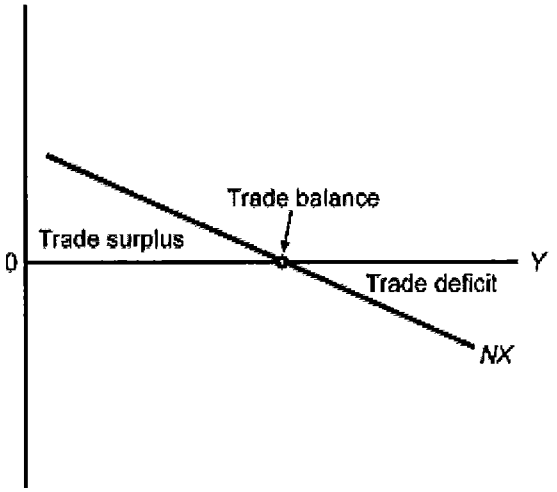
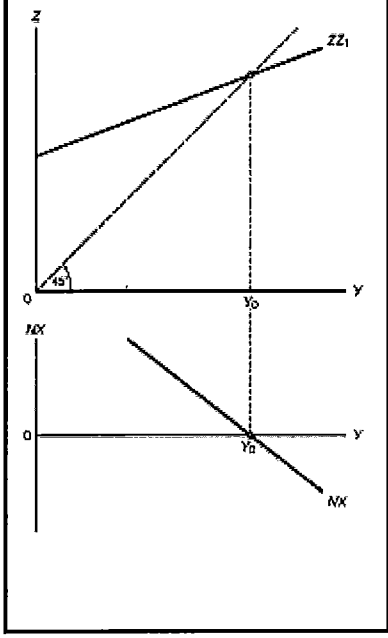
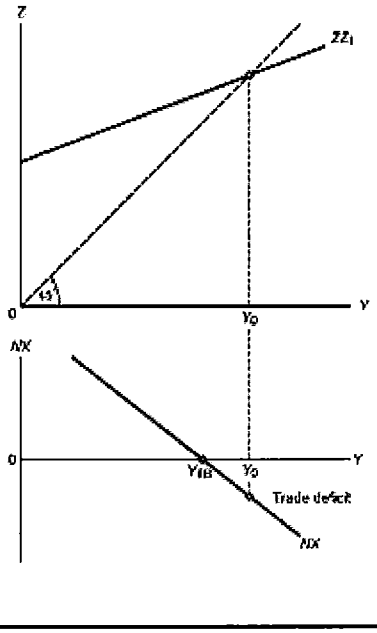
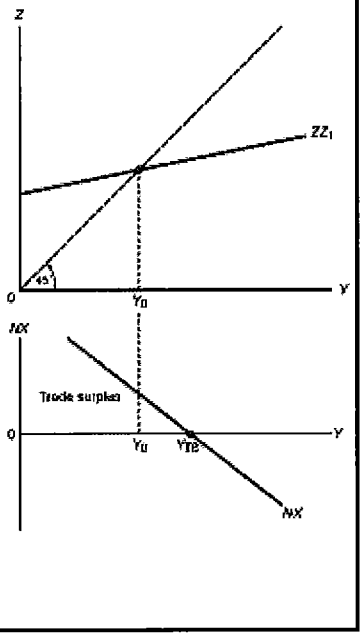
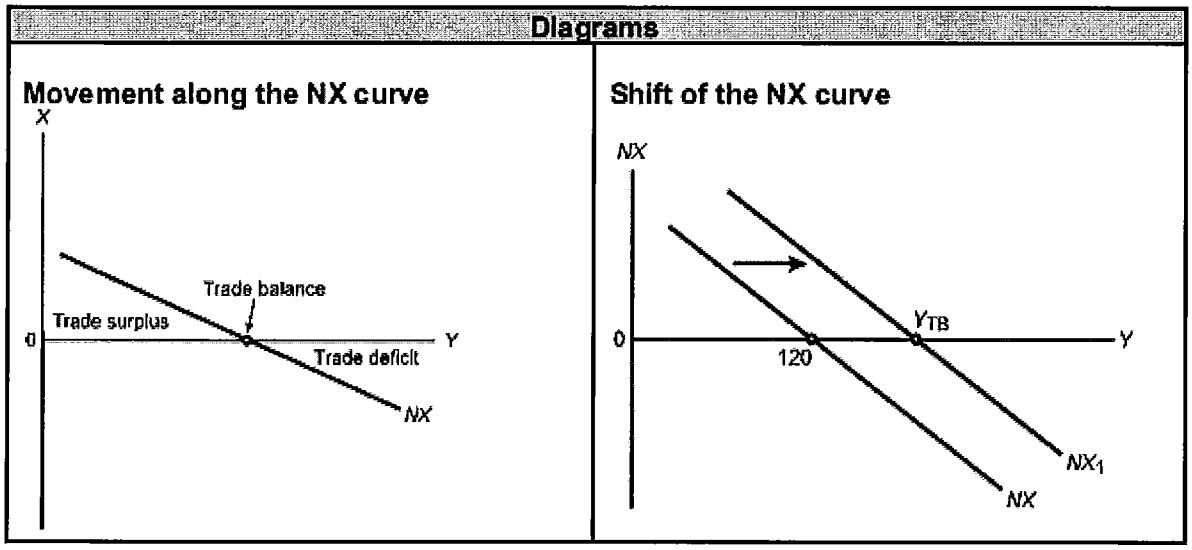


Diagram Trade balance	Diagram Trade deficit	Diagram Trade surplus
		

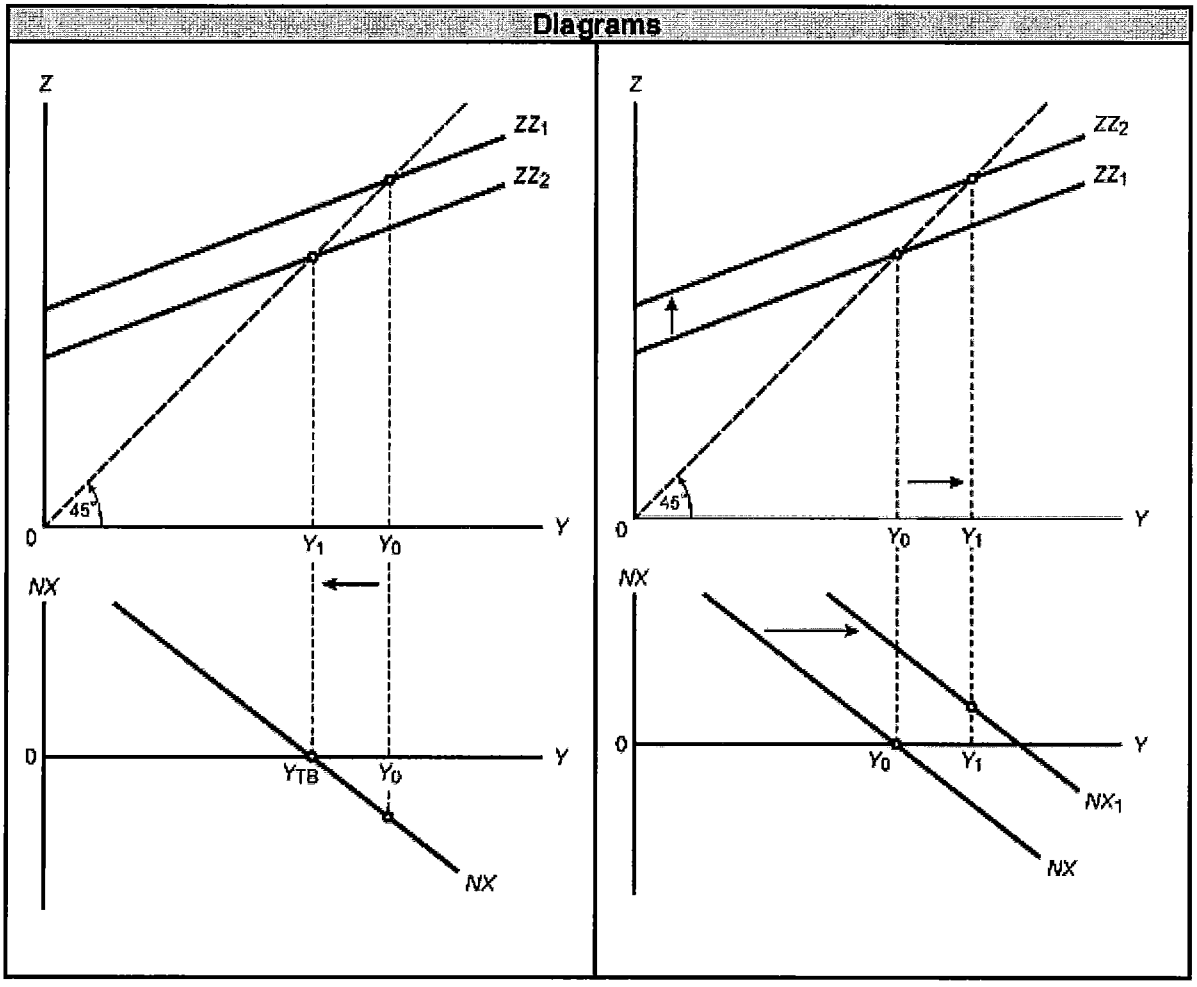
Increases in Domestic Demand: A rise in domestic demand, say, through an increase in government spending, increases the demand for goods and the equilibrium level of output and income increases. Since part of the increase in demand falls on imported goods, the level of imports increases and the trade balance decreases i.e. G↑ ⇒Z↑ ⇒Y↑ ⇒IM↑ ⇒NX↓. Since part of an increase in government spending and the resultant increase in the demand for goods are on imported goods, the multiplier effect of an increase in government spending on the equilibrium level of output and income is smaller in an open economy than in a closed economy. (Tip: The marginal propensity to import, MPI or m, diminishes the multiplier and therefore accounts for the deterioration in the trade balance.)

Increases in Foreign Demand: This is spurred by the increased income levels of foreign buyers through say economic growth in the USA, Europe or any of our trading partners. The impact of SA exports far exceeds the dampening effect of the MPI multiplier. In fact, it shifts the NX curve to the right to a new NX' curve such that when $X\uparrow$ ⇒Z↑ ⇒Y↑ ⇒$IM\uparrow$, the positive effect of an increase in exports on the trade balance, however, outstrips the negative effect of an increase in imports. The trade balance thus improves (NX↑). (Hence my exaggerated **X↑**.)

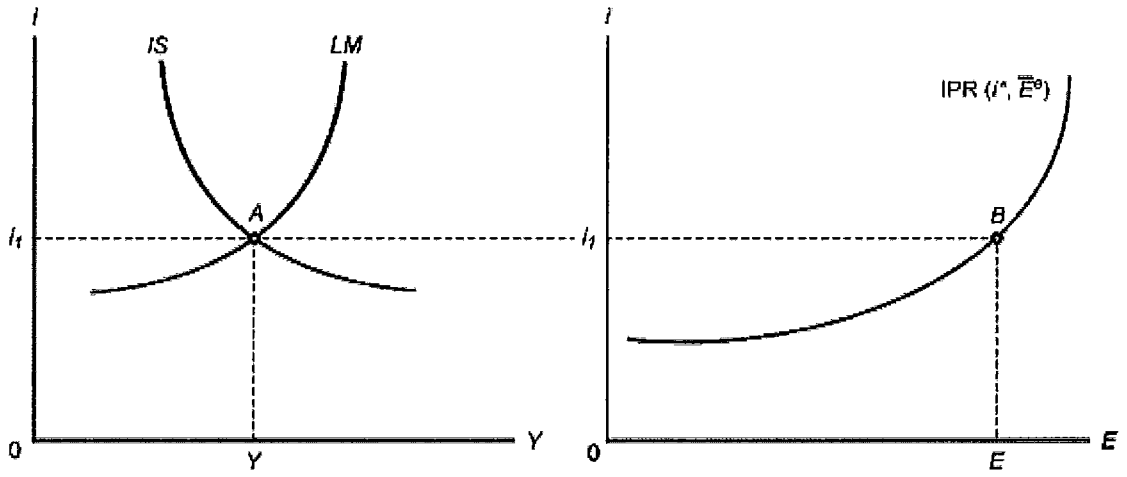
Movement along the NX curve	Shift of the NX curve
change in autonomous government spending (G)	change in foreign demand (X)
change in autonomous investment spending (I)	



Using the Goods Market model:



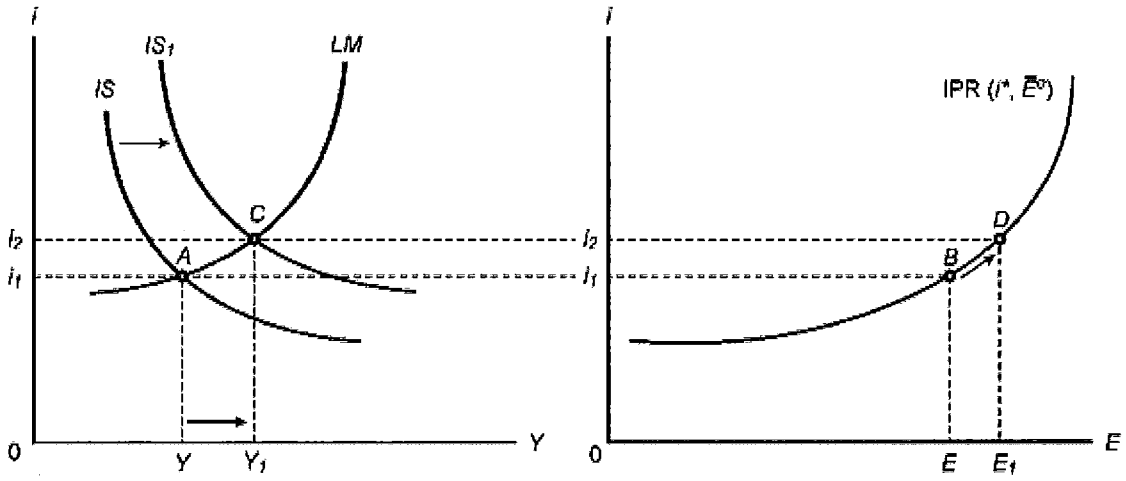
Using the IPR:



For example the Impact of Fiscal Policy on Exchange Rates, Trade Balance and Interest Rates using the IS-LM Model:

Diagram

G↑ ⇒ E↑ : appreciation



Chain of Events:

<u>The Goods Market</u>: (Because is where the stimulus started!)

G↑ ⇒Z↑ ⇒Y↑

Y↑ ⇒C↑

Y↑ ⇒I↑ (Everything as before.)

The Financial Market:

$$Y\uparrow \Rightarrow M^d\uparrow \Rightarrow i\uparrow$$

Back to the Goods Market:

$$i\uparrow \Rightarrow I\downarrow$$

$$Y\uparrow \Rightarrow I\uparrow$$

Now impact on the Exchange Rate and the Trade Balance

$$i\uparrow \Rightarrow E\uparrow \Rightarrow X\downarrow \Rightarrow NX\downarrow$$

$$E\uparrow \Rightarrow IM\uparrow \Rightarrow NX\downarrow$$

$$Y\uparrow \Rightarrow IM\uparrow \Rightarrow NX\downarrow$$

The same can be done for Monetary Policy or simultaneous policies. Also the shift of IS to the right is as a result of Y* (foreign buyers), NX will shift to the right as shown previously.

Variables	Expansionary fiscal policy	Expansionary monetary policy
The demand for goods	Higher	Higher
Level of output and income	Higher	Higher
Government spending and/or taxes	Government spending higher and/or taxes lower	Unchanged
Money supply	Unchanged	Higher
Interest rate	Higher	Lower
Investment	Indeterminate	Higher
Consumption spending	Higher	Higher
Capital flows	Inflow	Outflow
Exchange rate	Appreciate	Depreciate
Exports	Lower	Higher
Imports	Higher	Lower
Trade balance	Worsens	Improves

What a fantastic subject! Good luck with your exams and here's to seeing you in 3rd year Ecos!

Mike