

Mcq

1	a
2	d
3	d
4	c
5	e
6	d

Exercise 1 -Open economy in the short run

Flexible exchange rate regime

a)

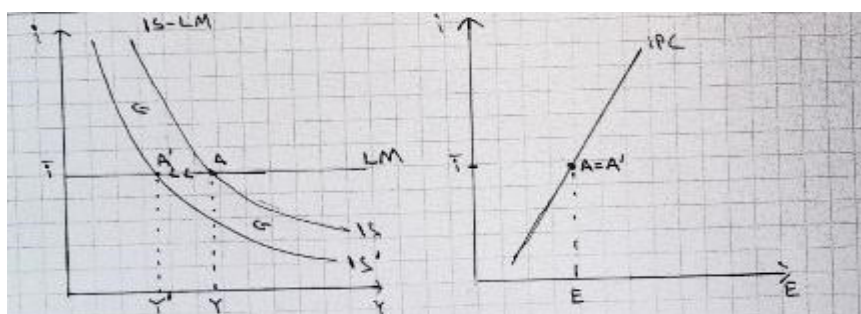
When consumer confidence goes down in the foreign country, consumption in the foreign country goes down, demand in the foreign country goes down, output in the foreign country goes down. This will lead to an decrease in exports in the domestic country, as export decrease and imports are unaffected, the trade balance deteriorates, and net export wil decrease. As net export goes down, demand in the domestic country goes down, and output will follow and decrease in the domestic country. Output is equivalent to income, and through the multiplier effect, when income decrease, the dispositional income consumers face in the domestic country will decrease, which will decrease consumption, firms also face the lower income, and will start to invest less, which will decrease investments in the domestic country. As consumption and investments decrease, aggregated demand and thus output will decrease further etc.

But as the income goes down, people will also start to import less, imports goes down. which will improve the trade balance, and increase net exports, however the overall effect on output is negative, and it will decrease in the domestic country.

$$c_0^* \downarrow \rightarrow C^* \downarrow \rightarrow Z^* \downarrow \rightarrow Y^* \downarrow \rightarrow X \downarrow \rightarrow NX \downarrow \rightarrow Z \downarrow \rightarrow Y \downarrow \rightarrow C \downarrow \rightarrow I \downarrow \rightarrow Z \downarrow \rightarrow Y \downarrow \downarrow$$

However as income goes down net export increases some, as imports goes down:

$$Y \downarrow \rightarrow IM \downarrow \rightarrow NX \uparrow \rightarrow Y \uparrow$$

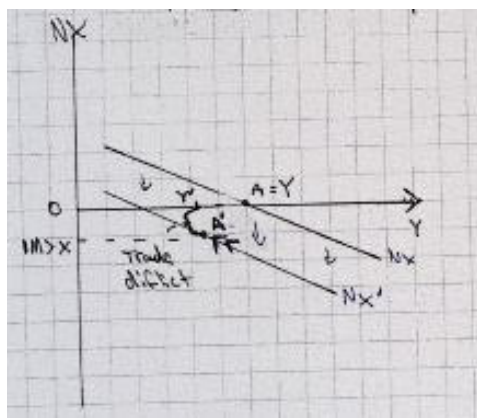


Graphically, IS shifts to the left due to the decrease in foreign output Y^* , LM curve is unchanged as the interest rate in the domestic country isn't affected and remains the same. We move along the LM curve from A to A', where A' represents a lower level of equilibrium output. In the IPC graph, as domestic interest rate, nor foreign interest rate and expected exchange rate changes, there is no movement on the IPC graph, $A=A'$, and the exchange rate remains the same.

b)

As foreign output goes down, it will have a direct effect on exports, decreasing exports, which will decrease net export for any given level of domestic output. However, as net export goes down, demand and output in the domestic country goes down, and as income goes down, people will start to import less, and there is no effect on exports, so through the multiplier imports goes down which will improve the trade balance some, and increase Net export.

c)



As illustrated, the NX line is downward sloping, as when domestic output increases, thus income increase, people will start to import more, and exports are unaffected, this will deteriorate the trade balance, as IM is positively related to domestic output, and negatively correlated to net exports, NX decrease when IM increase, deteriorates the trade balance;

$$NX = X(Y^*, E) - IM(Y, E)$$

where

Y^* _ foreign output

Y _ domestic output

E _ nominal exchange rate

In the graph in the case of that foreign output decreases, exports, which is positively related to foreign output, will decrease: Now for any given level of domestic output net exports will be lower. This is illustrated by a shift down in the net export line. But as domestic output decreases, imports will decrease, and as imports is negatively related to net export, net export increase, we move along the new NX line to the left, illustrating some improvement of the trade balance. We go from A to A', where I assume that the economy's trade balance was in equilibrium from the start i.e $IM=X$ $NX=0$, and we end up in A', where domestic output is lower, net export is lower for any given level of domestic output, but as output decrease we have moved along the new NX line to the right, as net export increases some, improving the trade balance.

d.

Yes, the government can implement an expansionary fiscal policy which they do by decreasing taxes or increasing government spending, or doing an equal change in both to balance their budget.

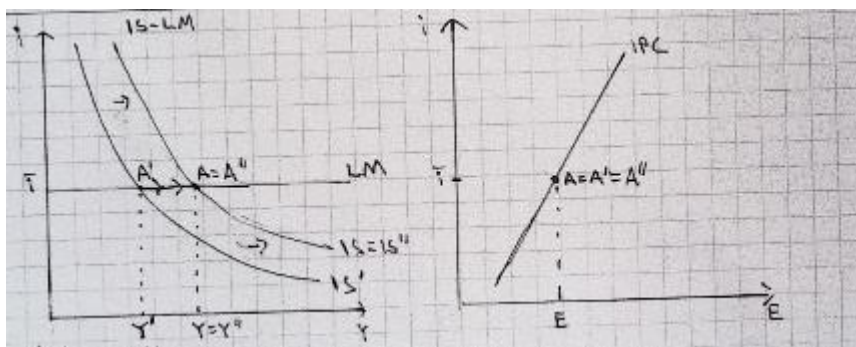
A decrease in taxes would lead to an increase in dispositional income, which will increase consumption thus demand and output will increase. As output increase, through the multiplier effect, consumption and investments increases which will increase demand and output further etc. But as income increase, imports will also increase, decreasing net export, deteriorates the trade balance, and decrease demand and output some. However the overall effect on output is positive.

By increasing government spending, the aggregated demand will face a direct increase, and output will follow and increase. As output increase, through the multiplier effect, consumption and investments increases which will increase demand and output further etc. But as income increase, imports will also increase, decreasing net export, deteriorates the trade balance, and decrease demand and output some. However the overall effect on output is positive.

As illustrated, the IS curve shifts to the left as taxes decrease or government spending increase or both, the LM curve remains unaffected, as the interest rate is not affected. We move along the LM curve from A' to A'', where A'' is equal to the initial equilibrium A. On the IPC graph there is no change in, no movement along or shift of the IPC curve as interest rate is unaffected, foreign interest rate unaffected and exchange rate expectations unaffected, thus nominal exchange rate will be unaffected and the same as before this expansionary policy.

The LM curve is determinate by i , as there is no price changes thus no inflation, and no expected inflation.

$$r = i - \pi^e = i - 0 = i$$



e.

No my answer would not differ in d if the economy was operating under a fixed exchange rate regime. As a fiscal policy does not affect the domestic interest rate, the interest parity condition would still hold, and in this fixed regime, foreign interest rate would still be equal to domestic interest rate, and the fixed exchange rate would not be affected. In fixed exchange rate regimes, the central bank is not able to affect the economy through adjustments in interest rate, i.e implement monetary policies, as domestic interest rate should be equal to foreign interest rate if people believe that the central bank is committed to the fixed exchange rate regime, thus;

$$E^e = \bar{E}$$

$$i = i^* - \frac{(E^e - \bar{E})}{\bar{E}}$$

$$i = i^* - \frac{(\bar{E} - \bar{E})}{\bar{E}} *$$

$$i = i^* - 0$$

$$i = i^*$$

However, the government can still implement any fiscal policies.

Exercise 2 - Interest parity condition

a)

So if we look at the interest;

$$1 + i = \frac{E(1 + i^*)}{E^e}$$

The domestic financial investor is expected to earn;

$$(one\ unit\ of\ domestic\ currency) * (1 + i)$$

The domestic currency times the interest rate on domestic bonds.

The domestic financial investor is expected to earn;

$$\frac{(One\ unit\ of\ domestic\ currency) * E(1 + i^*)}{E^e}$$

First the investor will convert one unit of domestic currency to foreign currency, which is one unit of domestic currency times the nominal exchange rate, which will give one unit of domestic currency expressed in foreign currency;

$$(One\ unit\ of\ domestic\ currency) * E$$

Then will the foreign bond face to foreign interest rate;

$$(One\ unit\ of\ domestic\ currency) * E * (1 + i^*)$$

And then will the investor convert the foreign return back to domestic currency;

$$(One\ unit\ of\ domestic\ currency) * E * (1 + i^*) * \frac{1}{E^e}$$

We divide by the expected exchange rate as this converting back to domestic currency will appear in the future, therefore we have what one unit foreign currency is expected to be worth in terms of a domestic currency in the future;

$$\frac{1}{E^e}$$

b.

We have that

$$\begin{aligned} i &= i^* = 0.01 \\ E &= E^e = 100 \\ i &\downarrow = 0.8 \end{aligned}$$

We start by looking at the interest parity condition;

$$i = i^* - \frac{E^e - E}{E}$$

When the domestic interest rate is decreasing due to an expansionary monetary policy, investors will start to think that the expected return on foreign bonds will be higher than the expected return on domestic bonds. This will drive up the demand for foreign bonds, and thus decrease the demand for domestic bonds, therefore the demand for domestic currency will decrease which will lead to a depreciation of the nominal exchange rate. The arbitrage opportunity for investors is that they expect higher returns on foreign bonds, which increase demand for foreign currency and decrease demand for domestic currency leading to a depreciation of the nominal exchange rate.

There would be a change in the nominal exchange rate, the new depreciated nominal exchange rate would be;

$$E = \frac{1+i}{1+i^*} E^e$$

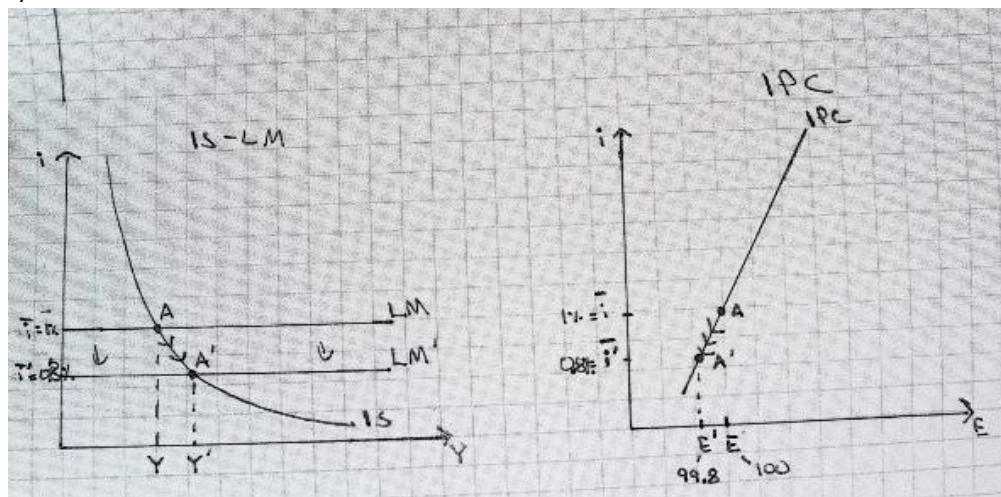
$$E = \frac{1+0,008}{1+0,01} 100$$

$$E = 99.8$$

The nominal exchange rate will depreciate to;

$$E = 99.8$$

c)



The IPC curve is upward sloping because investors will face arbitrage opportunities. Thus, if the domestic interest rate were to increase, investors would expect higher return on domestic bonds, which would drive up the demand for domestic currency and down the demand for foreign currency, this would lead the nominal exchange rate to increase an appreciation. Therefore, the IPC line is upward sloping as when domestic interest goes up, nominal exchange rate will appreciate and increase. This because investors will demand more domestic currency due to that they believe that the expected return will be higher for domestic bonds.

As illustrated in the graph, when the CB implements an expansionary monetary policy through purchase of bonds which will increase the money supply, increase demand for bonds, increase price for bonds thus decrease the interest rate.

The LM curve will shift down due to the decreased interest rate. As the interest rate decrease, borrowing rate will follow, which will make to borrow money cheaper for households and firms. This will increase investments which will increase demand and increase output. Through the multiplier effect, as output increase, consumption and investment increase, which increase demand and output further. But the increase in income will also increase imports which will decrease NX which negatively affect demand, however the overall effect on demand is positive.

As the interest rate decrease the expected return on foreign bonds increase, which decrease the demand for domestic currency and depreciates the nominal exchange rate. As the nominal exchange rate depreciates, if the Marshall-Lerner condition holds (valid in reality), net exports will increase because domestic goods will be relatively cheaper compared to foreign goods, as NX increase demand and output increase, which will, through the multiplier increase consumption and investment, which will increase demand and output further, but it will also increase imports which will decrease net exports decreasing demand and output, however the overall effect on demand is positive.

All this is shown by a movement along the IS curve to the right, we go from A to A', where A' is the new equilibrium level of output, and the decrease in interest rate has increased output through both the decrease in borrowing rate and increase in investment and from the depreciation of the nominal exchange rate.

As domestic interest rate decrease, we move along the IPC line from A to A', which represents the new value of the depreciated nominal exchange rate.

d)

Yes, it is possible for the interest parity condition to be respected even though the domestic interest rate and foreign interest rate differs. We saw that in the previous case, as participants expectation about expected exchange rate remains the same, the nominal exchange rate will decrease, and if the investors expect a appreciation of the exchange rate in the future, the domestic interest rate would need to be lower than the foreign interest rate in order to make the interest parity condition to hold.

If people start to change their expectations, and for example in the previous case, if people would think and believe that the new nominal exchange rate is undervalued, they would expect a future appreciation of the nominal exchange rate. This would lead to that the expected exchange rate is higher than the nominal exchange rate $E < E^e$. If this is case, the domestic interest rate would need to be lower than the foreign interest rate in order to attract investors to invest in foreign bonds in order for the interest parity condition to hold.

e)

No, in fixed exchange rate regimes, the central bank is not able to affect the economy through adjustments in interest rate, i.e implement monetary policies, as domestic interest rate should be equal to foreign interest rate as long as people believe that the central bank is committed to the fixed exchange rate regime, thus;

$$\begin{aligned}
 E^e &= \bar{E} \\
 i &= i^* - \frac{(E^e - \bar{E})}{\bar{E}} \\
 i &= i^* - \frac{(\bar{E} - \bar{E})}{\bar{E}} * \\
 i &= i^* - 0 \\
 i &= i^*
 \end{aligned}$$

With that said the central bank is not able to boost the economy though the decrease in interest rate if the country is operating in a fixed exchange regime as domestic interest rate should follow the foreign interest rate.

Exercise 3 -High inflation

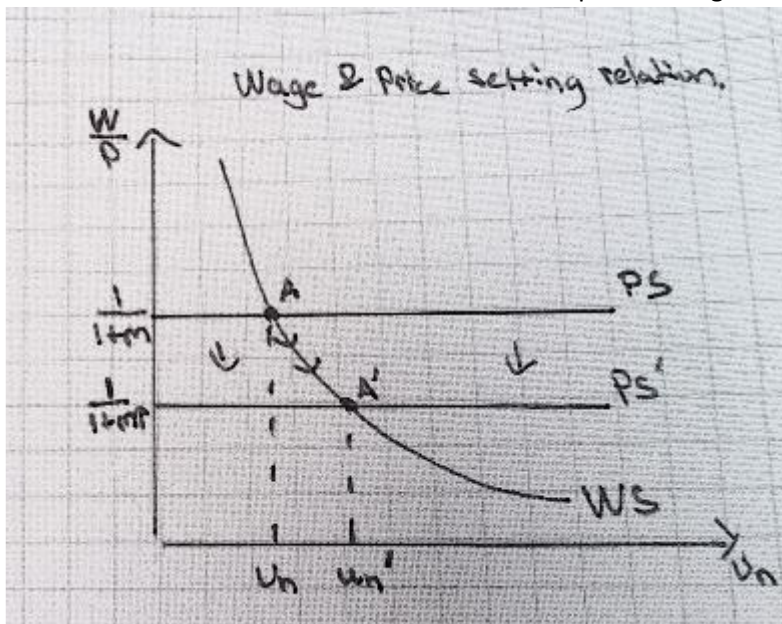
An increase in energy prices can be seen as an increase in the mark-up firms have (m)

By looking at the price setting relation we can see that an increase in firms mark-up, the price the set above marginal costs, increase, firms will increase prices. This would lead to a decrease in the real wage firms are willing to pay determined by the price setting relation.

$$\left(\frac{W}{P}\right) \downarrow = \frac{1}{1 + m \uparrow}$$

For the initial natural rate of unemployment, the real wage implied by the wage setting relation would be higher than the real wage that firms are willing to pay. This would lead to an increase in the natural rate of unemployment, as the nominal wage implied by the wage setting relation remain the same, and an increase in prices by firms would with the same nominal wages would lead to higher natural rate of unemployment as workers would lose bargaining power with the increase in natural rate on unemployment which would push the real wage implied by the wage setting relation down to the real wage that firms are willing to pay.

Here comes an illustration of the scenario in the price setting and wage setting graph;



As the natural rate of unemployment increase, the natural level of output decrease, this is implied by;

$$\begin{aligned} N &= \text{Employed} \\ U &= \text{unemployed} \\ \text{Labour force;} \\ L &= U + N \\ \text{Production function;} \\ N &= Y \\ \text{Unemployment rate;} \\ u &= \frac{U}{L} \\ \text{Therefore;} \\ L &= U + Y \\ Y &= L - U \\ Y &= L - Lu \\ Y &= L(1 - u) \\ \text{Hence;} \\ Y_n &= L(1 - u_n) \end{aligned}$$

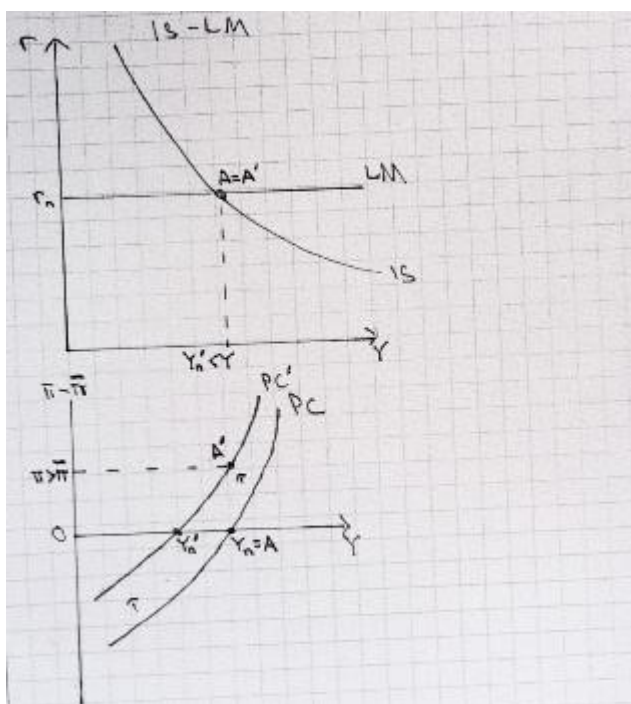
As natural rate of unemployment increase natural level of output decrease. This implies that for any given level of output inflation rate will now be higher, as firms sets higher prices but the nominal wages are the same.

As this is a supply side shock this would not affect the demand side of the economy, which means that the output would be the same as before the shock in prices firms face. But as firms increase prices, inflation increase and be higher for the same level of output.

As the natural rate of output goes down, PC curve shift up, the output gap would increase, and there would be a positive output gap, and an increase in inflation rate.

This shock does not affect the demand side, and does not affect interest rate, which means that the interest rate would remain the same.

b)



As illustrated the IS and LM curve is not affected of this supply side shock, A equals A' which represents the equilibrium level of output. However as the natural rate of unemployment goes up, natural level of output goes down and the PC curve shifts up. As output initially was in medium run equilibrium, the initial level of output is in point A in the Philips curve before the increase in energy prices. After the increase in energy prices, as natural level of output goes down, there will be increased inflation, we go to point A' on the new PC' curve, where inflation is increased and above target, actual level of output is above natural level of output and there is a positive output gap, and as natural rate of unemployment went up, and there is no change in unemployment rate, the unemployment rate is below the natural rate of unemployment. We are no longer in the medium run equilibrium for the economy.

c.

As one of the main goals or the main goal of the central bank is to bring back inflation to target inflation, the central bank would react by implementing a contractionary monetary policy. They do this by sales of bonds, which will decrease the money supply which will decrease demand for bonds and thus decrease price of bonds. As price of bonds decrease interest rate increase. As the interest rate increase the real interest rate will increase and borrowing rate will follow and increase. This makes borrowing more expensive for households and firms, which will lead to a decrease in investments. As investments decrease demand decrease and output will follow and decrease. As output decrease, through the multiplier effect, consumption and investments will decrease further, decreasing demand and output further.

As output decrease, employment will decrease and thus unemployment increase, as unemployment increase, workers lose bargaining power and will not be able to bargain for as high nominal wages, nominal wages will decrease.

$$W \downarrow = P^e F(u \uparrow, z)$$

As nominal wages is equal to firms marginal cost, and given that firms sets prices based on their mark-up, how high they can set prices above marginal cost, and it is unaffected, as firms marginal cost decrease firms will translate this decrease in marginal costs to an decrease in prices.

$$P \downarrow = (1 + m)W \downarrow$$

And as prices decrease inflation decrease;

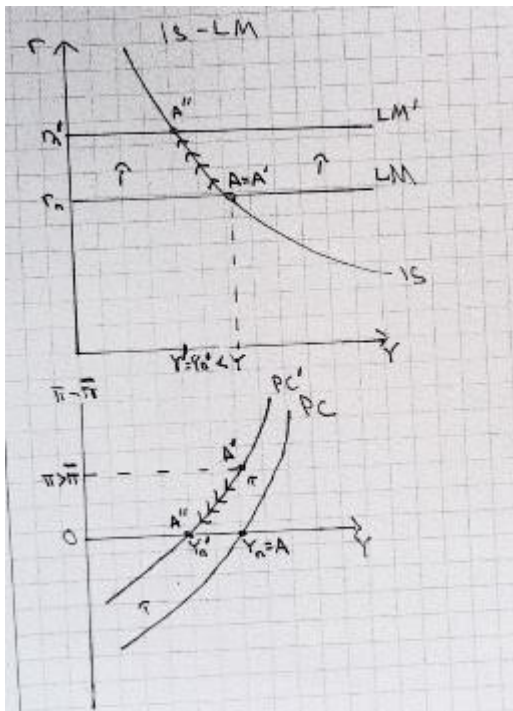
$$\pi \downarrow = \frac{p_t \downarrow - p_{t-1}}{p_{t-1}}$$

Through this contractionary monetary policy, the central bank can increase the interest rate and thus decrease output. As output decrease the output gap will decrease. As output decrease employment rate decrease and thus unemployment rate increase, nominal wages decrease, and prices will decrease which lead to a decrease in inflation rate.

If central bank increase the interest rate enough, it can contract the economy back to the new medium run equilibrium, where actual level of output is equal to natural level of output and the output gap is zero, where inflation has decreased and equals target inflation, and where unemployment rate has increased and equals the increased natural rate of unemployment. It can bring the economy back to its medium run equilibrium.

This economy would experience a stagflation because the negative supply shock has caused, increased and high inflation, increase in unemployment and a contraction of the economy.

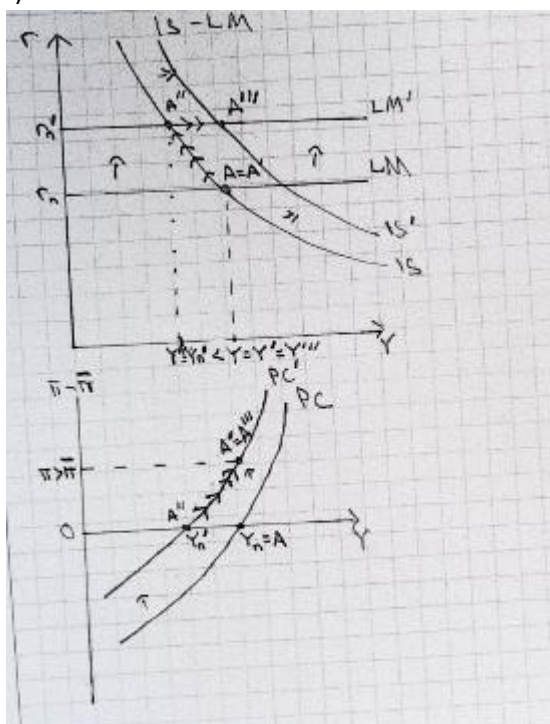
c)



As illustrated, the LM curve shifts up due to the increase in nominal interest rate, we move along the IS curve to the left as the increase in interest rate cause a decrease in investment, demand and output and through multiplier decrease in consumption and investment, which lead to a further decrease in demand and output etc. We go from A' to A'' in the IS-LM graph, where A'' represents a lower level of equilibrium output.

In the PC graph we move along the PC' curve to the left from A' to A'' , as when output goes down, unemployment increase, nominal wages goes down which will cause prices to go down which will cause a decrease in inflation. If central bank raises the interest rate enough, the economy will contract enough to bring the economy back so that the natural level of output equal actual level of output, inflation equals target and natural rate of unemployment equals unemployment rate. This is what is illustrated in A'' . The economy is back in its medium run equilibrium.

e)



To explain the last sentence, or rather the quote, and to show the effect of an expansionary policy implemented by the government, I will add the expansionary policy in the graph of sub-question d).

An fiscal expansionary policy is when the government increase government spending or decrease taxes or do both an equal change.

A decrease in taxes would lead to an increase in dispositional income, which will increase consumption thus demand and output will increase. As output increase, through the multiplier effect, consumption and investments increases which will increase demand and output further etc.

By increasing government spending, the aggregated demand will face an direct increase, and output will follow and increase. As output increase, through the multiplier effect, consumption and investments increases which will increase demand and output further etc.

As shown in the graph the IS curve shifts to the right when taxes decrease or government spending increase as output goes up, the LM curve is unchanged as there is no change in the interest rate. We move along the LM curve to the right, from A'' to A''', where A''' represents an increased level of equilibrium output.

As output increase employment increase and unemployment decrease, as unemployment decrease workers gain bargaining power and can bargain for higher nominal wages which will increase nominal wages. As nominal wages is equal to firms marginal cost, firms will translate the increase in nominal wages to an increase in prices given that their mark up stays the same. As prices increase it will increase inflation.

This is shown in the PC graph by a movement along the PC curve to the right from A'' to A''', where A''' represents a point where inflation is above target, and actual output is above natural level of

output i.e there is a positive output gap, as well as unemployment rate is below natural rate of unemployment and the economy is overheating.

To explain the last sentence made by the vice-president of EBC, in times where inflation is above target, when inflation is high, as one of the or the main objective by the central bank is to keep inflation at target level, the central bank will react by contractionary monetary policy as described above. But if government at the same time, as the economy may be experience stagflation as in the example above, want to boost the economy to hinder an economic contraction through an expansionary fiscal policy, it will offset the policy implemented by the central bank, and it will bring inflation to increase above target. In this case, the central bank would need to increase the interest rate even more, to contract the economy which wouldn't be sustainable for the economy, and the objective for the central bank to keep inflation at target would be harder to sustain, which can lead to that the central bank would lose credibility, which would make the objective to keep inflation at target even harder to sustain.

Also, as expansionary fiscal policies either increase the deficit, or if the government runs a balanced budget, at least will have no effect in decreasing the debt to GDP ratio. The central bank would have to increase the interest rate over and over again if governments keep implementing fiscal policies to be able to get inflation to target, this would increase the interest payments government pay on their debt, which would increase the debt-to-GDP ratio. In the end if the debt of the government is too high, the risk of default may increase, which would only lead to either an increase in interest rate and risk premium, which would increase debt to GDP ratio even more, or a increase in taxes and or decrease in government spending which would lead to a huge contraction of the economy. All this can lead to a debt spiral.

However, all in all, "but expansionary fiscal policies should not happen", implies that these policies will work against the target of the central bank to keep inflation to the target level, and offset the policies implemented by the central bank, and increase inflation.