International Economics

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Lecture No. # 16

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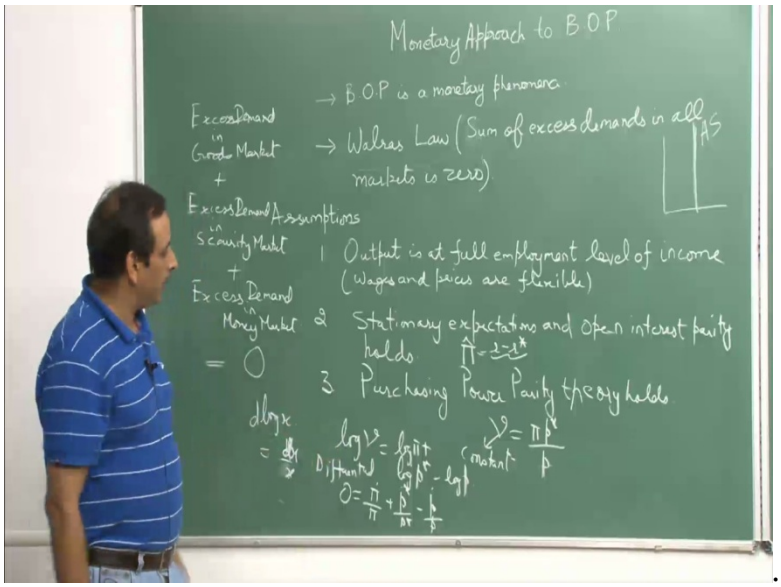

Good afternoon, today we are discussing a new topic which is the monetary approach to balance of payments. Earlier, we had discussed the elasticity approach to balance of payments along with the absorption approach to balance of payments and then we we are now coming to the monetary approach to the balance of payment. What it says is that this balance of payment is a monetary phenomena and it uses the Walras law, which says that the sum of excess demands in all markets is 0.

So, what it considers is three markets; one is the goods market, the other is the security market and the third is the monetary market. So, according to the Walras law if there is a excess demand in say goods and the security market according to the Walras law, there has to be an excess supply in the money market. And further when when I say there is excess demand for goods and securities, it is equivalent to saying that there is a balance of payment deficit.

Remember, balance of payment deficit when the central bank loses its reserves and there is a net outflow of foreign exchange underlying that disequilibrium situation was the fact that countries wanted to spend more on goods and services coming from outside. So, when I say there is excess demand in the goods and the security market, this is equivalent to saying that there is excess supply of money in the money market.

If there is a excess demand, if there is a excess supply of goods and securities; that means, if there is a balance of payments surplus, it is equivalent to saying that there is an excess demand for money in the money market. Reason being that this monetary approach uses the Walras law which says, that the sum of excess demand in all the markets should sum sum to 0.

So, if there is excess demand in the goods market excess demand in goods market plus excess demand in security market. So, this is a positive this is positive and if there is a third market that we are considering which is say the money market and if Walras law has to hold, then there cannot be excess demand in the money market. There has to be a negative excess demand in the money market.

Negative excess demand is excess supply. So, or if you have surplus here you have surplus in this security market then there has to be a negative figure. Say, if there is a negative excess demand here, there is a negative excess demand in the security market there has to be a positive figure here, because the sum should be equal to 0 according to the Walras law.

Now, when I say goods market, I am saying if there is an excess demand in the goods market, I am saying that it is equivalent to saying that there is a current account deficit. Because remember in the current account all income related flows are recorded in the current account of the balance of payment, all assets related flows are recorded in the capital account of the balance of payment.

So, when I say excess demand in the security market it is equivalent to saying, that there is a capital account deficit. Excess supply in goods market is equivalent to saying that there is a current account surplus. Excess supply in security market is equivalent is equivalent to saying that there is a surplus in the capital account. In any case, if these are negative this has to be positive, if these are positive this has to be negative because of the Walras law.

The main result of this monetary approach to balance of payment is that any disequilibrium situation, any balance of payment disequilibrium or surplus or deficit is a temporary phenomena. You cannot have sustained levels of surplus and deficit, and that is what we are going to prove.

This approach can explain what one saw in the economy and I am talking of a period from 1870 to 1914 when a particular type of monetary arrangement which was called the gold standard, that that particular monetary standard, that is the gold standard worked according to what the monetary approach to balance of payment claims, that any disequilibrium situation is a temporary phenomena.

And I am going to explain why? Remember, in the gold standard that is a period from 1870 to 1914, where around 70 percent of the countries would peg their currencies, new currencies they had come would peg it to the ounces of gold. Like now, in Europe they peg their own currencies to a common currency Euro, that time they would peg it to the gold. So, it was like a fixed exchange rate system.

Now, see how would the gold standard worked, if there was any deficit in the balance of payment you would see an outflow of gold from that particular country and this country which had a balance of payment surplus would receive this gold from its trading country. Today, if you have a deficit in the balance of payment and it is a fixed exchange rate regime you lose reserves, at that time the reserves were the gold.

So, any deficit country any any country which had a balance of payment deficit would lose the foreign exchange reserves which in those times were only gold. Now, see how this disequilibrium situation where one country is having a deficit, another country is having a surplus, this was only a temporary phenomena. Why? Because any deficit in the balance of payment would have some impact on the money supply.

So, a country which would lose reserves would see a reduction in the money supply. And so, that country which saw a reduction in money supply, the assumption was that this money would have a direct impact on the prices. So, reduction in money supply would lead to reduction in prices. When you reduce prices your exports, it was hoped that as the prices go down the exports would increase, imports would go down, exports would go up.

So, initially that deficit that you had would be wiped out over time, because of the changes in the prices and the money supply. Look at the other country which had a surplus, if you have a surplus in the balance of payment the gold will come in, the reserves will come in. So, it will have an impact on the money supply, the money supply would go up, the prices would go up, this increase in price would deter exports, increase imports. So, any balance of payment surplus will be wiped out over time because of the changes in money supply and the prices.

So, any disequilibrium situation was a temporary phenomena, there were forces in the economy which would bring back the economy back to equilibrium. So, this monetary approach comes closest in explaining the gold standard, but through a different phenomena, through a different sets of adjustments which take place in the economy.

So, the final claim of the monetary approach to balance of payment you may be you need to write note it down that any balance of payment disequilibrium is a temporary phenomena or any balance of payment surplus or deficit is a temporary phenomena. There will be adjustments taking place in the economy, which will bring back the economy into a balance of payment equilibrium. Now, what we will do here is, we will try to understand those adjustments which take place in the economy.

Same as what happens with the fixed exchange rate, there it is gold that is going out some money factor down here it is foreign exchange that goes down.

So, it is the same that remember, when we were discussing the fixed exchange rate and we wanted to see the effectiveness of the monetary policy. So, even in the case of no capital mobility or low capital mobility and perfect capital mobility we saw that monetary policy is ineffective in raising incomes and employments. So, it is it is similar to that and it explains the workings of the gold standards.

So, the gold standard would work, if there were changes in the money supply and then it would have an impact on the prices and so on. That was the time when you did not have any Central bank that was the time when you did not have inflation. I am talking of 1870 to 1914. So, the assumption was that everything would be smooth, the only objective of changing the money supply was or the money supply would change just because of inflow and outflow of gold. But today, monetary policy has many other objectives besides besides the impact of changes of reserves on the money supply.

So, then this monetary approach was based on some stringent assumptions. It is the oldest approach, so they referred to the one of the main assumptions of the classical school which is that the output is at the full employment level of incomes. So, remember you have an aggregate supply curve which is vertical, and this happens because wages and prices are flexible. There are stationary expectations and open interest parity holds. Recall, the open interest parity pi hat is equal to r minus r star.

So, there are stationary expectations of pi is equal to pi. So, pi hat this is 0. So, r is equal to r star and you further resume that r star is constant. So, r is also constant. Purchasing Power Parity theory, it is a way of linking domestic prices to international prices, it is like saying for the same set of goods how much do you pay here and in the foreign countries.

So, so this is a constant this is pi p star. So, pi p star would be the prices expressed in domestic currency this is linked to this is linked to pi p star, this is linked to p. So, nu is equal to pi p star by p and this is a constant. So, if you work further on this you would see that if you take the log, log nu log pi plus log p star minus log p. Take the differential log of nu which is a constant. So, if you take the differential that is d log nu so, that is d of log x. So, it would be d x by x it would be d x by x and because we assume nu to be a constant. So, so if you take the differential you will have 0 pi dot by pi plus p dot star by p star minus p dot by p. Zero, this is d pi by pi, d p star by p star, d p by p.

So, the rate of change of the exchange rate is a function of the differential inflation rate. This is what is coming out of the fact that you are linking domestic prices with the international prices and you assume this to be a constant. So, what I am trying to say this I am just adding another point that remember when we said what determines exchange rates? So, what determines exchange rate is the differential interest rates, what explains the changes in exchange rate is the differential inflation levels and then day before yesterday we saw that, expectations also have a role to play in effecting the exchange rates.

So, up till now there are three factors which are coming out of the theory that we have been reading.

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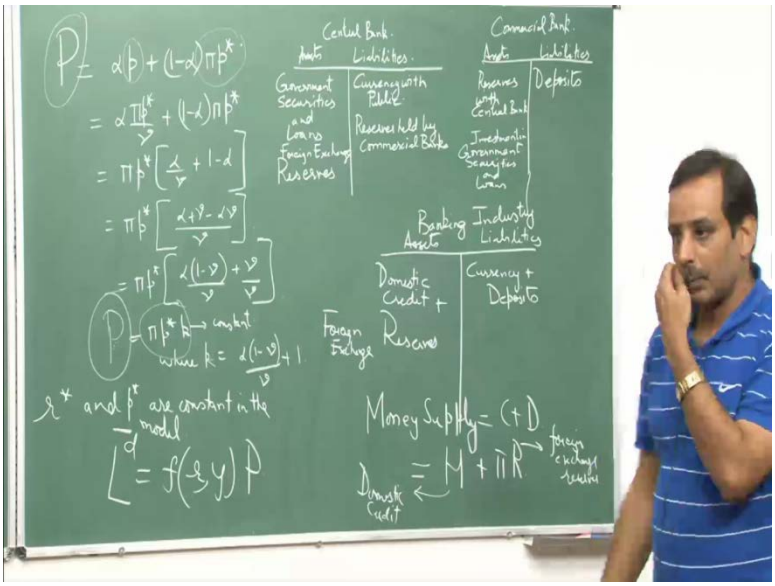

Anyway, so Purchasing Power Parity theory holds and then the price level in your country is a weighted average of the prices of the domestic goods and the prices of the foreign goods. Your domestic price level, it is a weighted average of the prices of the domestic goods and the foreign goods. So, you solve it and what you get is pi p star k and it is a fixed exchange rate regime. So, the domestic price level is a function of the exchange rate and the foreign price level.

So, p star you assume to be constant, r star is constant. So, this is fixed P is a constant, r star p star is a constant, r would r is equal to r star. So, r is a constant. (Refer Slide Time: 00:16) So, then the money demand which is a function of r, y and big P the money demand is a function of the rate of interest and incomes. Remember the money demand it is a sum of two demands: transaction demand and the speculative demand. Transaction demand is a function of income, speculative demand is a function of the rate of interest, and you have P and we see that P is constant, r is a constant output, is at full employment level. So, your money demand is fixed at L d bar.

Sir

Yeah

P is the prices (( ))

The price level, which is a function of the domestic prices and the international prices: a weighted average of the domestic and the international prices.

(( ))

This is the price of the domestic goods and remember this is the price of the the the foreign goods. So, so it is a weighted average of these two.

(( ))

It is a price index, it is an index. This is the P, it is the price index.

Is gamma the real interest rate and real exchange rate.

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Where is gamma?

nu

This nu

Yeah nu sir

Nu is the real exchange rate absolutely, which is the reciprocal of the terms of trade.

It is coming because of the fact that, we have assumed flexible prices it is constant because we have assumed flexible prices.

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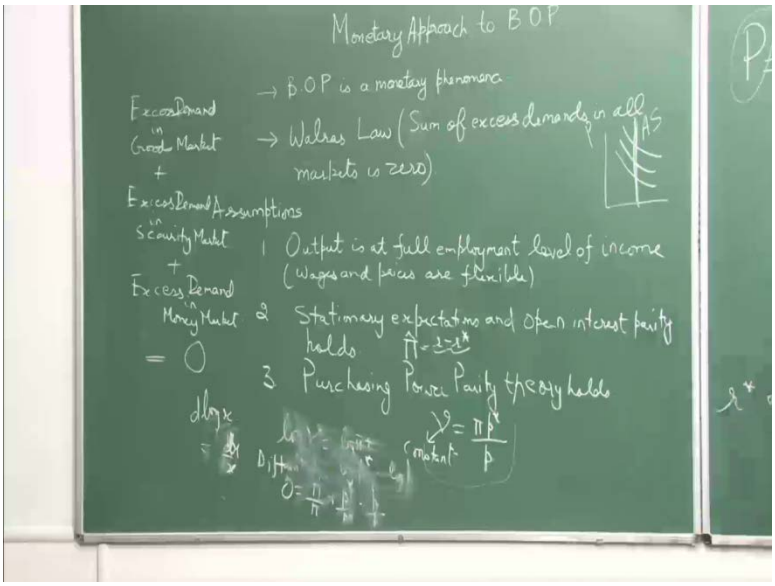

Remember when you have an aggregate supply curve which is like this. So, any changes in the aggregate demand will have impact on the prices only. So, it is a constant say if pi increases then p would also increase so, that this will become a constant and I will come to back to this point when we discuss the entire model.

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So, you have the demand side, money demand.

Sir

Yeah

p star is constant

This r star and p star are constant. This is constant in the model

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This was a point, this is the assumption here. This is the point that I wanted to make and this is not related to the monetary approach to balance of payment. When you take the log and you differentiate it, you will get that the changes in the exchange rate is a function of the differential inflation levels. And this has nothing to do with this that r star

and p star are constant. So, what I am trying to say is that if you assume this then your exchange rate movement is a function of the differential inflation levels.

So, this is just the point that I wanted to make, it has nothing related to the the monetary approach. So, this is the money demand which is this is fixed, this is at full employment level, this is a function of exchange rate which is a fixed exchange rate p star, we assume to be constant this is k.

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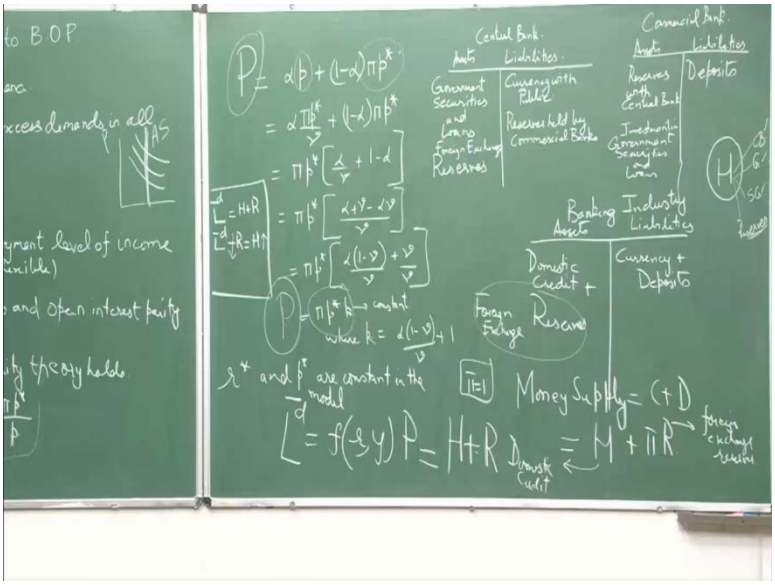

So, money demand in equilibrium is equal to the money supply, which is H plus say R if pi is assume to be 1. So, you have L bar d L bar d. So, that is the equation that is coming out L bar d is equal to H plus R or L bar d minus R is equal to H.

Now, look at the money supply, if you combine the Central bank and the commercial bank, you will get the banking industries whose assets would be domestic credit plus foreign exchange reserves this is equal to the currency plus deposits. So, it is the same thing the sources of changes in the high powered money is due to the changes in reserves and it is credit to the commercial banks and the other nonbank financial institutions in your country.

So H, this is the high powered money that is the money of the central bank. It changes because this changes and because there are demands which are coming from the other functionaries in the economy, can be commercial banks, it can be central government, it

can be state government and reserves. So, if you read about the sources of changes in the high powered money it will be the commercial banks, the government, the state governments and the changes in reserves.

So, this high powered money which is the money of the Central bank this is equal to currency plus deposits held by the commercial banks. So then C plus D currency plus deposits is equal to the Domestic credit, plus the reserves. So, pi is 1 so, you get this equation L bar d is equal to H plus R or L bar d minus R is equal to H. This is the main equation in this monetary approach to balance of payment; this is what happens in the long run.

So if you increase H, if you increase money supply in the economy. So, there is an excess supply of money if you if you look at this Walras law. So, H goes up there is excess supply of money which is equivalent to saying that there will be an excess demand for goods and there will be an excess demand for securities. When I say excess demand for goods and excess demand in security, I mean that there will be balance of payment deficit. When you have a balance of payment deficit and if it is a fixed exchange rate you would start losing reserves.

So, then you had excess supply of money which lead to a balance of payment deficit. But then this balance of payment deficit was wiped out, because you would see a fall in the in the reserves because it is a fixed exchange rate regime. If there is any excess demand for goods or if there is a balance of payment deficit, the central bank has to intervene to maintain that parity, that exchange rate so it would start losing reserves. When it will start losing reserves, this will come down you will again have equilibrium in the money market. So, there will be equilibrium in the other markets, whatever was the deficit it will be wiped out.

So, any balance of payment disequilibrium is a temporary phenomena. Now, what you may ask is that how does this function? How does an increase in the high powered money have an impact on the reserves? What what is the interface between between the high powered money and the reserves? Of course, you have the Walras law, but there has to be something within within this to explain that H has an impact on the R. So, then we need to go into the short run behavior, what happens in the short run? This is long run phenomena. So, this is the fact that they add on.

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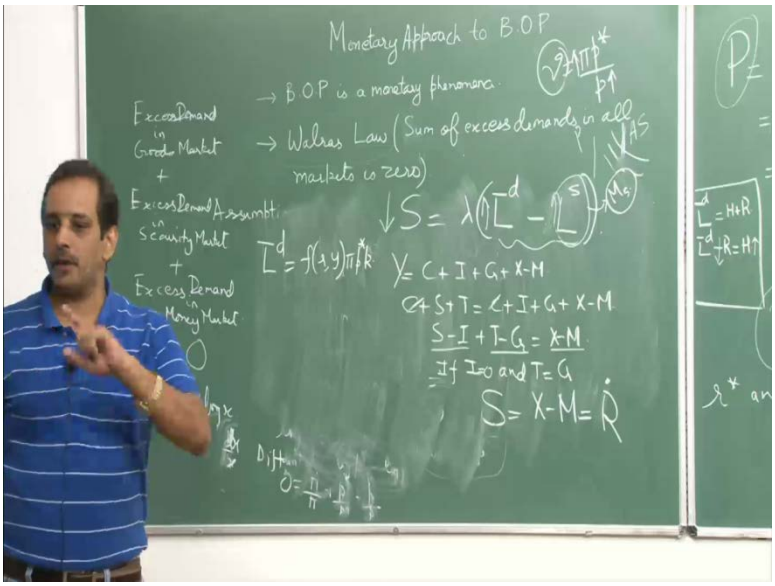

So, I am going to rub here and then I am going to write some more equations. So, look at this what the monetary approach to balance of payment is saying, that savings is a function of the excess demand for money. And if you work on the equation, Y is equal to C plus I plus G plus X minus M, you will get that the current account surplus is a function of the differential in the savings and investments, and the differentials in T and G.

If I is 0 and T is equal to G, you will get savings to be equal to X minus M. If there is a current account surplus or if there is positive savings and if it is a fixed exchange rate regime you would see an increase in the reserves. R dot would be greater than 0 if you see negative savings or its equivalent to savings you have a current account deficit, you would see a fall in reserves.

Now, see what happens. So, this is the money supply which is H plus R this is the money supplier H plus R. So, see what happens? Say for example, L S goes up so, if this goes up, the savings goes down.If the savings goes down, then there is an increase in the demand for goods and securities which is equivalent to saying that you have a balance of payment deficit. So, when you decrease savings correspondingly, there will be an increase in consumption of goods and securities.

So, so then you have a balance of payment deficit, if it is a fixed exchange rate regime you would see that the reserves will go down, if the reserves will go down then whatever

was the increase in money supply you would see an eventual fall of it. The money market will come back to equilibrium and so, will be the other markets.

So you could also think about in terms of (( ))

See, remember in the set of stringent assumptions are such that r star is a constant and remember the second assumptions which said, stationary expectations, open interest parity holds. So, pi dot is 0, pi hat is 0. So, R is equal to R star, R star fixed, y fixed P is a function of pi p star k constant, p star fixed, pi is the fixed exchange rate. So, you you see this to be constant, this is not changing. So, you have money demand which is fixed and the short run relationship goes like this.

Now think of another thing if say L bar d is f r y and p is pi p star k. L bar d is a function of rate of interest and incomes pi p star k, p star is fixed, k is a constant. Say for example, you devalue your currency. So, pi goes up if pi goes up see what happens to L bar d, L bar d goes up. Now, look at this you will have an excess demand in the money market, when you have an excess demand in the money market, according to the Walras law you would have excess supply in the goods and the security market.

Excess supply in the goods and the security markets is equivalent to saying that you have a balance of payment surplus. And if it is a fixed exchange rate and you have a balance of payment surplus, the reserves would go up. So initially, you had excess demand for money, but then this L S went up. So, that overtime you would have equilibrium in the money market and therefore, you would have equilibrium in the other markets.

So, it proves that any disequilibrium situation is a temporary phenomena and this is the oldest approach which says that balance of payment is entirely a monetary phenomena. Further, when I say that if pi had gone up and there is a balance of payment surplus and overtime balance of payment surplus will fall back and it will come to equilibrium. The question that you can pose is that Sir, then the things that we have read especially about the Marshall Lerner condition which said that if you devalue the currency, then it will lead to an improvement in the current account balance, if the sum of the foreign and home import demand elasticity is greater than 1.

Now, what this approach is saying is that if you increase pi, you would have a balance of payment surplus, but it will eventually come back to equilibrium. Does it contradict the

elasticity approach to balance of payment? If that is the question that I pose, No! Because the point that you raised right at the beginning that nu is pi p star by p. So, if pi goes up, p also goes up to maintain this.

So, remember when we are discussing the elasticity approach current account balance, I told you is a function of the real exchange rates. So, real exchange rate may not change, but the Marshall Lerner condition may hold and you may not see an improvement in the current account balance. But here you do see an improvement in the current account balance. So, probably the foreign import demand elasticity is probably infinite, that is why you are seeing a balance of payments surplus.

So, even if the prices are constant you are seeing a trade surplus that is because may be the foreign import demand elasticity is infinite. So, MLR condition is holding the only thing that you are saying is that this will be a constant, if this does not change then you may not see changes in the current account balance. So, I am I am trying to say that there is no contradiction between the elasticity and the monetary approach to the balance of payments.

So, I will quickly recapitulate what I am trying to say is this approach says, that balance of payment disequilibrium or any surplus or deficit in the balance of payment is a temporary phenomena. Any excess supply of money is equivalent to saying that there is excess demand in the goods and the security markets. So, excess supply of money means that there is a balance of payment deficit. Excess demand in the money market would mean that there is a balance of payment surplus, because of the Walras law.

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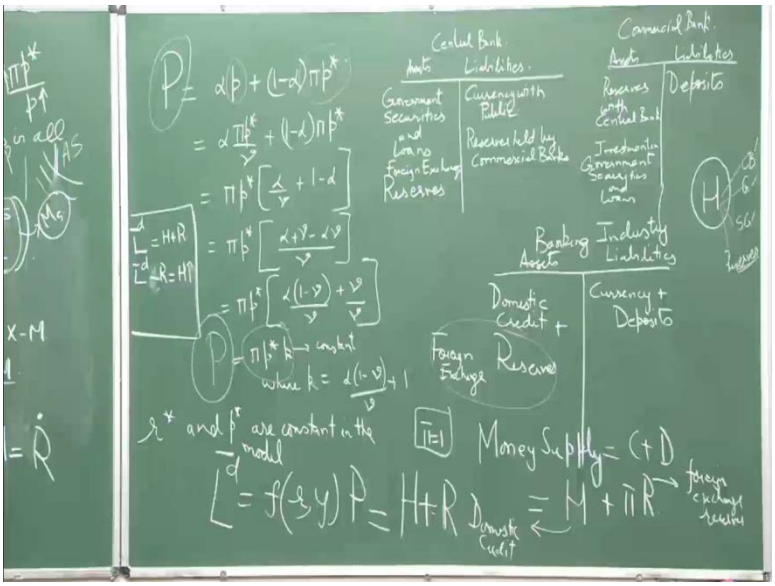

The equation that is coming out here is, L bar d plus r is equal to H sorry minus L bar d minus r is equal to H where, money demand works out to be fixed here, because y is at the full employment level, the price index is a constant, r is equal to r star, r star is constant. So, r is constant this is fixed. So, here if you increase the money supply the domestic credit, there is an excess supply of money which is equivalent to saying there is excess demand for goods and securities.

Excess demand for goods and security means that there is a balance of payment deficit. If it is a fixed exchange rate the reserves will fall down, if the reserves will fall you would again see that whatever disturbances that you had in the money market is back to equilibrium. And so, you would see an equilibrium in the other markets also. So, whatever was the deficit will be wiped out overtime.

Inherent, in this is the fact that in the short run what happens is that any changes in money supply or money demand has an impact on the savings. So, if the money supply goes up, the savings go down this is equivalent to saying that consumption of goods and services and securities go up. That is equivalent to saying that you have a balance of payment deficit. If you have a fixed exchange rate you would start losing reserves. So, the reserves would go down and that you can see from this equation also.

If you have a deficit in the balance of payments, savings would fall which is equivalent to saying that the reserves also go down. So, when the reserves go down, H had gone up,

R would go down eventually you would have equilibrium in the money market and that would lead to an equilibrium in the other markets. So, any disequilibrium is just a temporary phenomena. I am going to keep expressing the same thing through various diagrams. So, this diagram if you work on it.

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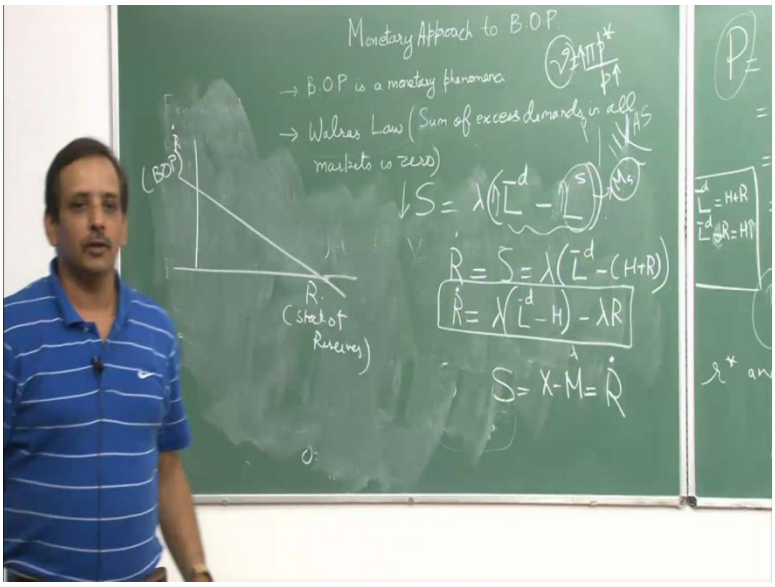

So, R dot is equal to saving is equal to L l bar d minus H plus R.

Sir

Yeah

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So, we end up here please.