International Economics

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Lecture No. # 02

Good afternoon, today we will carry forward our discussion on the Interdependent Model. The issue was that any shock which is given in the system leads to the changes in the incomes, and in the current account balance.

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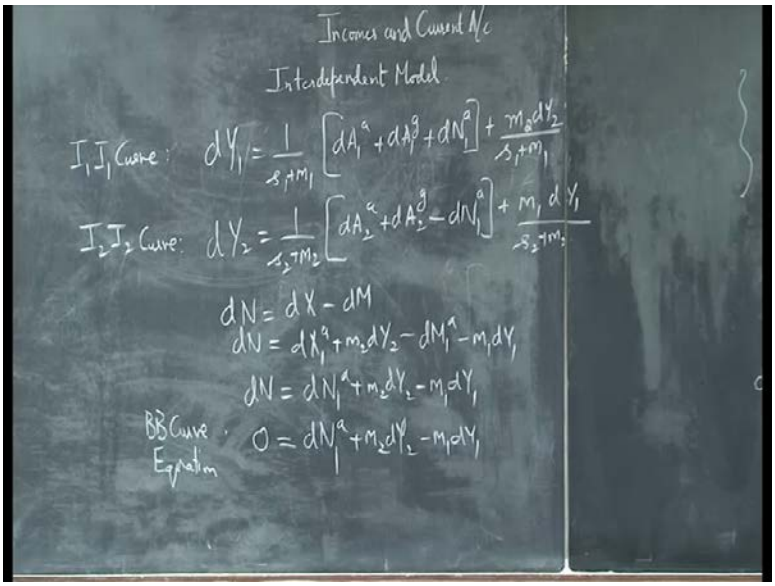

And the shocks leads to the changes in current account balance, which are sustained even in the Interdependent Model, and this is what we are going to see this set of equations; we derived last time. Here, we have two trading partners, and d y 1 denotes the changes in income for the first country as a function of the expenditures including the changes in the autonomous net exports, and it is also a function of the changes in incomes in the second country. Similarly, d y 2 the change in income in country two is a function of the expenditures including the changes in net exports, and the changes in incomes in the first country had it been a model without interdependence.

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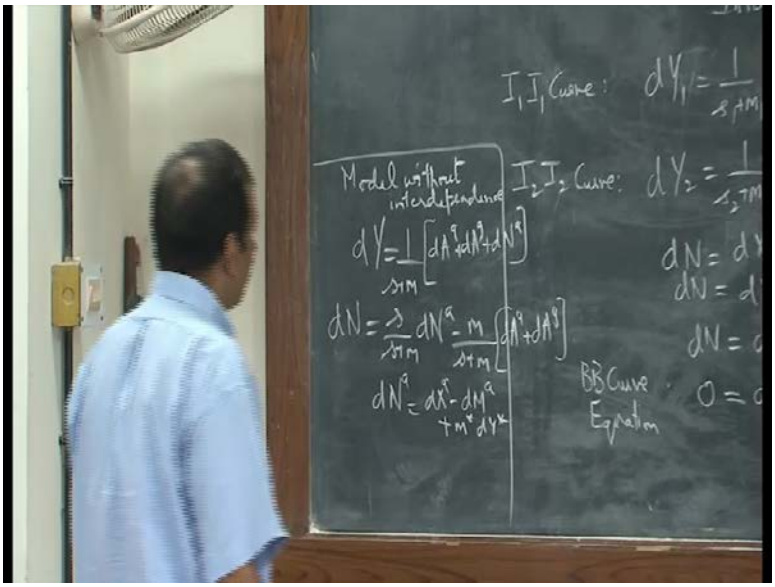

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In that case in that case a model without interdependence, you see that the changes in income is directly related to the expenditures, and the autonomous change in net exports which is defined in this manner, and the changes in net exports is directly related to autonomous change in net exports and the expenditures.

Now, see the difference between the interdependent and the dependent model. That if there is an increase in the expenditures. It leads to the changes in income through the open economy multiplier, but in the Interdependent Model there is something else which is happening when these expenditures go up; they tend to increase not only the incomes in the first country, but they also tend to increase the incomes of in the second country, because expenditures tend to have an impact on the incomes of both the countries. So, if incomes in US if the expenditures in US go up, the incomes in both US and Japan goes up and when the incomes in Japan goes up their imports go up. It means US exports go up and when US exports go up it impacts the incomes in the US. So, in an interdependent economy, your open economy multiplier increases. You have a larger impact on the incomes. Now, this point is depicted through a diagram, if you have the, if you have collected the notes.

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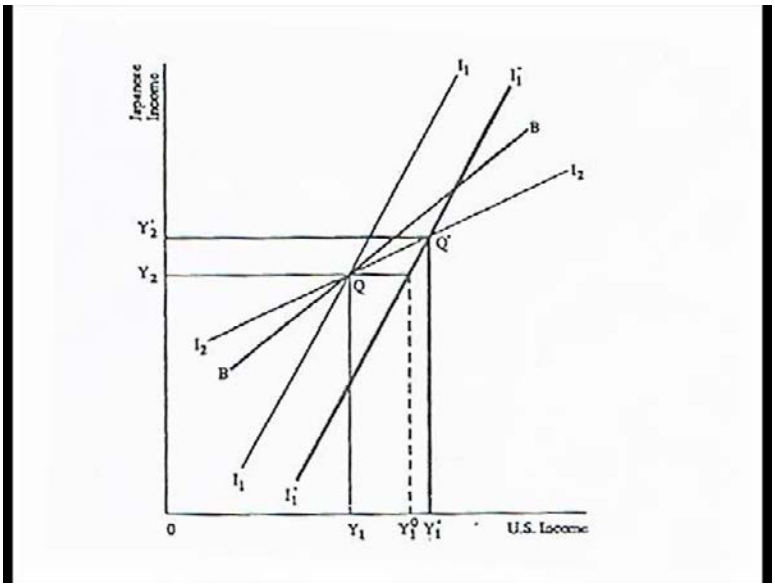

This is if you look at the hand out page 340. You have three lines: one is the I 1 I 1 line, the other is the I 2 I 2 line, and the third is the BB line. The I 1 I 1 line is a reflection of this equation where the slope of the I 1 I 1 curve sorry is m 2 divided by S 1 plus m 1. The I 2 I 2 curve, which has a lower slope is a reflection of this second equation whose slope is given by m 1 upon S 2 plus m 2.

There is another line which is BB line which denotes, which is a reflection of this BB curve which shows all combinations of US and Japanese incomes, wherein you have to current account balance. In other words when d N is equal to 0, and you have relationship between incomes of the US and the Japan you get the BB curve.

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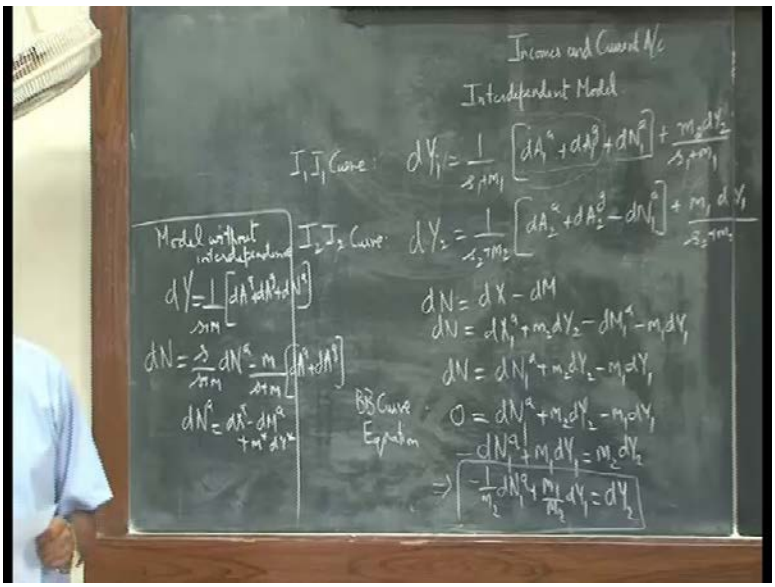

So, if you solve it further; you would get minus d 1 a plus m 1 d y 1 is equal to m 2 d y 2. So, d y 2 is minus 1 by m 2 d N 1 a plus m 1 by m 2 d y 1 is equal to d y 2. So, your BB curve is a reflection of of this equation.

Now, with any equation that you have if there are changes in the autonomous components. Then you see a shift of the curves and so say for example: if there is increase in expenditures, if there is an increase in expenditures the incomes in the first country would go up. Now, this would mean that the I 1 I 1 curve given the Japanese incomes. You would see a rightward shift of the I 1 I 1 curve.

So, given given that the incomes of Japan remains the same; if the expenditures in US goes up; then the incomes in the US goes up. This means that there will be a rightward shift of the I 1 I 1 curve. If there is a change in say this component which is the autonomous component, if there is an increase in this please see what happens the there the income incomes in the US increases; again, there will be a rightward shift, but look what happens to the d y 2 curve if d N 1 a goes up the d y 2 term declines. So, given the incomes d y given d y 1 if you see that d y 2 has to go down. Then, the I 2 I 2 curve will shift to the right, and then this autonomous component if there is a change in the autonomous component. This also brings changes in the BB curve, because if d N 1 a goes up d y 2 terms goes down. So, the BB curve also shifts to the right given the US incomes.

So, let us see, an analyze three at least two cases: one is an autonomous increase in US expenditures in a two country world. So, again you can easily see that if d A 1 a or d A 1 g changes; it increases it tends to have an impact on the I 1 I 1 curve, the I 1 I 1 curve shift to the right. So, the new equilibrium point is q dash, a movement from q to q dash, and this is a point which lies below the BB curve, remember the BB curve. BB curve is a reflection of this where all points shows the current account balance. So, here at q dash if it is below the BB curve; you would see a current account, you would see a current account deficit at Q dash.

Let me explain this point, you can see from from this equation, and also from from the equation model without the interdependence; any increase in expenditures tends to raise the incomes, but it also tends to have an impact on the current account balance which goes into deficit, because as incomes increases the imports go up. So, you have a current account deficit.

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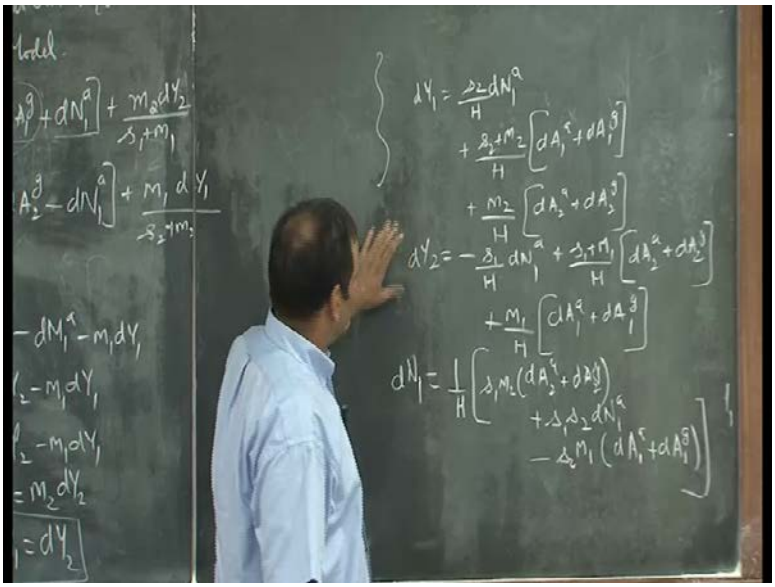

Now, even in the Interdependent Model, even if the expenditures go up, income in both US and Japan goes up. So, increase in Japans income leads to an increase in imports, and increase in exports, and a minor adjustment to the current account balance of the US which has fallen into the deficit, because of the increase in expenditures. So, there is a minor adjustment, but still you see a current account deficit, because of the initial shocks which is which are given.

So, even in the Interdependent Model, it is not able to completely wipeout the deficit which is created by an increase in the expenditures. Now, you can see this BB curve, any point which is say above BB curve; you would see that you would have a higher Japanese incomes, higher Japanese incomes would lead to higher imports, higher imports leads to higher exports, and therefore, any point above the BB curve will be a current accounts surplus, any point below the BB curve; will you will have a current account deficit.

So, this diagram shows that two things: one that if you do not have a Interdependent Model, and there are increase in expenditures. Your incomes will increase from y 1 to y 1 0. You see, that in the if you if you consider a changes in expenditures, it tends to have an impact on the US incomes, but US incomes only increase from y 1 to y 1 0. In an Interdependent Model, the open economy multiplier becomes larger, and therefore, the incomes raise from y 1 to y 1 dash not y 1 0, and the reason that, I explained is that in an interdependent economy when your expenditures go up, your incomes go up, there their incomes also go up, when their incomes go up; their imports go up, when their imports

go up; our exports go up, when our exports go up; they tend to have an impact on the incomes.

So, the increase in income is larger in case of an interdependent economy, but as I said it is not able to completely wipeout the deficit which is created, because of the shocks which are given in the economy. Look at, the model without interdependence, if d A a plus d A g if this goes up; it leads to a current account deficit. Because when the expenditures go up, incomes go up, imports go up, when imports go up? your current account falls into deficit.

Now, bring in another economy, if expenditures go up, your incomes go up, their incomes go up, your exports go up, but that is not able to wipe out the deficit which is created by the increase in the expenditures. Now, look at the other handout, which is page 342 of the pita Buchanan's book, it seems that they are, it is a complicated diagram, but if you are clear on what is the I 1 I 1 curves equations, the I 2 I 2 curves equations, and the BB curve equations. You will not have any difficulty in understanding the diagrams. Again, there is an I 1 I 1 curve depicting the first equation; the I 2 I 2 curve depicting the second equation; which shows relationship between their incomes, and our incomes, and you have the BB curve which shows the current account balance.

Now, the shock the shock which is given yes.

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No, in the first case, the I 2 I 2 will not shift, because I 1 I 1 curve is this; I 2 I 2 curve is this. So, you can see that d A 1 a and d A 1 g is not here in the second equation, but when you solve for this when you solve for this; that means, if you are talking of that point q and q dash. You see the point q and q dash that point q and q dash in the first handout that is page 340. That is a reflection of those d y 1 and d y 2, but if the I 1 I 1 curve is a reflection of this.

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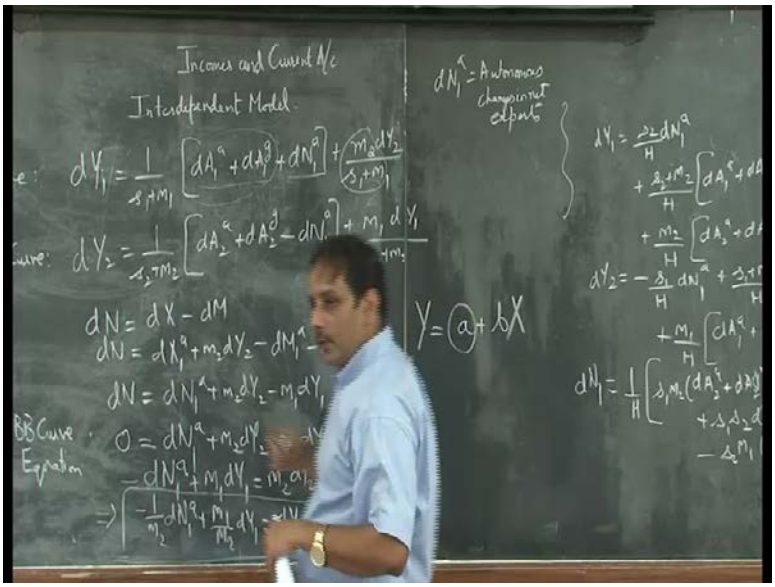

So, coming back to, see please recall that for an equation equation of a straight line, you have a plus b x right. So, if there is a change in a it means that the curve will shift, and if b changes right, you move along along the curve right. So, if this would have changed; then, you would have moved along the curve the slope would have change, but here the intercept changes, and this does not have the the second equation does not have d A 1 a and d A 1 g.

Now, coming back to this point an autonomous switch in expenditure from home to foreign goods. Now, what do you think will happen to the first equation. Now, please see that d N 1 a term is the autonomous changes in net exports. Now, there is a switch in expenditure from home to foreign goods.

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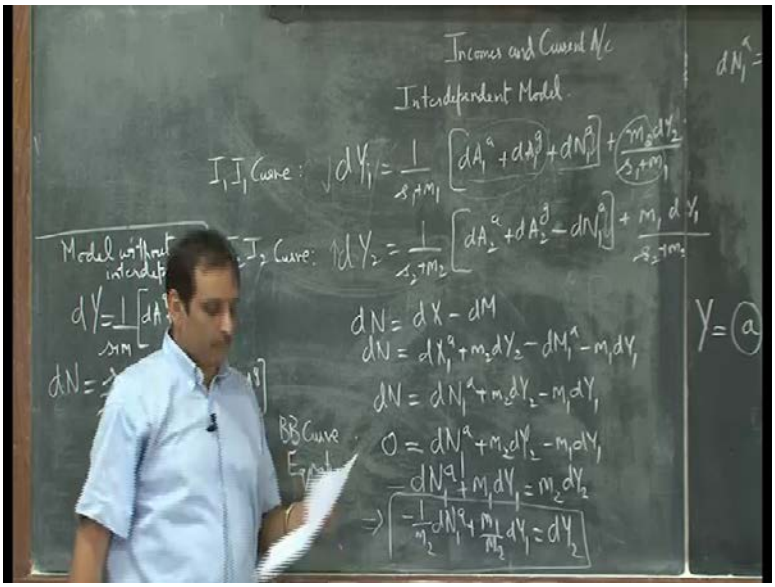

What do you think will happen to the d N 1 a term, if there was a switch from foreign to domestic goods. Then, what would have happened to d N 1 a term instead of liking goods from abroad; if you start liking your own goods. What would have happened to d N 1 a it would have increased, because your imports would go down; what would have happened, if there is a switch in expenditure from home to foreign goods. The d N 1 a terms goes down. So, what do you think will happen to the incomes, here it goes down. So, when the incomes the incomes go down, given that the Japanese incomes remain the same. You would see leftward shift of the I 1 I 1 curve, and that is what happens the I 1 I 1 curve shifts leftwards, but that is not the end of the story. Because d N 1 a term is also present here; and when the d N 1 a term goes down and there is a negative sign, here the d y 2 term goes up, now given d y 1 d y 2 term goes up.

So, if the d y 2 term goes up, please see that the I 2 I 2 curve given the US income, it shifts upwards or shift to the left, and then, there is a third thing happening: there is also the BB curve equation; which has a d N 1 a term and when the d N 1 a term goes down with a negative sign here, the d y 2 term goes up. So, when the d y 2 term goes up with the given US income, see what happens to the BB curve it also shifts upwards.

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Because if you look at this, and I will give you the economic reason also, but look at this when the d N 1 a terms goes down; when there is a deficit here there. So, d N 1 a term goes down here, and there is a negative sign here right. So, you have a negative sign and

this goes down. So, the change is negative, and there is a negative sign here; this goes up. So, when d y 2 goes up with the given level of income; y 1 is the US income right and d y 2 term goes up. So, the I 2 I 2 curve shifts up, and the economic reason you are already aware; that if there is a deficit, autonomous change in net exports; this goes down. It leads to a decline in incomes; when this goes down, there you have an autonomous increase; when you have a deficit they have a surplus, when they have a surplus their incomes go up. That is what happens the d y 2 terms goes up, but then the initial deficit which is created is not been able to be wiped out even in case of an interdependent economy.

So, you would still see deficit happening, because the new equilibrium point which is q dash lies below the b dash v dash curve. So, you still see a deficit even in case of the interdependent economy.

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Absolutely, because this is the curve, that we have defined this is the notation should have had 1 d N 1, this is all d N 1 d N 1. So, we are talking of this.

So, that is the point that, I was trying to explain that even in the interdependent economy. The current account deficit or surplus which is been created, because of the shocks is not been able to be wiped out, even in case of the interdependent economy. So, then the question is that how do we remove surplus or deficits permanently? Even if the surplus and deficits not being removed in the interdependent economy. Then what do we what can we do, to remove the deficits and surpluses in the balance of payments.

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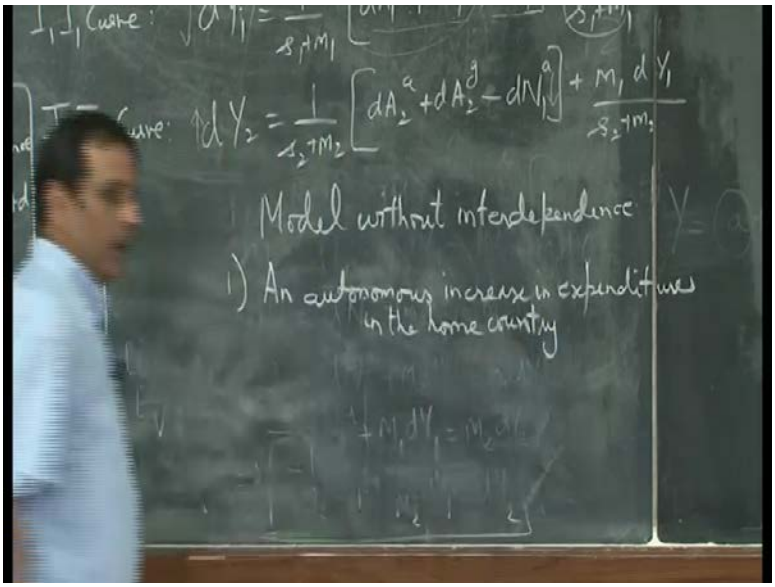

So, let us discuss the first case, this is again a model without interdependence. So, we are back to the one economy world; which is this, where the changes in income is directly related to the expenditures, and the autonomous change in net exports, and the current account balance is directly related to autonomous change in net exports, and the expenditures. The first shock is an autonomous increase in expenditures in the home country.

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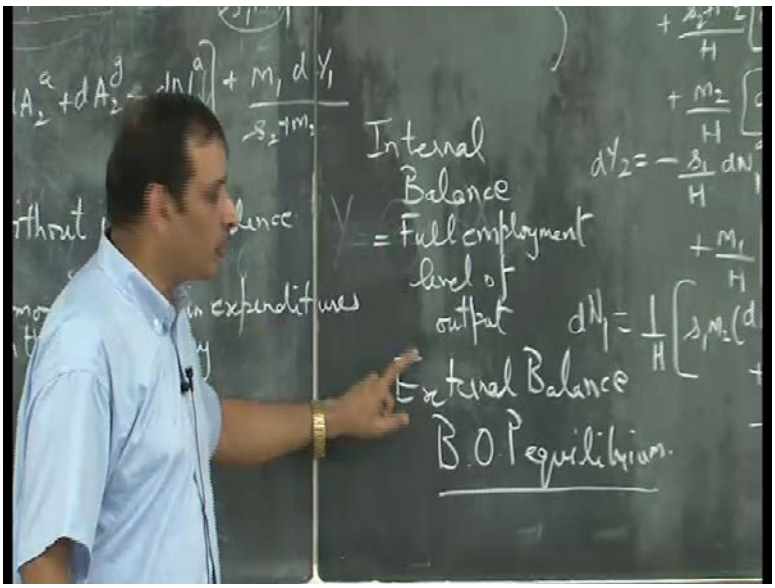

Now, to analyze this let me define two things: which are internal and external balance. There something, like the internal balance which is the full employment level of output. If the output exceeds the full employment level of output, you see an inflation, if the output falls below the full employment level of output; you would see an unemployment in the economy. So, this is one point, wherein all people who wish to work they get employed, you have price stability, but anything beyond this would lead to inflation, anything below this would lead to an unemployment in the economy. This is called the internal balance.

And then there is something like the external balance which which means that there is a balance of payment equilibrium. How do we have a balance of payment equilibrium? Please recall, that if the sum of autonomous receipts of foreign exchange is equal to the sum of autonomous payments of foreign exchange. Then, you have a balance of payment equilibrium; this can also be analyzed. If you assume that, there is a current account which falls to 0; if the current account is 0, then you can have a balance of payment equilibrium. Current account is 0 means the capital account balance is also 0, If the current account balance is 0, the capital account balance will also be 0. So, think of the external balance as the balance of payment equilibrium; wherein, you do not have any deficit or surplus in the balance of payments.

You are back to model without interdependence and your objective now is to curve any deficit or surplus in the balance of payment; reason being that, even if you had a model with interdependence: any shock is not able to curve the deficit or surplus permanently. So, we have to do something more in the economy to curve the surplus and deficit. Now, see what happens if there is an autonomous increase in expenditures in the home country. How it impacts the internal and the external balance? Given a model without interdependence, you already know that if the expenditures go up; the incomes go up. So, your internal balance gets affected. You see, inflation in the economy, but then the increase in expenditures also tend to deteriorate your current account balance. So, you see a deficit in the balance of payment. So, your out of internal balance, your out of external balance, point is what you should do to bring back your economy, back to internal and external balance.

So, to answer that there the answer is to cut back the expenditures may be policy induced expenditures, because that will bring the economy back to internal, and external balance.

Now, you depreciate this point, if someone instead of using the expenditure changing policies uses the expenditure switching policy.

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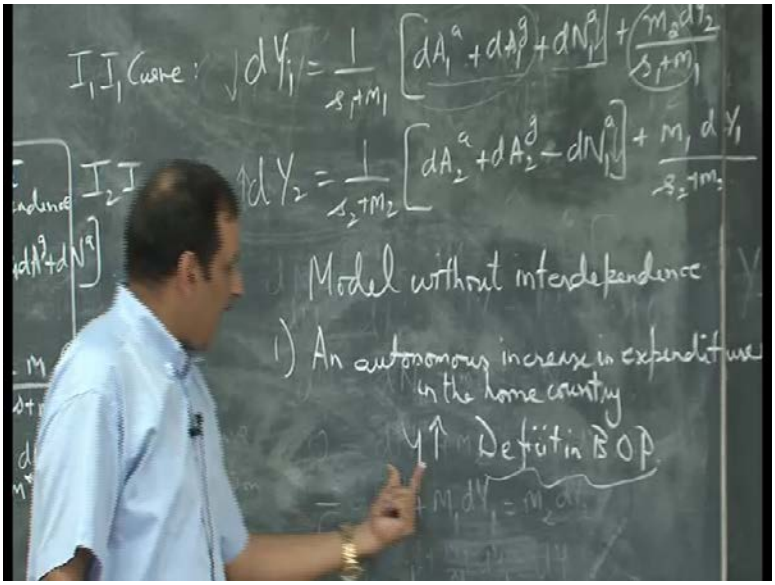

Now, you already seen that, when this happens the incomes go up, and there is a deficit in the balance of payments, and if there is a novice who is sitting in the ministry, and he has with him an instrument; which is a way to switch expenditure to curve the deficit; see what happens? If he if he if he only focuses on the external part, and he wants to curve the deficit in big balance of payment. He will switch expenditure from foreign to home goods is not it. So, when you do that you can take care of the deficit in balance of payment, but never realizing when you switch your expenditure from foreign to domestic good; see what happens to the d N 1 a term when there is a switch from foreign to domestic good your d N 1 a term goes up, your incomes go up, your incomes had already increased before beforehand because of the shock. So, you achieve external balance, but you move further away from your internal balance.

So, expenditure switching polices are not the right policies. In case, there is an autonomous increase in expenditures; only expenditure changing policies are appropriate from national point of view to bring back your your economy, back to equilibrium, that is you should you achieve and external balance; again if there is a novice who is sitting and he wants to take care of the increase in incomes; what do you think? He can do to curve that increase in incomes. If the instrument that he has with him is to switch expenditures, how can he take care of the increase in incomes? He can take care of the increase in incomes.

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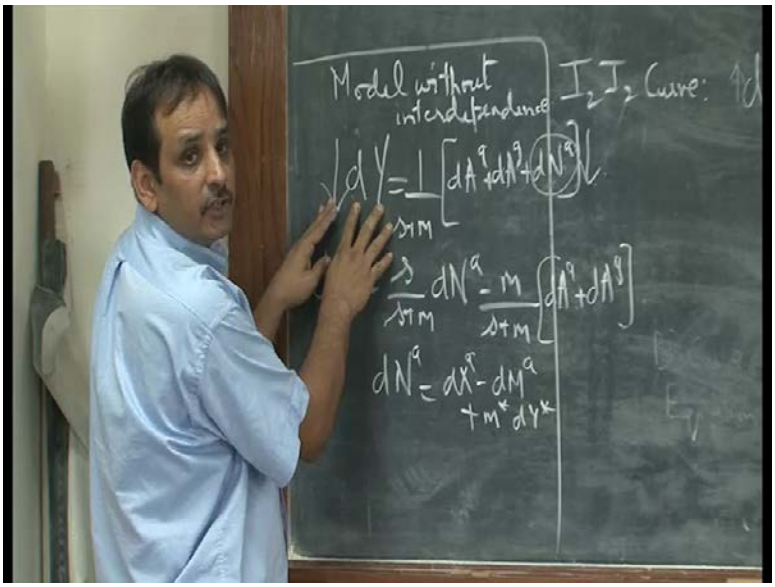

If he concentrates on this term, and if this term goes down, it would lead to decline in income and how is this possible? How can the d N a term go down? If there is a switch in expenditure from home to foreign goods, then only d N a term would go down. So, when this goes down he feels relieved that at least he has taken care of the changes in income, but when this goes down: it would further lead to a deficit in the balance of payment you move further, away from your external balance. So, the message is that if there is an autonomous increase or decrease in expenditure; you adopt expenditure changing policies to take care of your internal and external balance.

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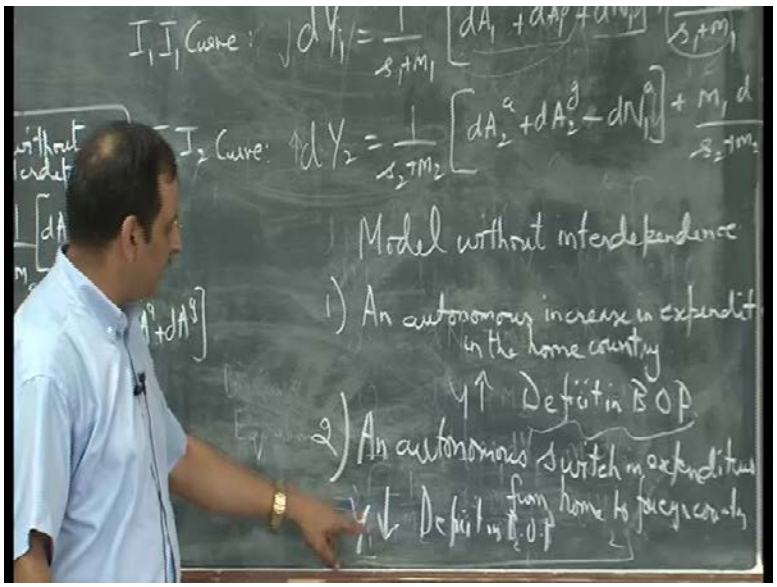

Second an autonomous switch in expenditures from home to foreign country. Now, you know what will be the impact? If there is an autonomous switch in expenditures from home to foreign country; if an Indian starts liking goods coming from abroad. So, what will happen is that it will have an impact on the d N a term, this would go down; incomes would go down. So, you have incomes going down, and you have a deficit in the balance of payments; what do you think should be the appropriate policy to take care of the switch of the switch in expenditures; which has taken which has taken place from home to foreign country; what should the policy maker do to achieve internal and external balance should they adopt expenditure changing policies or should they adopt expenditure switching policies.

So, (( )) to answer that if there is a switch in expenditure, you adopt the expenditure switching policies; you shift back from foreign to home goods. So, if you switch your expenditure from foreign to home goods, you can see that you can bring your economy back to equilibrium. Your internal and external balance can be brought back to the equilibrium; again, think of a novice who is sitting in the ministry instead of using the expenditure switching policy; he focuses on expenditure changing policy. There is an income decline, he wants to take care of this internal balance what will he do? He says he sees a decline in the incomes. So, the option if he has an instrument which is expenditure changing policy; he would increase the expenditures in the economy, because he knows that if the expenditures go up; the incomes go up.

So, he can take care of the internal balance, but never realizing that when the expenditures go up: this you have a current account deficit, you move away from your external balance you may achieve internal balance you, but you you move away from your external balance; again, if he uses the expenditure changing policies to take care of the deficit. Then he will reduce his expenditures; when he reduces his expenditures, he may be able to take care of the balance of payments, but when it comes to the internal balance as soon as he decreases the expenditures, his incomes go down; further he moves away from the internal balance.

So, the message is that if you have to permanently deal with deficit and surplus in an economy without interdependence. If there is an autonomous increase or decrease in expenditures; you adopt expenditure changing policies to bring back your economy, back to internal external balance, and if there is a autonomous switch in expenditures; you switch back your expenditures to bring back your economy into internal and external

balance. In the next class, we will see that how you switch your expenditures. In fact, when you depreciate your economy? You switch your expenditure from foreign to domestic goods, because your imported price goes up in terms of Indian rupees; your export price in terms of the foreign currency goes down. So, you switch you switch your expenditure from foreign to domestic goods; and when you appreciate your currency? You switch your expenditures from domestic to foreign goods, because your import prices goes down: your export prices increases in terms of foreign currency, so you switch your expenditure from domestic to foreign goods, and that we will see in the in the in the next few lectures.

I will end up with little complicated case of a model, wherein you have interdependence, and then you have an objective of how to achieve the internal and external balance.

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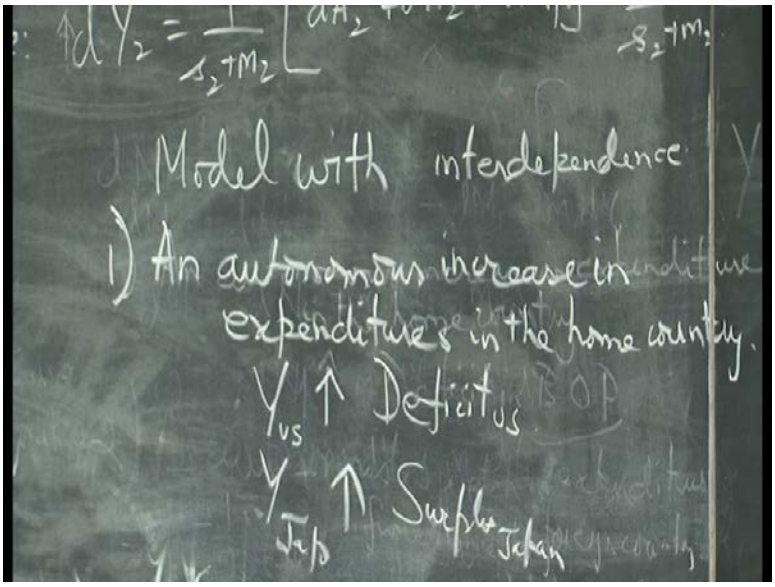

So, you have model with interdependence, and again, a shock comes the shock is an autonomous increase in expenditures in the home country. So, it is a little bit complicated case, because it is complicated, because here the home country decides to do nothing. You already know that, when there is an autonomous increase in expenditure the appropriate policy from both national and global point of view is to decrease the expenditures in the home country. Now, when I say appropriate policy from national and global point of view, I am bringing in what happens in the foreign country. Now, remember when there is an autonomous increase in expenditures in the home country incomes in US goes up; there is a deficit in the current account balance in US, but there is something which happens in Japan also. In Japan, because the expenditures have gone

up, incomes in Japan go up, and because there is a deficit in the US; there will be a surplus in Japan. This is the entire effect of an autonomous increase in expenditures. So, both countries move out of their internal and external balance.

So, when I say the appropriate policy from national and global point of view, would be again the same that if there is an autonomous increase in expenditures, you reduce your expenditures; when you reduce your expenditures, your incomes go down; deficit comes back to equilibrium; their incomes go down the surplus is curve curved, because when the deficit becomes 0 in the US, the surplus also becomes 0 in Japan. So, the appropriate policy is again expenditure changing policies in the when the you have an autonomous increase in expenditures in the home country. Again, think of this person, who does not know this rule, does not know the optimal pairing of the instruments with the targets, and he tries to use the exchange rates the changes in exchange rates to either look at the deficit in the US or look at the ways and means to counter the increase in incomes.

Now, if there is a deficit in the US, he will switch expenditure from foreign to domestic goods. So, what happens if he depreciate his currency in the hope that he curves the deficit in the balance of payments; what do you think will happen? He will be able to curve the deficit, because he has switched expenditure from foreign to domestic good, but that has an impact on the incomes, because as d N 1 a when he when he switches his expenditure from foreign to domestic goods, the incomes in the economy go up; when the incomes go up when the incomes go up you move further away from your internal balance; what do you think will happen in Japan? If there is an autonomous switch in expenditure here from foreign to domestic goods.

So, deficit can be taken care here, and so, will be the surplus there, but then what will happen to the to the incomes? If this improves, If this d N a term improves incomes go up, but when d N a terms improve it deteriorates there. So, the incomes there goes down, and this is also taken care. A switch in expenditures will not be able to take care of the internal, and the external balance in the in the US economy. So, the appropriate policy is the expenditure changing policies.

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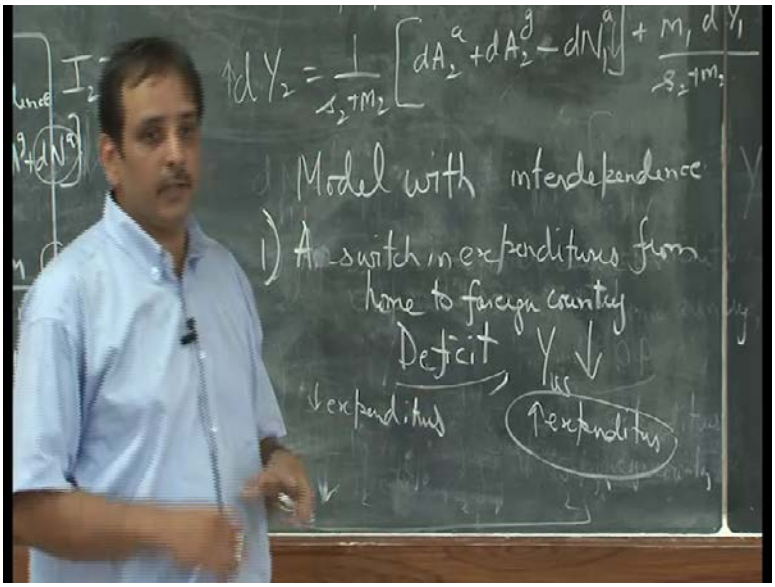

Quickly on the second point again so, what will happen? If there is a switch in expenditure from home to foreign country; what do you think will happen in the economy? There is a deficit in the balance of payment absolutely right, and when there is a deficit remember the incomes in the US goes down. So, the appropriate policy in this case is to switch back your expenditure from foreign to home goods, and a say for example; if US decides to do nothing. So, remember when you move your expenditures from foreign to home goods; you are depreciating your currency, but the others when you depreciate they appreciate.

So, either you can depreciate your currency or if you do not want to anything you you would expect, that the other country would appreciate their currency, to bring back the economy back to equilibrium. So, the appropriate policy is switching back; what would have happened? If he had adopted expenditure changing policies, now there is a deficit here, and the incomes have come down; what would have happened, if he wants to take care of the deficit, if he wants to take care of the deficit he would reduce expenditures. This will take care of the deficit, but again when you reduce expenditures your incomes would go down; what would have happened? If had taken, if you wants to take care of the decline in the US incomes. He would increase expenditures, but increasing expenditures would mean again a deficit in the balance of payment of this country.

Now, I want you to understand this point that, when he increases expenditures please think; what happens in Japan? When he increases expenditure? Here, to take care of the internal balance, it leads to a deficit here, but think what happens in Japan. In Japan,

because of the increase in expenditures, their incomes go up, and when their incomes go up see what happens to the surplus which is created, because of this shock when the incomes go up; the imports go up. So, their surplus gets reduced. So, this policy of the US which is which is increasing expenditure can take care of your internal balance, but not the deficit. It is an altruistic in the sense that, it takes care of both internal and external balance in Japan, because the increase in expenditure, increases incomes there, and it also takes care of the surplus which was created, because of the deficit in the in the balance of payments. So, this is this is a case, where your policies altruistic it is not good for you, but it is good for Japan.

So, all this which what I am saying can be analyzed through the equations. I want you to go back, and then have a look, and read the the the relevant chapter along with what is there in the appendix, because all the equations are there in the appendix. So, we stop here, and then we will move to the other chapter on capital account and the elasticity approach to balance of payment in the next class, thank you.