International Business
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Lecture – 13
Multiplier Effect with Numericals

Welcome friends to the 13th lecture of our course International Business. So, in the last class, we started discussing about a new concept called Multiplier Effect. Now, what is this effect? If we have like we try to understand, multiplier effect is a very simple concept which says that whenever there is a case of depression or a potential recession going to come and the economy is not doing well. Then, as per Keynes, he suggested that the government should interfere and inject money invest money into the system.

So, that when the government invests right. So, when the money comes into the system, it has a multiplying effect. Now, why is the multiplying effect happens? Because for example, if the government spends money on roads, construction of roads, let us say you know construction of buildings and real estate development etc.

So, automatically, the people start getting more jobs right and as people start getting more jobs and even you know the companies start producing the raw materials that the components and all required for the real estate business example or the auto component business etc.

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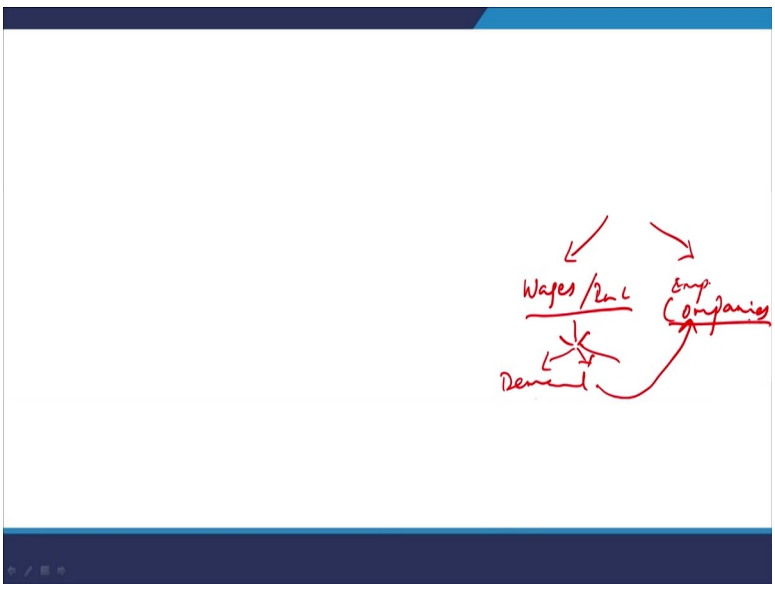

So, what happens is on two fronts; one side the people start getting more wages right or you know their income grows right and other side, the plants start functioning which also gives rise to employment right employment. So, in total; so, the employment comes through wages. The wages comes through employment only.

So, because of this increase in this income of people. So, now, the people tend to spend this income in some other ways. For example, they spend in going watching a movie, they spend in buying snacks, you know which earlier they would not have done. So, as this money is spent.

So, automatically, this to the demand for products rises right. So, as the demand for the product rises, there is automatically a good sign for the company's right, who are producing these products. For example, if more if the government gives us when the let us say the pay commission happens and we get a bonus or you know an extra money. So, most of the time, it has been seen that there is suddenly rise in the sales of cars of two wheelers and even refrigerators, consumer durable items.

So, what happens is because of the extra disposable income, people tend to spend it on items and goods that they feel are necessary for them and as a result, the company start producing and they in the in their turn start buying raw materials and entire you know the whole economic cycle becomes more active and it runs more faster right.

On the other hand, when the economy is in a state of recession or depressed. So, in such condition, what happens? People become more scared and they try to save the money and they thinking that it might be required in the future.

So, the future is uncertain. So, what they do is they try to save the money as much as possible. And as a result of it, what happens? The money does not circulate and as the money does not circulate, the demand for production goes down and as the demand for production goes down, the companies do not feel any need to produce the inventory.

Because then it they understand it would be only you know hoarding of or waste of the inventory since it is not getting sold. So, for example, right now at the moment, when I am discussing you must be knowing that in India, many of the auto companies. For example, Mahindra has announced that it would shut its plant for 17 days right. Some

other auto component plants have shut their operations for since the last 10-15 days. One of them is the Jamna auto what I am saying.

So as a result, in this condition, when the economy is in a dim state, so the government needs to Keynes had suggested that the government needs to interfere and inject money so that people have more disposable income with them and they can start consuming more. And more the marginal propensity to consume, the MPC, higher is the multiplier effect and when the marginal propensity to save is more, then lower is the multiplier effect right.

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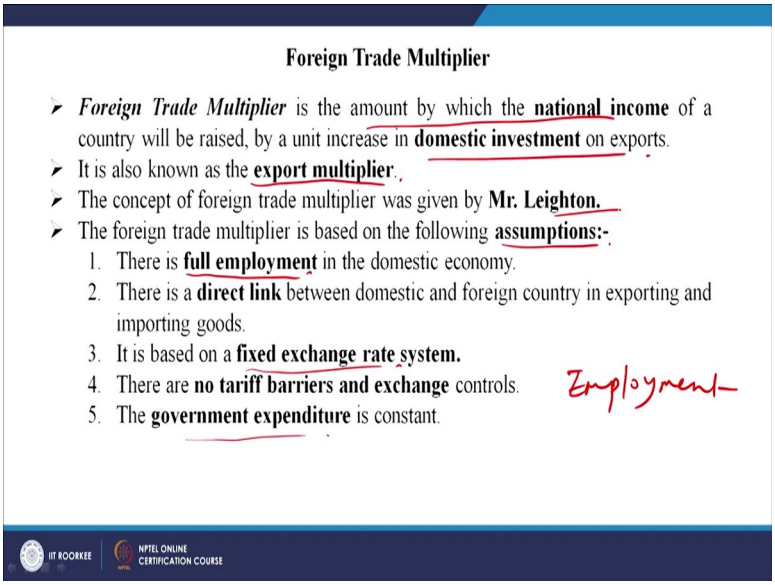

So, in the last class, we also discussed about the employment multiplier given by Kahn. So, and the next was we are discussing about the Foreign Trade Multiplier. Foreign trade multiplier I had said was given by Leighton right. And he said, there are a few assumptions while you talk about foreign multiplier.

What is foreign trade multiplier? It is a amount by which the national income of a country will be raised, will grow by an unit increase in the domestic investment on exports. Now, suppose the government invests in the exports in improving the exports of a of the country. Then obviously, we will get more money and this increase in flow of money will help in increasing the national income right.

So, this helps in the further you know running of the business and the economy becomes more stronger right. So, this is called as an export multiplier. Now, the concept of foreign trade multiplier was given by Leighton as I said and it is based on following assumptions which we discussed in the last class just to brief you again. The assumptions are it says there is already full employment in the domestic economy. So, if employment is not there full, why it is being said? If there is no full employment in the domestic economy and people are; so the point is that how do you put in invest make investments in the exports right.

Because you need to first understand that theevery person in a in the country is employed and he is having such some source of income. It also says that there is a direct link between domestic and foreign country right which we have discussed about in the mobility theory and trade theory right in exporting and importing goods. So that means, there is a free you know, trade you can understand that way.

So, it is then he says it is a fixed or a static exchange rate system and not a dynamic or volatile right which is again not true because the money, the in the market the money market it changes so rapidly right. So, all the time the Dollar and the Rupee, the Yen and all they change their value very very fast right.

So, it is it cannot be all that is a fixed exchange rate system; but for the to make it simpler and easy to understand, it has been assumed to be fixed which is not exactly true. It says there are no tariff barriers, but again that is wrong. There are tariff barriers; there are lot of tariff barriers, where tariff and non tariff barriers to have a control right, to save sometimes a domestic business people. The domestic industries and all and it assumes the government expenditure is constant. But again, that is not true, that changes; all these always a fluctuating.

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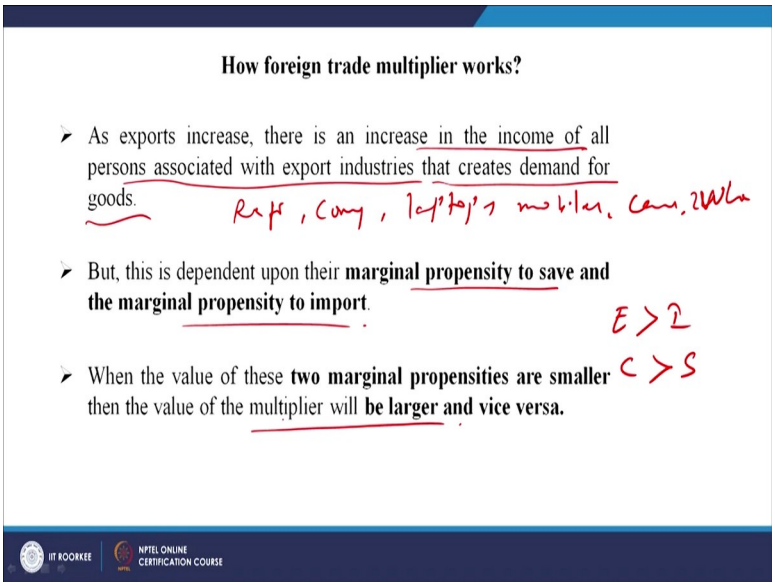

So, how does this foreign trade multiplier work? As exports increase, there is an increase in the income of all the people associated with the export industries and that creates demand for the goods right.

So, when you know the export increases, people get more income. They want to you know consume something more, they want to spend this money on something, some other items right and this creates a demand for the for those goods; as I said refrigerator right, computers, today laptops, mobiles you know. So, mobiles, car, maybe two wheelers, so, two wheelers right.

But, this is dependent upon their marginal propensity to save, what it is based on; what it depends upon? How much they want to save now and the marginal propensity to import. Now, there are two things if you see; save, now if the idea behind saving which is largely there in India. For example, the Indian you know mindset of the Indian economy runs basically largely on a saving mindset. So, we tend to save.

So, you must have I am not talking about the black money and the hoarding of money; but I am saying in a simple plain if a normal human being also an Indian would like to save the money as much as possible and try to reduce its consumption as far as possible.

They do not want to spend too much because they feel it is a waste of money; but actually economics does not say that; economics says the more you tend to save, the less

the money flows into the economy and therefore, there will be lesser demand of goods and services. And thus, there would be lesser production and this lesser production, then this lesser production will require lesser employment and lesser employment again comes down to lesser income right. So, if you are saving, in one way you are hurting yourself that is what is a chain reaction right. When the value of these two marginal propensities. The other one is the propensity to import and how much you want to import and when does one import?

One would import when one wants to have some items which are not available in the local market and or it is cheaper in the other market. So, they would like to import those items right. what it says is when the value of these two marginal propensities are small that means, the marginal propensity to save, you do not save much and the marginal propensity to import. So, you do not want to import much, when these two are small; then, the value of the multiplier will be large that means, if export is sufficiently more than import and consumption is more than saving, then this will be have a larger multiplier effect ok.

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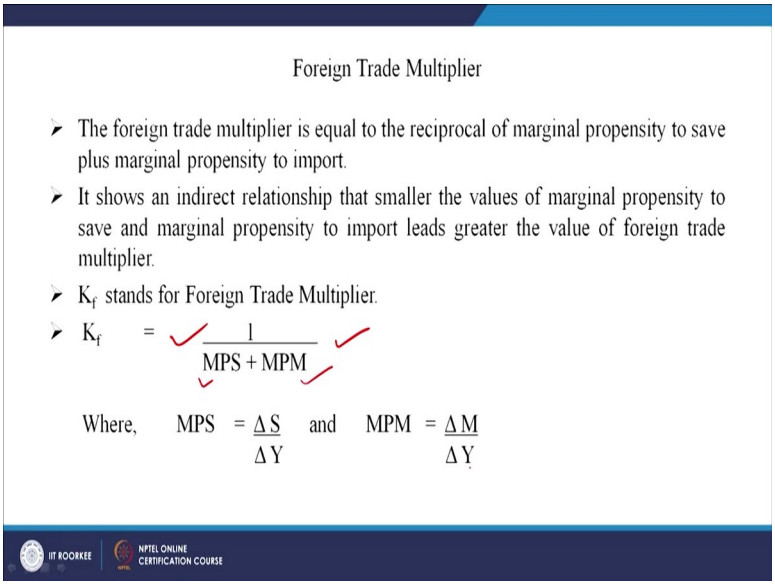

The foreign trade multiplier is equal to the reciprocal of marginal propensity to save right plus the marginal propensity to import; now this one. So, what it is saying? It is the reciprocal, 1 by the marginal propensity to save MPS divided plus the marginal propensity to import MPM right. It shows an indirect relationship that smaller the values

of marginal propensity to save and marginal propensity to import right leads greater the value of foreign trade multiplier. So, we understood. So, the more you want to save, the lesser the money goes into. So, similarly, if you if you export more than more money will flow in and if you import, then the money will go out. It is as simple as that.

So, the lesser the money goes out and the lesser is the money is saved and not consumed, then it and then consumed, then higher is the multiplier effect right foreign trade multiplier effect. Now, what is this MPS? We have already understood MPS is the change in saving divided by the change in income right. So, change in saving divided by the change in income and what is MPM? The marginal propensity to import is the change in imports divided by the change in income ok.

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Now, let us do this. Let us give an example. Calculate the foreign trade multiplier, if MPS=0.2 and MPM=0.2 and second case MPS=0.3 and MPM=0.2. Now, just do it on your notebook, using this formula. Just do it and tell me what is the result right ok.

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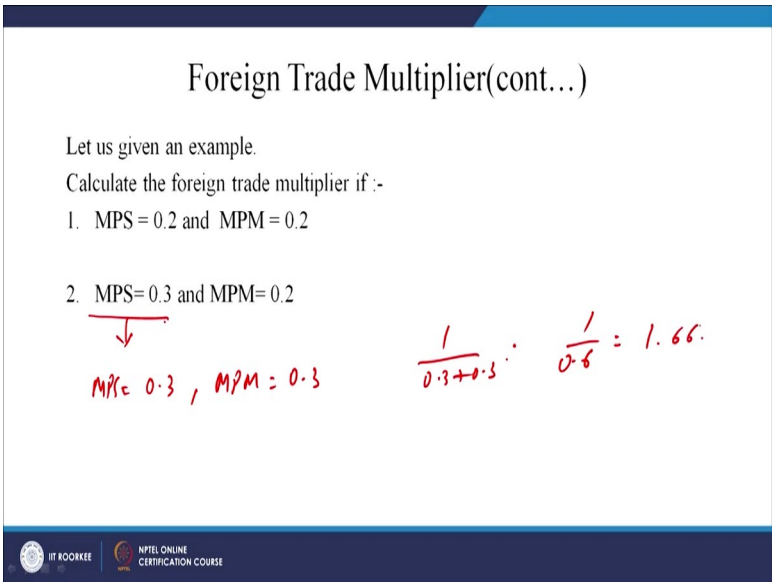

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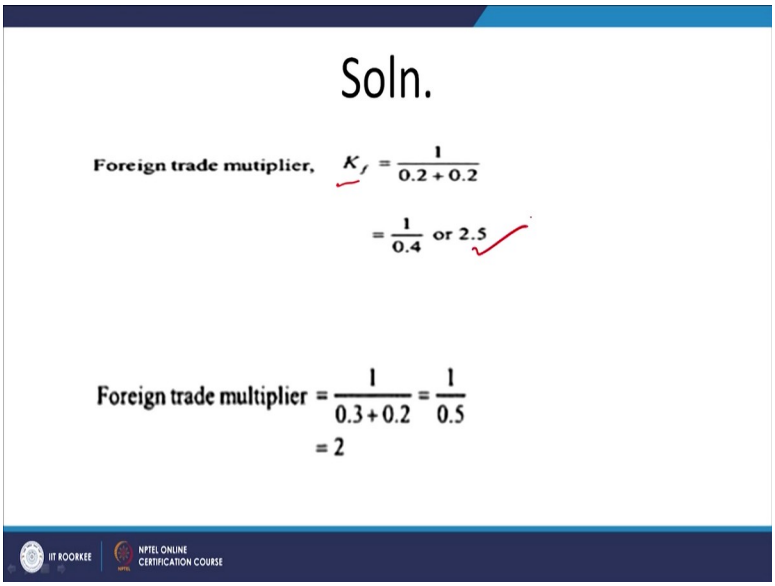

Now, this is what happens. So, the multiplier foreign trade multiplier is 1 by 0.2 plus 0.2; so, that is 2.5, right. In the second case, you see when the marginal propensity to save was higher, when people started the tendency to save became higher. Obviously, the trade multiplier effect although this was constant, the trade multiplier effect was changing low. Now, let us take a third case. For example, the marginal propensity to save MPS is equal to 0.3 and MPM also becomes 0.3. So, what is the change now?

So 1 by 0.3 plus 0.3 that is equal to 1 by 0.6. That is equal to how much? So, six ones are 6 (Refer Time: 13:12) six sevens are almost 6 6. So, 1.67. So, you see that again comes down right and as the foreign trade multiplier comes down, that means, it is not a very healthy sign right.

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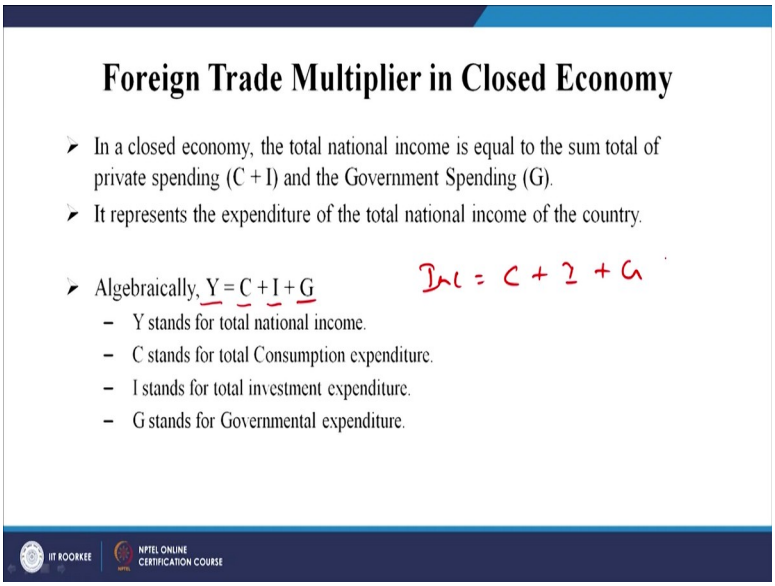

Now, there are two conditions when the economy is a closed economy or when the economy is an open economy. So, what is a closed economy condition? A closed economy condition is when the domestic players are given more importance and the you know the tendency to of the government and the trade policies are more stringent, you can say stringent or more closed, you can understand that way.

So, what it says in the closed economy, you know the policies are more restrictive policies. In a closed economy, the total national income is equal to the sum total of the private spending right.

So, private spending is the C + I, I have explained everything, let me go through it and the government spending. It represents the expenditure of the total national income of the country. So, algebraically, total national income the national income is equal to the total consumption expenditure right C + total investment expenditure right I, then the government expenditure right; so, three things. So, my income right income is equal to consumption expenditure + investment expenditure + government expenditure right governmental expenditure.

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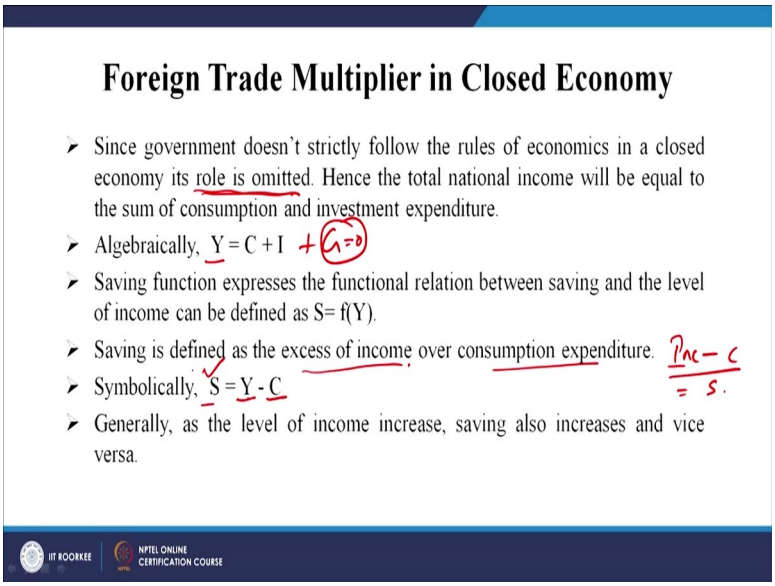

Now, these three things will totally tell me my income. But the problem is in the closed economy the government does not follow the rules of economics right. So, there is no free trade and all in a closed economy, its role is omitted. This is a very important line. The government's role is removed from there. Hence, the national income will be equal to Y= C + I because G is equal to is 0, it does not exist now.

Saving function expresses the functional relationship between saving and the level of income which is a function of Y. S is equal to saving is a function of Y. So, how you are saving it will depend on how much you have you are earning right, your income, what is your income.

So, saving is defined as the excess of income over consumption right. So, how much you have you are earning and income minus what is your consumption that is your saving, that is what you saved right. So, symbolically, S is equal to Y-C, income minus consumption.

So, what it is saying is generally as the level of income increases right. So, the income is increasing, saving also increases and vice versa. So, if the income is increasing, my consumption remains the same, consumption is not. Hoping that consumption remains the same, then my savings also increases.

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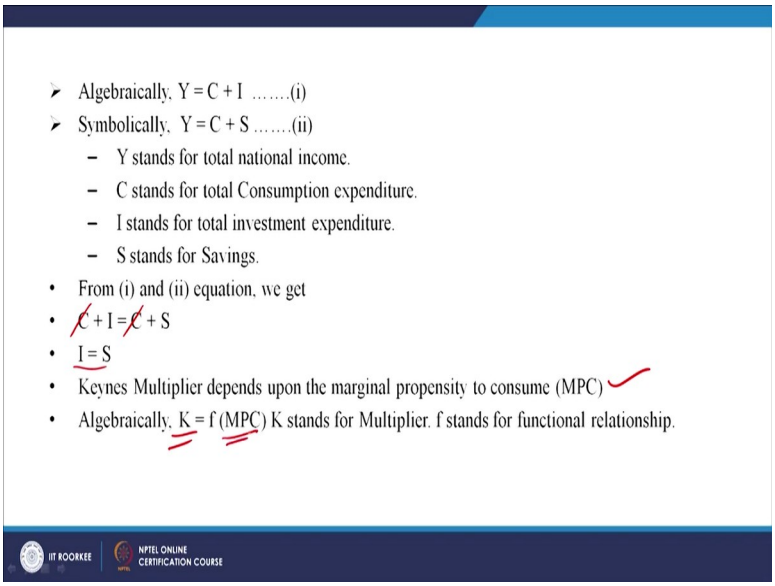

But if my consumption also changes, then saving also will accordingly change. Algebraically, you can see Y = C, consumption + investment expenditure and on the other hand, Y = consumption + saving. Now, Y stands for the total national income, C stands for the total consumption expenditure, I stands for the total investment expenditure, S stands for the saving.

So, if I take these two equations, what do we get? Consumption + investment expenditure is equal to consumption + savings. So, if we strike off these two across their both the sides, then I = S. That means, my investment is equal to my saving. Keynes multiplier depends upon the marginal propensity to consume. So, it largely focuses on the marginal propensity to consume. How much you want to consume? How effective, how much the consumption is growing?

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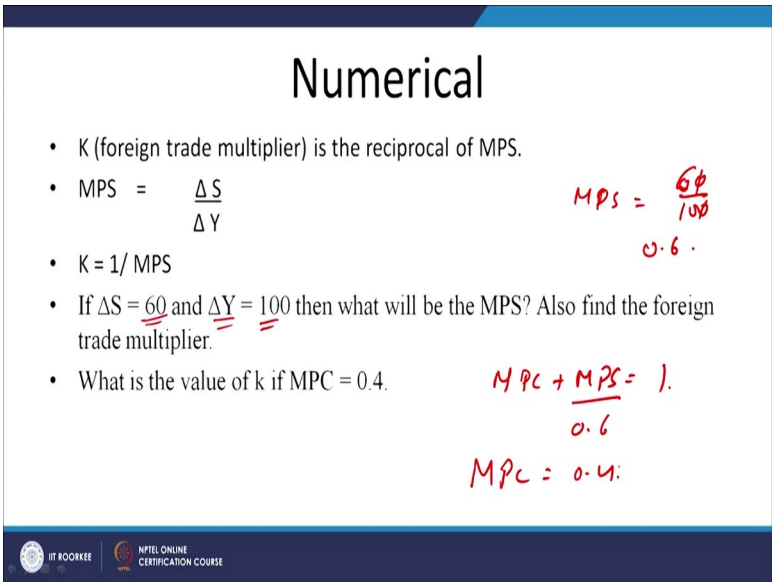

So, K the multiplier right is a function as per Keynes is a function of the marginal propensity to consume right ok. So, let us take this numerical. If K the foreign trade multiplier, it says K foreign trade multiplier is the reciprocal of MPS right. So, MPS= delta S saving by the delta change in the income; change in saving divided by change in income. K = 1 by MPS.

So, if delta S change in my income saving is let us say 60 rupees, change in my income is let us say 100 rupees, then what is my MPS? Now, this by this; so, what is the foreign trade multiplier? Now, delta S = 60, delta Y = 100. So, how much it is becoming? So, MPS MPS is equal to zero point sorry 60 upon 100. So, 0.6 right. Now, if this is my 0.6, MPS is my 0.6 right, then what is my what is the value of my MPC. Now, MPC + MPS = 1. So, if MPS is equal to 0.6, my MPC automatically becomes 0.4

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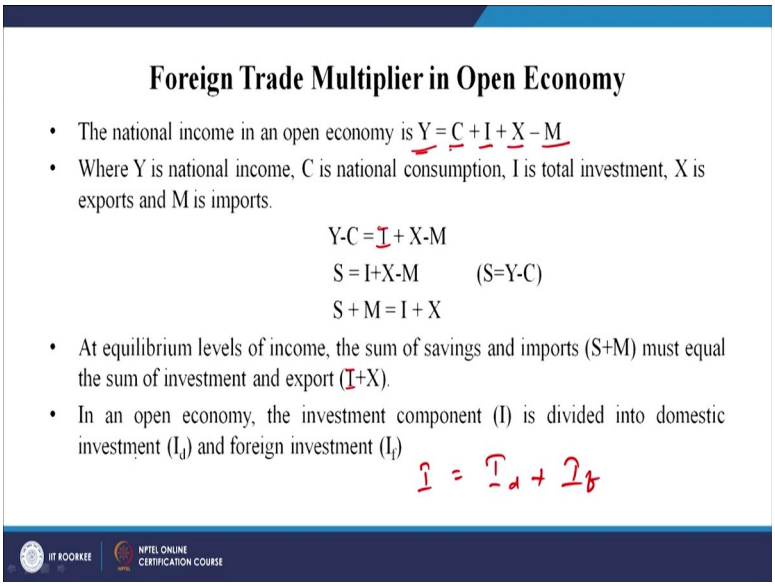

So, now, that was a case of a closed economy right. Now, let us take this case of a open economy now, when the market the economy is more open and free right. So, that national income is equal to is Y = C + I. Now, what is C? C is my consumption, I is my investment expenditure, X is my export, minus M is my import. So, you see Y-C; if I break it bring it this side is equal to how much? I plus it is I, I think it looks I + X-M right. So, S is equal to since S is equal to Y-C right. So, S is equal to I + X-M right.

So, S + M is equal to I + X. Now, what does it mean? That means, the savings plus the imports is equal to the investment expenditure plus the export expenditure. So, at a equilibrium level of income, the sum of savings and import, when it is a equilibrium condition must equal the sum of investment plus the export right. So, this is again looking like a 1. So, in an open economy the investment component is divided into domestic investment and foreign investment.

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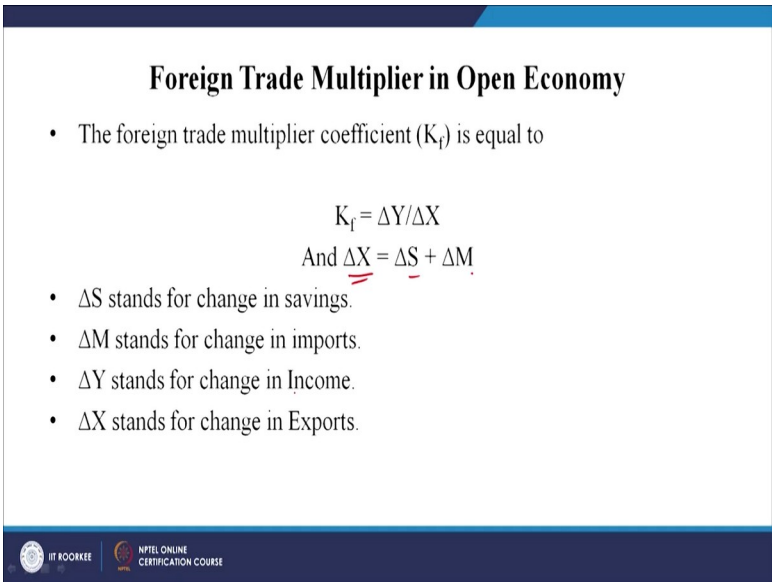

So, this I, the I is now total I is equal to I d plus I foreign right. So, foreign investment plus the domestic investment. Foreign trade multiplier coefficient is equal to now delta Y, the change in income upon the change in exports right in a open economy case and delta X = change in exports = delta S + delta M, savings plus imports. We have seen that. You can go back to the slides, go back across and check it. So, delta S stands for change in savings, delta M stands for change in imports, delta Y stands for change in income and delta X stands for the change in exports.

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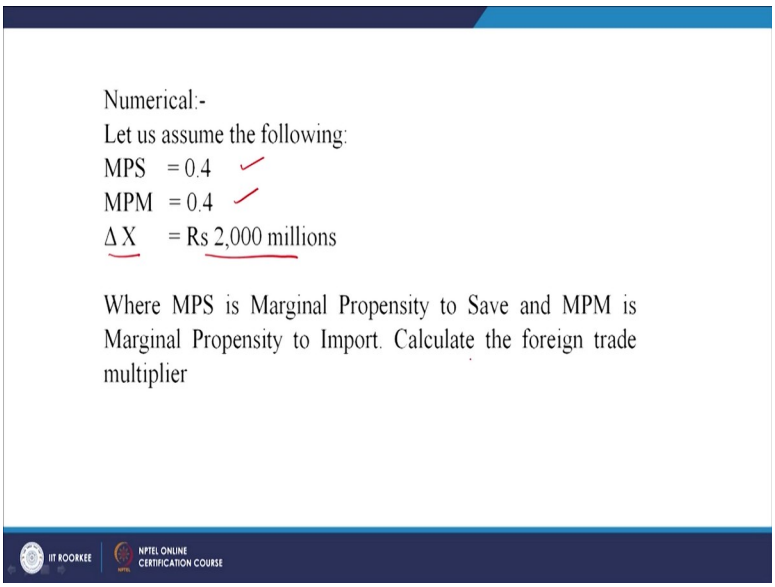

Let us take a numerical now to calculate the foreign trade multiplier. Let us assume the given data that marginal propensity to save is 0.4, the marginal propensity to import is 0.4 and there has been a change in exports of rupees 2000 right. So, in this condition right, calculate the foreign trade multiplier. Now, how do we do it? Try to do it on your own and let us check then.

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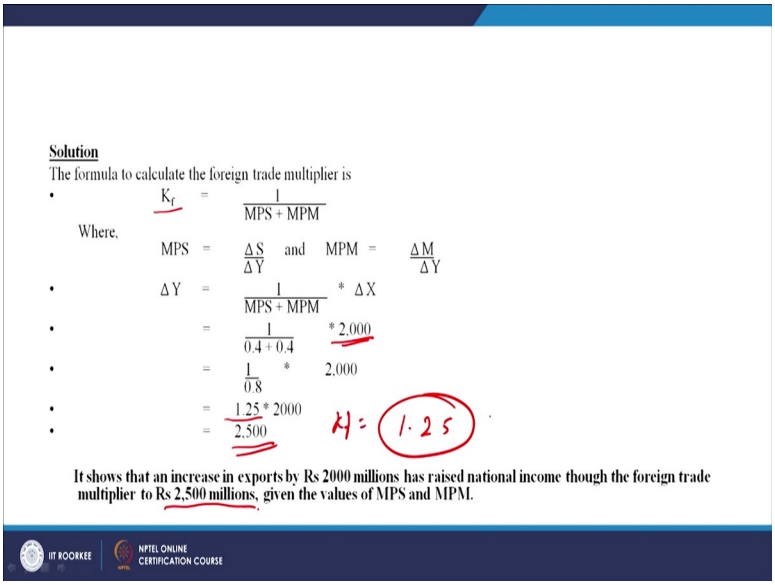

Now, the formula to calculate is Kf is given by 1/MPS + MPM right. Now, where MPS is my savings, change in savings / the change in income and my change marginal propensity to import is my change in imports / change in income.

So, change in income del Y = 1 / MPS + 1 / MPM into del X which is the change in the exports ok. So, that brings in 1 / 0.4 + 0.4 = 1 / 0.8 that is 1.25 multiplied by the 2000 that you have seen here right, this 2000 right. So, that means, 1.25 into 2000 is equal to 2500 rupees right, million rupees.

So, it shows that an increase in exports by rupees 2000 million has raised the national income through the foreign trade multiplier to rupees 2500 million right. So, and what is the foreign trade multiplier in this case now? We have 1.25. So, my Kf is equal to Kf is equal to 1.25 and multiplied with the change in export, we get a value of rupees 2500 right ok.

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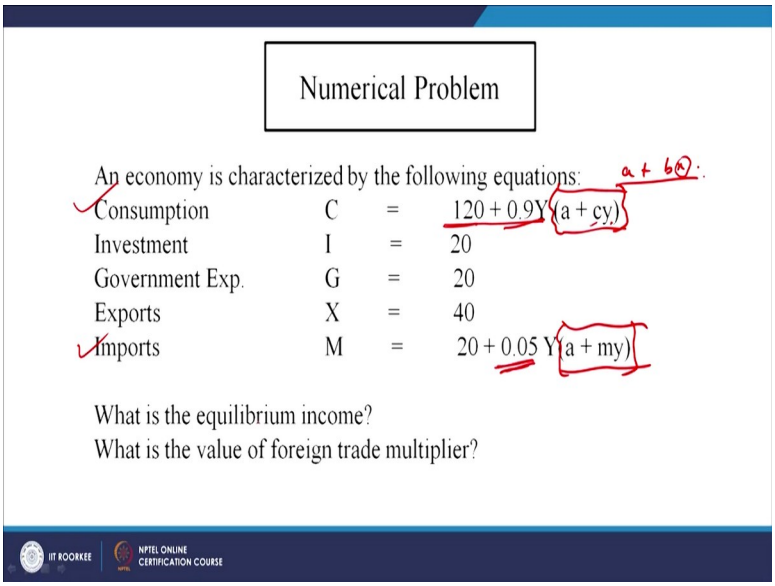

Now, let us take another problem in which is a case of a open economy case right and economy is characterized by the following equations. So, two equations are given; one is the consumption equation, the other is the import right. So, what it saying consumption is given as 120 + 0.9 Y right. So, this is the only the representation form which is a form of a regression equation. So, which is we say a + b of x right. So, instead of b, I am saying c because it is a consumption. So, c and x is my in the x is the independent variable in the regression equation, where here I am keeping the y; the y is the income right.

So, 120 + 0.9Y. So, this is just to understand right. So, this is only to understand and similarly, I is 20 investment the government is making is the investment is 20, the government expenditure is 20, the exports is 40 and imports is again given as a form in a regression form which is saying 20 + 0.05Y right. Now, 0.05 is again in that similar a form. So, this is not this is just to understand right these are understand. So, 0.05 is my slope. So, this is my slope 0.9 here and this is 0.05 here. Now, what is asking; what is the equilibrium income and what is the value of the foreign trade multiplier?

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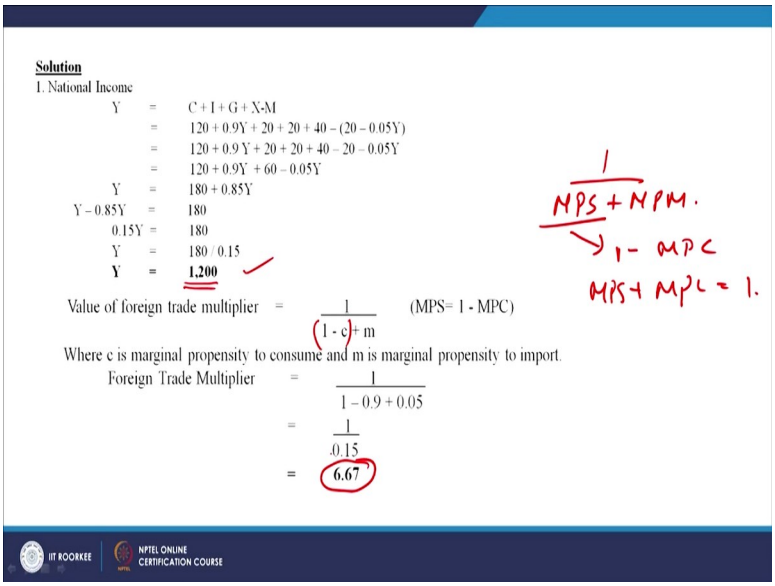

Now, let us go into it. Y = C which is my consumption expenditure consumption + investment expenditure zero point. So, this is consumption is 120 + 0.9 Y + 20 is my investment expenditure + G my government expenditure + X my you know exports and minus again 20 - 0.05 Y which is in the form of a equation.

So, if I solve this equation, what am I getting? I am getting Y is equal to 180 + 0.85 Y. So, that means, what? Y is equal to if I solve this, I am getting Y, the value of Y my income is equal to national income is equal to 1200 right. So, I have removed the units just make it unit less.

So, what is the value of the foreign trade multiplier in this case? Now, foreign trade multiplier = 1 / 1 - C. Now, C is what? Now, marginal propensity to consume plus the marginal propensity to import.

Now, why I put it 1 - C because actually the equation looks something like this 1 /MPS + MPM right. So, but MPS we know = 1 - MPC right, since MPS + MPC is equal to 1. So, taking that into condition that condition, we are saying now the foreign trade multiplier = 1 / 1 - C is 0.9 + M is 0.05. So, that gives me the value of 6.67. So, the foreign trade multiplier value is 6.67 right.

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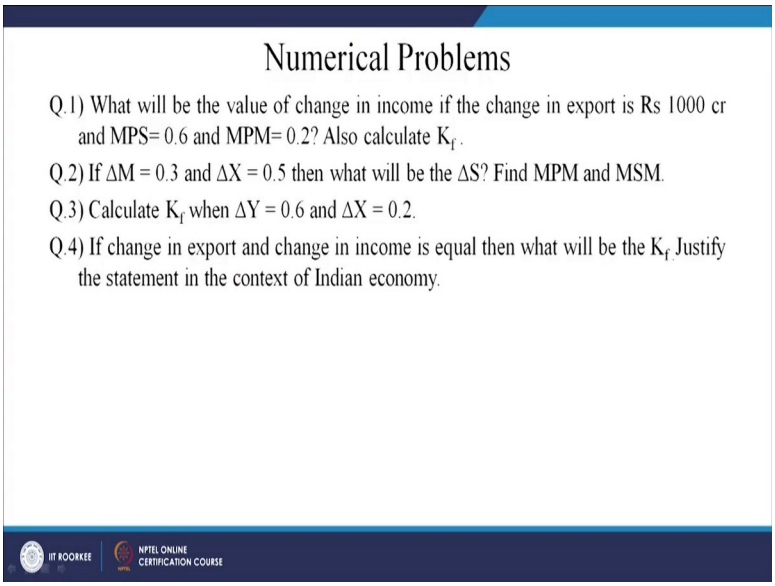

Now, this is another question. So, what is the value of change in income with the change in exports is rupees 1000 crore and MPS is given to you. Calculate Kf and similarly, 2 3 4, there are other questions, you can go through it right.

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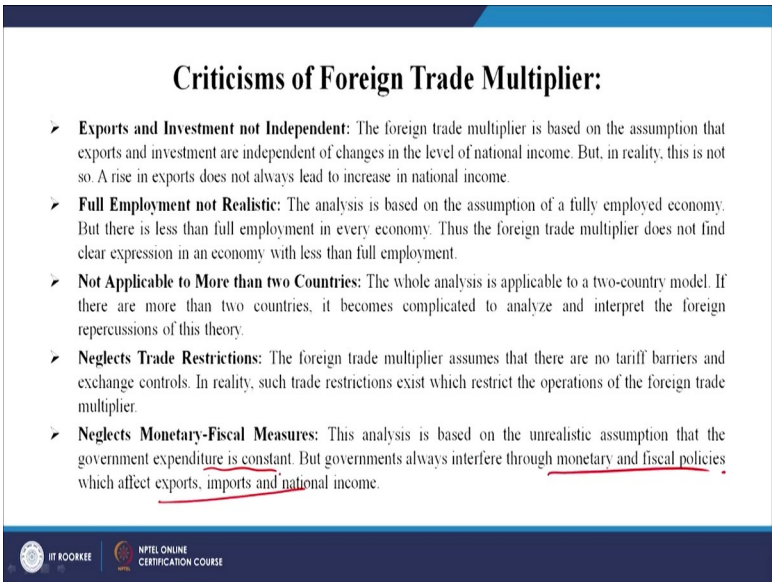

So, this is all about the foreign trade multipliers. So, what it is says as the government tends to increase the exports, automatically the income of the country will grow right and that has got a multiplying effect. But foreign trade multiplier has some criticisms also against it. What are the criticisms? Some of the criticisms are given here, as you can see.

The exports and investment which is considered assumes to be independent in the foreign trade multiplier case. Actually, is not true. The foreign trade multiplier is based on the assumption that exports and investment are independent of changes in the level of national income; but in reality this is not so. A rise in export does not always lead to increase in national income.

It might not. So, you if you are if there is a rise in exports, it does not always necessarily say that in the national income would grow. Full employment is only a ideal situation, a utopian situation which is not realistic. This analysis based on the assumption of a full employed economy; but there is less than full employment in every economy. So, you go to the at most developed country, there is some unemployment always there also.

So, thus the foreign trade multiplier does not find clear expression in a economy with less than full employment. So, that is one assumption which is again works as a criticism against state.

Not applicable to more than two countries, we are talking about two countries there is a relationship trade between A and B, but the true is, the truth is the whole analysis is applicable to a two country model. But if there are more than two countries which is happens in the real life, it becomes complicated to analyze and interpret the foreign repercussions of this theory because since there are 3 events, 3 countries.

So, the you know the there are could be some effects which is not directly visible, but that has an influence. So, that is not taken care of in the foreign trade multiplier theory. It neglects trade restrictions, but trade restrictions are a truth that it is prevalent everywhere in any type of businesses. So, foreign trade multiplier assumes that there are no tariff barriers and exchange controls that is not possible. It is it is just an assumption which is not true.

So, this is a criticism again state right. It neglects the monetary fiscal measures. This analysis based on the unrealistic assumption that the government expenditure is constant which is again not correct. But government always interferes through some other policies which affects the exports and imports and the national income. So, we cannot say that it is a constant effect right.

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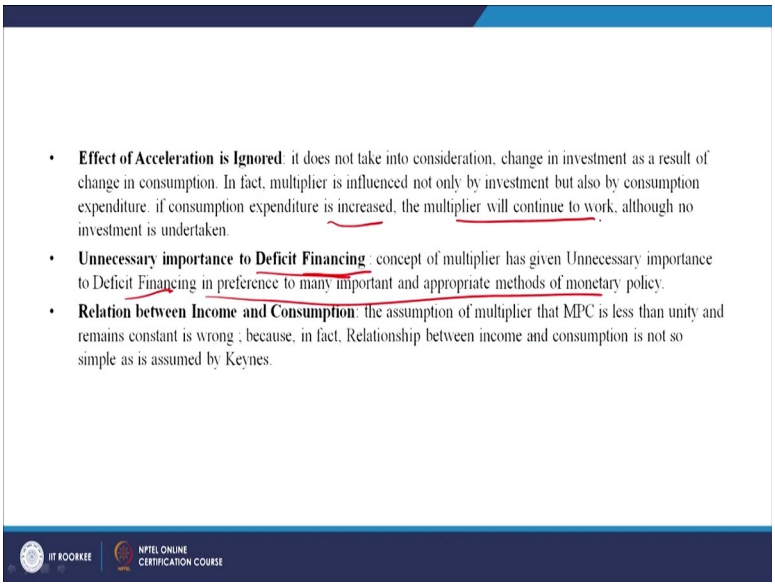

Finally, the effect of acceleration is ignored. It does not take into a consideration the change in investment, as a result of the change in consumption. In fact, multiplier is influenced not only by the investment, but also by the consumption. So, we have understood it very well now.

So, it is not only the investment, but how much the people's consumption pattern is changing. If the people are going to save more, then the foreign trade multiplier value will not increase at all. It will not have a positive effect. If consumption expenditure is increased, then only the multiplier will continue to work although no such investment is undertaken.

Unnecessary importance to deficit financing, now deficit financing is a different concept where we say that it is sometimes necessary to because to create this multiplier effect. The countries can go for a deficit financing and make investments, but this concept what it is saying is concept of multiplier has given unnecessary importance to deficit financing. It says you need to invest.

So, if necessary go for a deficit financing. But that minor might not hold true in preference to many important and appropriate methods. There are other monetary policy methods which can be used to uplift the economy and create a better multiplier effect.

So, all the time deficit financing might not be the best solution right. Relation between income and consumption, the assumption of multiplier that MPC (Marginal Propensity to Consume) is less than unity and remains constant is also wrong you know assumption. Because, in fact, relationship between income and consumption is not as simple as it was assumed by Keynes because it is it has been seen that for example, in the Giffen's paradox that as the income of people increases, they sometimes move from the obvious goods and they move into something which are called luxury goods. So, these kind of relationships exist which make it very complicated. So, the assumptions do not hold true right.

So, this is all we had today. So, we had today I hope you have understood the multiplier effect and how it affects the national income, how the government in a time of depression, recession can think of utilizing you know making investments injecting money into the economy create more jobs, more wealth so that you know it has a cascading effect, it has a dominos effect and this chain effect will help in the overall growth of the economy.

But yes, the you know the very the very notion that it should be done at any context at in all context in all conditions, by even go going for deficit financing might not hold true and may not be the best policy that is available. So, this is all for the day.

Thank you very much.