Petroleum Economics and Management
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Module - 12
Implications of Fiscal and Trade Policies
Lecture - 55
Exchange Rate and Its Determination

Hi everyone, welcome to the NPTEL course, Petroleum Economics and Management. And I am your instructor, Dr. Anwesha Aditya. So, we are here in the last module of our course that is module 12 where we are going to discuss the Implications of Fiscal and Trade Policies. And this is the first lecture in module 12 and overall, this is the lecture number 55 in our course, where we will be discussing about The Exchange Rate and its Determination.

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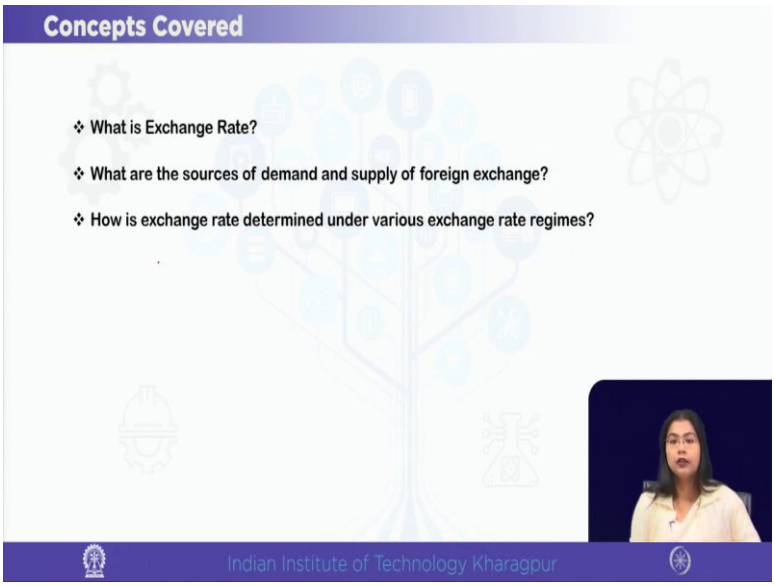

So, you see, it seems that we just started our course and then we have come to the last module where we will be discussing a very interesting and relevant part for your purpose. So, this part is very relevant for everyone, even the non-economics student. So, everyone should know, everyone should have some idea about exchange rate, what is exchange rate? How it is determined? And of course, it is extremely important and relevant for the purpose of petroleum economics.

So, what is the motivation behind designing this module? So, if you remember, we have discussed in depth, we have motivated our course that what is the purpose of having a course on petroleum economics and management. And we have discussed that petroleum is a major traded good, if you remember in the very initial lectures towards the beginning of our course, we have discussed many times. So, we have seen empirical data, the importance of petroleum products in total trade of the world.

So, the countries which are endowed with petrol, they are the exporter of petroleum products and countries like India, which do not have enough domestic supply. So, they have to buy or import petroleum. So, it is a one of the major traded good, exported and imported good. And we know that when we are engaging into transaction with the rest of the world, then the domestic currency will not be applicable.

So, that outside transaction with the rest of the world, we need to convert our domestic currency into some internationally accepted currency like say dollar or euro means or any other particular currency, if you have some specific agreement with a particular country. So, now for our purpose, we will be sticking to the rupee dollar exchange rate mainly. So, first we need to know what is exchange rate.

So, since petroleum is a major traded good, we need to know how what is exchange rate and how exchange rate is determined. Because suppose for India, when we are buying petroleum products. So, we have to import petroleum, we cannot pay in rupee. We need a foreign exchange reserve like we need dollar to pay for the import bill. So, we need to know how this rupee dollar exchange rate is decided. Often, we hear that rupee, the domestic currency appreciates or depreciate. So, what are these?

So, and whether the events in the global market, oil market, how they affect the exchange rate? So, we will see that there is no unique answer to this because the events in the oil market, how they affect the domestic economy, that depends on the particular exchange rate regime followed in the domestic country.

So, first in today's class, what we will do? We will define what is exchange rate and we will define the determination of exchange rate, but before going into the determination of exchange rate, we need to know the demand side and the supply side of foreign currency. So, we will draw the demand curve and supply curve of let us say dollar.

So, we will be sticking to the rupee dollar exchange rate mainly. And then we will be discussing how the exchange rate is determined under various types of exchange rate regime? And in the next lecture of this module, we will bring in the oil price shock. And finally, in the last two lectures of the module, we will be discussing about the with respect to the specific example of the balance of payment crisis that Indian economy faced in 1991.

So, what are the reasons for the crisis, but that is not our purpose, it is not a course on Indian economy. So, we will see that how the events in the global oil market, how they might have triggered the crisis ok. And we will also study very briefly about the reform policies, especially the exchange rate policies which is of our interest. So, how those policies could bring India out from that crisis? So, this is how we have structured this module.

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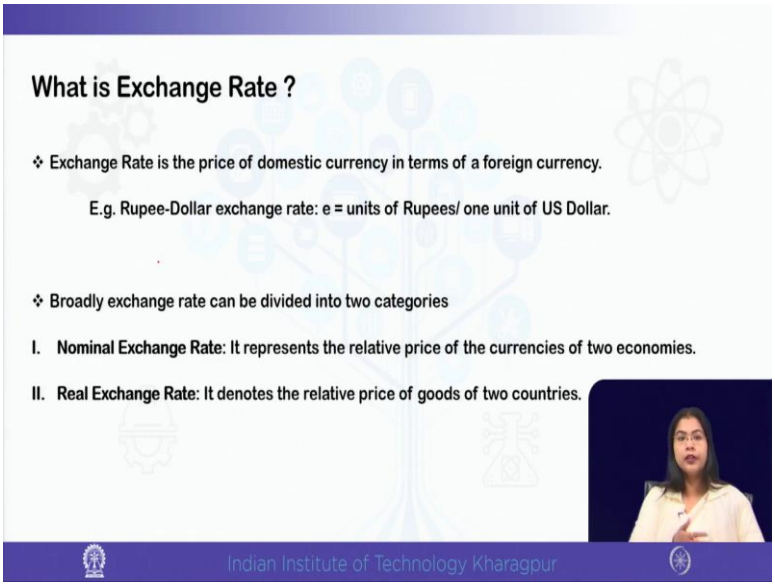

So, first and foremost, let us start with exchange rate. I think almost all of you know about you have some rough idea about exchange rate. So, this is the price of domestic currency in terms of a foreign currency, let us say the rupee dollar exchange rate. So, we are denoting suppose E as the rupee dollar exchange rate. So, that means, rupee dollar exchange rate is how means how much one unit of dollar, how much rupee will be fed. So, E is equal to units of rupee divided by one unit of dollar.

So, how many units of rupees equivalent to one unit of US dollar so, that is the rupee dollar exchange rate. So, you can define exchange rate of any other domestic currency with respect to dollar or even say euro. So, that means, it is the price of domestic currency in terms of a foreign currency as simple as that. And broadly exchange rate can be divided into two categories.

So, nominal exchange rate which is the relative price of two currencies and the real exchange rate which denotes the relative price of goods of the two currencies ok. If you consider some goods, so, that is the real exchange rate. So, for our purpose we are sticking to the rupee dollar exchange rate as I mentioned.

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Now, before going into the determination of exchange rate, we need to draw the demand and supply curve of let us say dollar.

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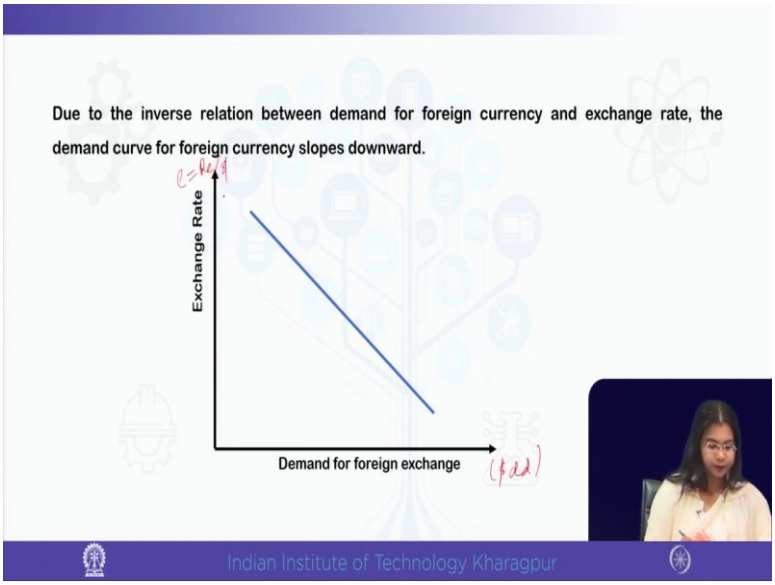

So, suppose we are plotting the rupee dollar exchange rate which is the price of dollar you can say in the vertical axis. So, rupee by dollar and in the horizontal axis we are plotting the demand for foreign currency let us say dollar ok. So, we can write it as dollar, dollar demand. So, here you are plotting dollar demand and here you are plotting e is equal to rupee by dollar.

So, before we draw the exchange means the dollar demand curve, we need to know the sources of dollar demand. So, first and foremost from means the major demand for foreign currency or dollar comes from imports of goods and services because as I mentioned that India being a net importer of oil, we already have discussed many times that we have to buy lot of oil.

Our domestic endowment is miniscule as compared to our huge domestic demand. So, we have to buy oil mainly from OPEC countries I means the Middle East countries from a Russia. So, and we have to pay in terms of dollar. So, import of goods and services constitute a major source of demand for dollar or foreign currency. Second is you see the Indians travelling abroad ok.

So, I am giving the example of India, but you can think of any other country. So, the domestic citizens travelling abroad for the purpose of just a tourism or say a medical purpose or even education so, if you are going abroad. So, you need to you need to convert your domestic currency into the internationally accepted currency.

Then third important source of dollar demand is seeing the foreigners who are working in India. So, the foreigners who are working in India they have to send their income back their home country in terms of dollar ok. So, they may be earning in terms of rupee. The foreigners who are working here they are getting the salary in terms of rupee, but they have to send the income to their families living in their home countries.

So, for that purpose they have to exchange the dollar means rupee earning into the dollar. And lastly it is the speculators those who trade in foreign currency, but for the time being we are not bringing the speculation over here. So, the speculators mean those who purchase the asset in the foreign countries.

Now, you see how this dollar demand will change. So, imports from a foreign country will become cheaper or affordable when the value of that country's currency decreases. That means the domestic currency becomes stronger so, that means, import will rise. So, that means, what how in demand for dollar or foreign currency. So, I am sticking to dollar example only.

So, how the demand for dollar will change if the rupee dollar exchange rate say it also changes. So, there is you can see that there will be inverse relation right. If dollar means dollar becomes weaker. So, demand for dollar will. So, increase so, you see there is an inverse relation between demand for foreign currency and the exchange rate. So, therefore, the by law of demand your demand curve for foreign currency it will slope downward.

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Now, what are the sources of supply? So, you come to the supply side. Now, in the supply side you see main source of dollar earning or foreign exchange earnings is basically export. So, if you export exporting means whatever is not sold in your domestic market.

So, suppose you produce something in large quantity than what is demanded domestically. So, this excess supply you are selling in the foreign market. So, what you earn you earn in terms of the foreign currency or say dollar So, export that is why you see export is so, important.

So, the governments often have to take export promotion strategies because like a country like India since you cannot avoid the import of oil you have to buy lot of oil. So, how to finance that huge amount of import bill? So, one major option of financing that major means the huge amount of increasing import bill is to increase export also because export is a major source of supply of dollar. Then what are the other sources?

So, the foreigners coming to India say the foreign tourists coming to visit Taj Mahal so or any other tourist spot in India. So, that will also fetch lot of dollar for the Indian government because they will convert their currency into rupee ok. Even the many people from Asian country many of the Asian countries like Bangladesh, Sri Lanka, Nepal, Bhutan in the neighboring countries they come to India for medical purpose also even students also come for education purpose.

So, these all will lead to increase in dollar supply in our home in in India. Then see we have lot of Indians working abroad in the Middle East countries Australia, US, UK and everywhere right. So, those Indians who are working abroad they also send their money back to home country means India to their families.

So, they will be sending in terms of dollar and their families will be converting that dollar into rupee. So, this is the remittances from abroad. So, the Indians working in the foreign country so, this is also a major source of dollar. And finally, just like we discussed about the demand for foreign currency here also you have a speculation component.

So, the speculators who trade in foreign currency ok. So, these are the major sources of supply of dollar. Now, what happens the domestic products Indian products become cheaper when the value of a foreign currency. So, dollar value increases and rupee become weaker. If rupee becomes weaker so, what will happen? Indian products Indian goods become cheaper. And it encourages the foreigners to buy more products from India.

So, what will happen? The supply of foreign currency will increase right; that means, dollar supply will increase ok. So, if that means, if dollar becomes stronger. So, the supply of foreign currency becomes higher because if dollar becomes stronger means vis-a-vis rupee becomes weaker Indian products become cheaper. So, dollar supply increases. So, this is just opposite to the demand side you see. So, demand curve of dollar is downward sloping, but the supply curve is upward rising.

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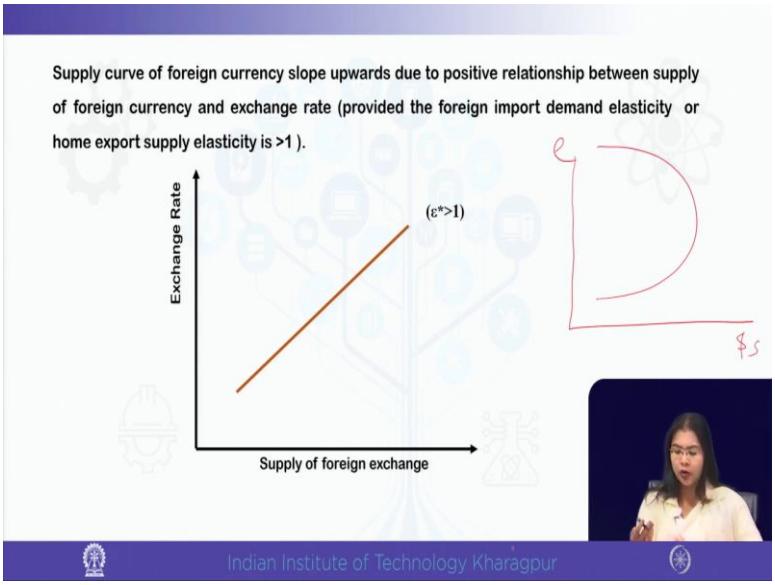

However, here is one caveat. The caveat is that we are assuming that the home exports supply elasticity is greater than 1 or home export supply means it is the foreign import demand. You see suppose you consider the trade relation between India and US. So, India's export supply to US is the import demand of US from India. So, either the home exports supply elasticity or the foreign import demand elasticity needs to be greater than 1.

Then only you will get this result because if the elasticity value is varying then the dollar supply curve will not be upward rising. So, if you now plot the dollar supply and the horizontal axis and we know that price always comes on the vertical axis. And if you consider that this epsilon star which is the home countries export supply elasticity it is varying.

So, the dollar supply curve will also be means backward bending means the elasticity value is varying and dollar supply will change accordingly with the change in exchange rate ok. So, in this region here epsilon star is greater than 1, but in the backward bending part the epsilon star can be less than 1 ok.

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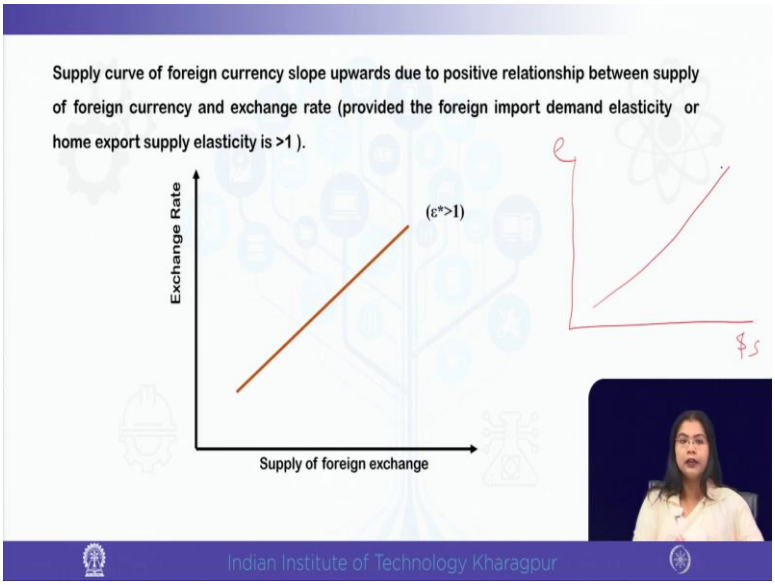

However, we are not considering this part. So, we will be sticking to upward rising dollar supply curve and we consider that epsilon star is greater than 1.

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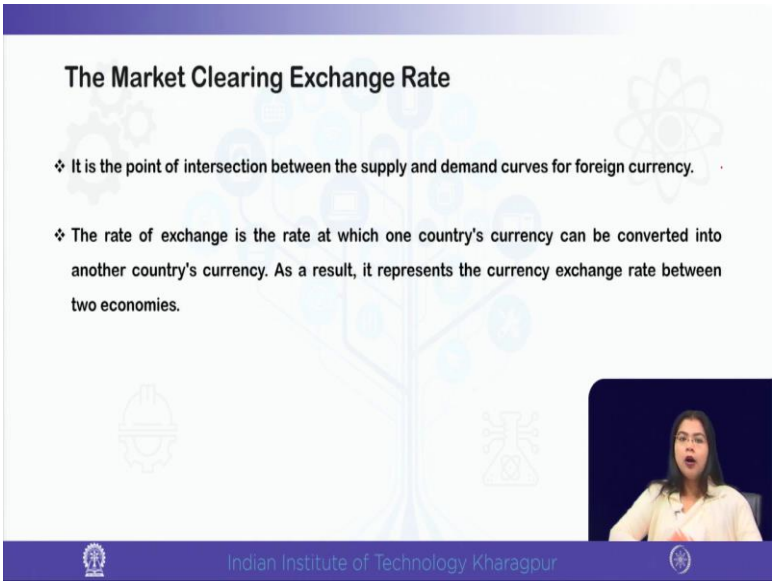

So, now, how an exchange rate is determined if there is no intervention by the monetary authority. So, it is the point of intersection between the supply curve and the demand curve for the foreign currency dollar. So, the rate of exchange this is the rate at which one country's currency can be converted into another country's currency. So, it represents the currency exchange rate between two countries.

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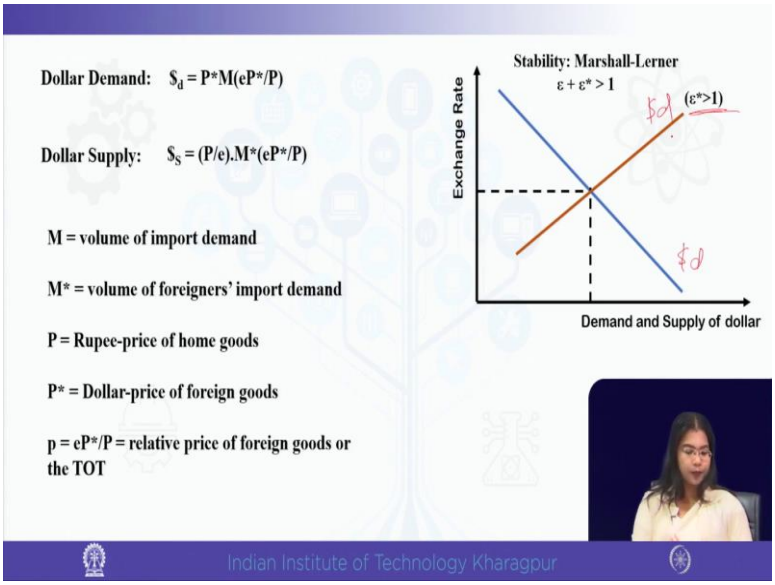

Now, we can more specifically write down the dollar demand in terms of the import value and dollar supply in terms of the export value under the condition that epsilon star or home import demand means foreign import demand elasticity or home export supply elasticity is greater than 1. So, this is the dollar demand curve and this is the dollar supply curve ok.

So, here you see what is your dollar demand. So, we are mainly focusing on the first component. So, import and export part supply of dollar is the major part is from export and for import of means demand for dollar the major part comes from the import. So, the dollar demand curve we can write as the import bill. So, what is your value of import? That is actually the import bill. So, value of import is price of import into the amount of good imported.

So, what is the price of import when you are buying something from abroad the international price is the is make sense. So, P star is the dollar price of foreign good because you are buying from abroad. So, your domestic price is not relevant ok. So, this is your, the international price into the amount of import.

So, M is the volume of import demand which is of which depends on what the amount of import demand depends on the relative price of the foreign good or the terms of trade. So, eP star by P, where P is the rupee price of the home good and P star as we mentioned that is the dollar price of home good.

Similarly, what is the dollar supply that is the export revenue right. So, that is your export price into the amount of export. So, the export price is now the domestic price rupee price of home good divided by the exchange rate e into your M star is the volume of foreign countries import demand, which is equivalent to home countries export supply ok.

So, M star is home countries export supply M star which depends on once again the relative price of foreign good or the terms of trade ok eP star by P which is equal to small p we are denoting it as small p. So, under the assumption that epsilon star is greater than 1 as I just mentioned that the dollar supply curve is upward rising because the reason we already mentioned right.

So, you see when the dollar becomes stronger rupee becomes weaker. So, Indian products become cheaper right. So, for this reason our under the assumption of epsilon star greater than 1 the dollar supply curve is upward rising. So, we will be talking about the stability means it is not that always the equilibrium will be stable.

So, this is the equilibrium where the dollar demand and dollar supply curve the intersect, but it may not always be stable we have some underlying stability condition, which requires that the sum of value of import demand elasticity and export supply elasticity epsilon star should be greater than 1 ok.

So, that means, e epsilon star can also be interpreted as the import demand elasticity of foreign country. So, or it is the export supply elasticity of home country. So, that means, for this equilibrium to be stable. So, stability means if there is some shock whether the market returns to the equilibrium or not.

So, in order for the equilibrium to be stable we need the home import demand elasticity and the foreign export supply elasticity there or sorry home export supply elasticity the sum should exceed 1. Now, if you assume that epsilon star alone is greater than 1. Of course, so, it is trivial that the Marshall Lerner condition is satisfied.

Now, we will be discussing the implication of the condition later in some of the lectures in this module. However, due to time constraint I am not able to derive the Marshall Lerner condition. So, you can go for any advanced course on international economics or

open economy, macro economy related courses for derivation of the Marshall Lerner condition.

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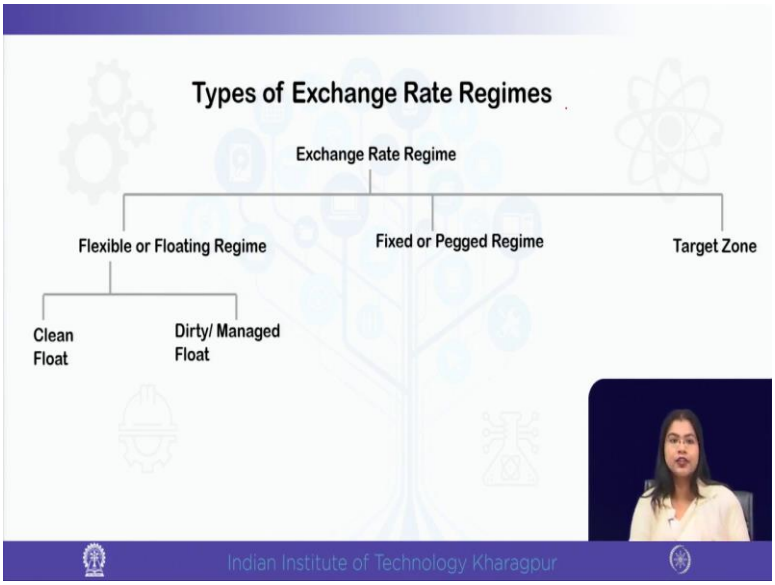

Now, with this background on the dollar demand and dollar supply let us now classify the exchange rate. So, what are the types of exchange rate? There are two broad categories of exchange rate one is other the exchange rate is flexible or floating or it can be fixed or pegged. There is a third type which is a combination of these two and that is called the target zone. So, let us start with the first category where the exchange rate is flexible or floating.

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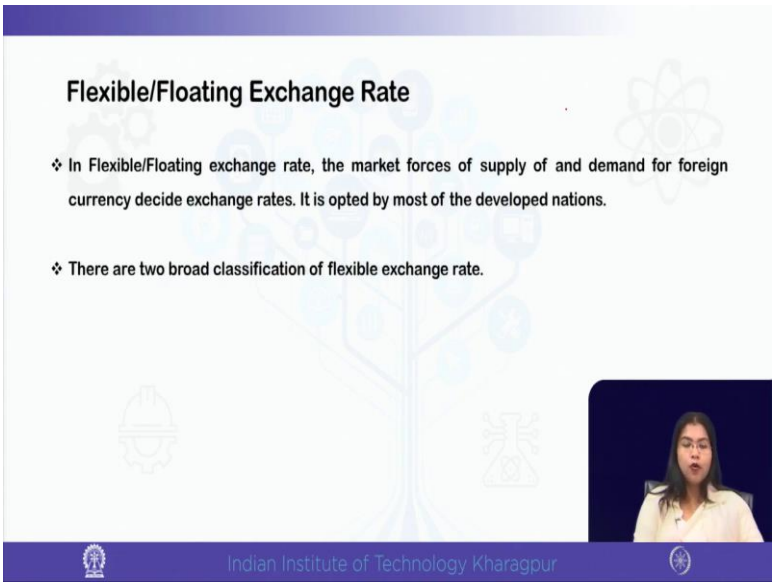

What does it mean? Under flexible or floating exchange rate the market forces of supply of demand and demand for sorry the supply of dollar and the demand for dollar decides the exchange rate.

So, when the demand and supply curve the intersect so, the exchange rate is determined and it is opted by most of the developed countries in the world. However, under this flexible or floating exchange rate there are two sub categories as you can see one is a clean float another is a dirty float or managed float.

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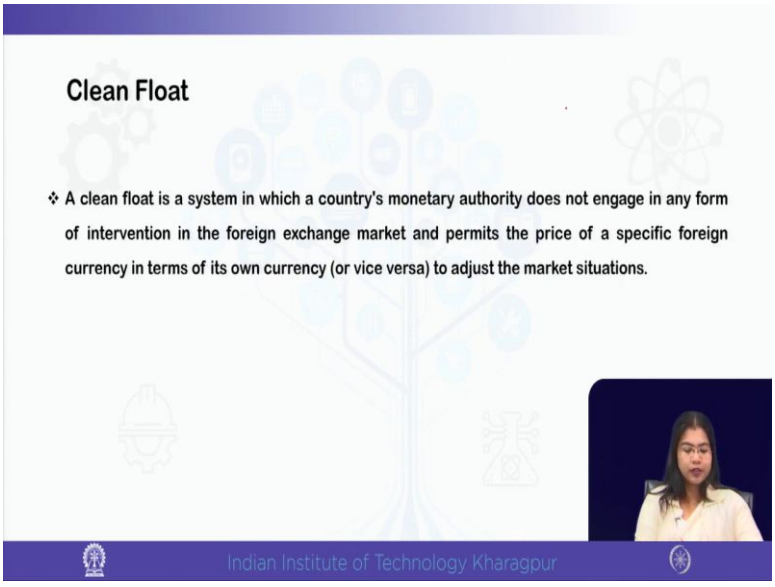

So, what is clean float? So, as the name suggests you see there is no intervention. Its clean means it is entirely the exchange rate is entirely market determined. Does not matter how much is the variation in the exchange rate the monetary authority will not interfere. So, clean float is a system in which a country's monetary authority does not engage in any form of intervention in the foreign exchange market.

And permits the price of a specific foreign currency in terms of its own currency to adjust the market situation; so, whatever if there is any shock the exchange rate will means the demand for dollar and the supply of dollar will then lead to change in the exchange rate. So, exchange rate is not controlled at all by the monetary authority it is entirely market determined there is no intervention hence the name clean float.

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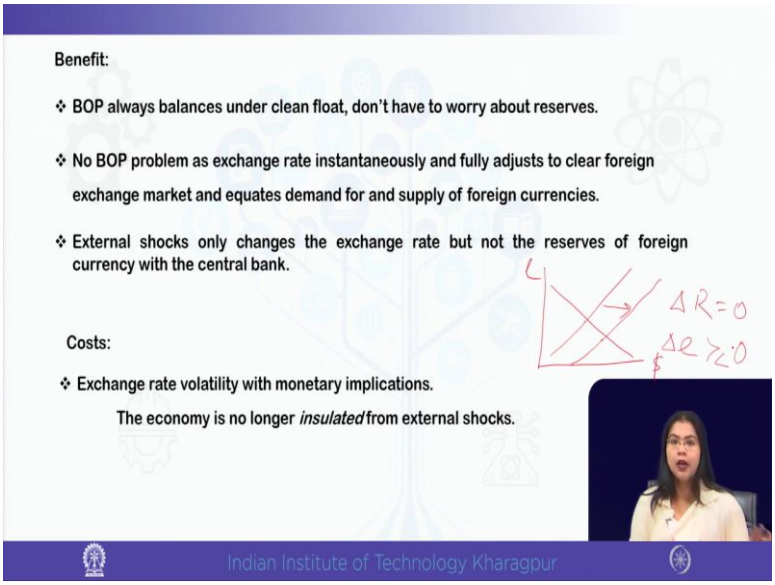

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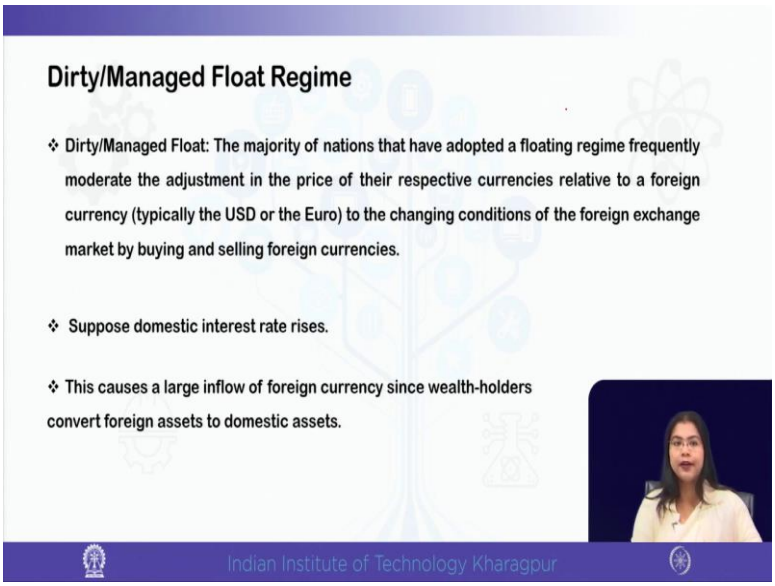

The other category of flexible regime is a dirty float or managed float. So, here also see exchange rate is determined by the market forces of demand for dollar and supply of dollar. But if required if the central bank or the monetary authority for India it is the RBI Reserve Bank of India if it fails it can interfere. So, if it thinks that it is too high or too low the exchange rate I am mentioning about. So, then the Central Bank can interfere.

So, the majority of the nations have adopted a floating regime the objective is to frequently moderate the adjustment in the price of their respective currency relative to a foreign currency like the US dollar or euro to the changing market conditions ok. So, for example, you can think of a situation where the domestic rate of interest increases.

What will happen? If the if your rate of interest in the domestic market increases that will lead to means that will provide greater incentive to the foreigners to invest in India. So, this will lead to a huge inflow of foreign currency because the wealth holders can convert the foreign asset into domestic asset by doing. So, they earn a higher return.

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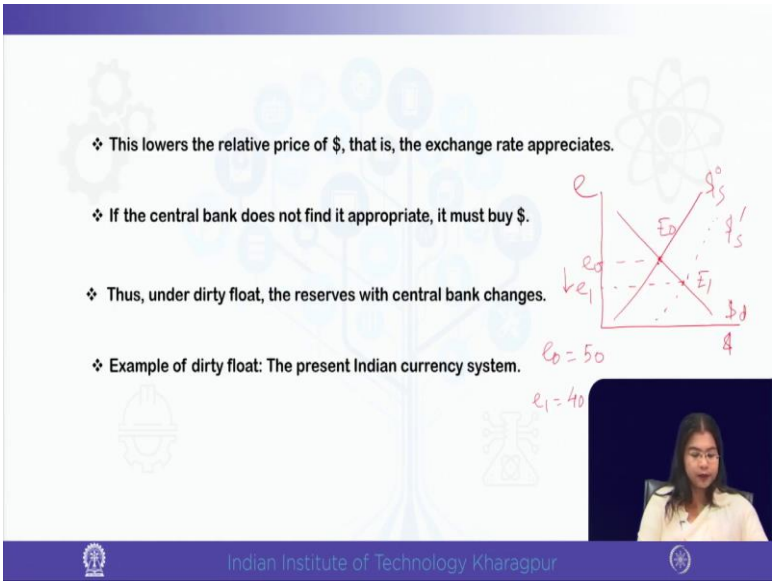

So, what will happen? So, this will lead to so, if you plot the dollar demand and dollar supply curve you see. So, I am just plotting the quantity of dollar. So, what will happen? This will lead to increase in supply of dollar from dollar S0 to dollar S dash. So, suppose initially this was the exchange rate and this was the equilibrium at e0 and the exchange rate was at e0.

Now, with excess supply of dollar what will happen? The exchange rate rupee becomes stronger right or this lowers the relative price of dollar that means, exchange rate the domestic currency appreciates and dollar becomes weaker. So, if the Central Bank thinks that this is not appropriate because the problem is that when your domestic currency appreciates it gains in value.

So, you can consider an example suppose e0 was say 50 rupee per dollar and e1 is say 40 rupee per dollar; that means, for; that means, rupee is now stronger. So, you may think that it is good. Yeah, it is good as far as the import is concerned right because your import price as if it is falling rupee has become stronger.

But what happens in the export market? In the export market you are losing competitiveness because Indian goods become costlier. So, therefore, if the Central Bank thinks that this is not appropriate. So, what the Central Bank needs to do? The Central Bank needs to wipe out this amount of excess dollar supply. So, it has to buy dollar.

Therefore, under dirty float the reserve with the Central Bank changes ok and the example of dirty float is or the managed float is the present Indian economy after 1991 crisis. We switch to dirty float. So, that means, in dirty float if the Central Bank thinks it will then interfere otherwise the exchange rate is determined in the market by the demand for and the supply of dollar.

Now, what about the clean float? There are some advantages and disadvantages of clean float. The advantage so, there are some points which may not be clear right now, but I will be making them explicit and I will be discussing them with example as we proceed in the subsequent lecture.

So, one great advantage in the clean float is that the balance of payment is always balanced under clean float. Means the reserve, reserve will not change because if you consider again similar such shock here that happened in the dirty float you can consider a similar such situation.

So, there the Central Bank will not interfere. So, rupee will depreciate sorry the rupee will appreciate if the dollar supply increases. So, just like this example we discussed, but here you see here the Central Bank in place of managed float Central Bank interfered and bought some I mean purchased dollar this excess supply and the dollar supply curve can shift back to the initial one.

But that will not happen under the clean float under the clean float the rupee will appreciate or if you consider a situation where demand for dollar suppose increases then rupee will depreciate. So, there will be no change in the reserve. So, reserve with the Central Bank will not change, del R is equal to 0, the entire change will be in terms of change in exchange rate, either it is positive or negative depending on the scenario.

So, exchange rate will change. So, advantage is that there is no balance of payment problem because exchange rate instantaneously and fully adjusts to clear the foreign exchange market where again demand for and supply of dollar is equated.

Now, see will be these three points this balance of payment problem will be cleared. When we will be discussing the other extreme type of exchange rate that is pegged exchange rate and we will be discussing these in more detail with our relevance with example of oil price shock.

So, here what we can see is that if there is some oil price shock say there is some imposition of tariff or trade barrier or there is some external shock like oil price shock. Only the exchange rate will change the reserve of the foreign currency with the Central Bank will not change. However, a major cost or disadvantage of clean float is your economy is subject to lot of volatility as we can see.

So, if there are means there are events in the global market which are beyond the control of the monetary authority or the domestic economy that will lead to huge fluctuation in the exchange rate. So, the economy is no longer insulated from external shock and that is why you see we have already mentioned that most of the developed countries they follow this dirty or managed float where.

Exchange rate is market determined, but if required the central bank or the monetary authority will interfere, but in clean float there is no interference by the monetary authority. So, there is huge exchange rate volatility with lot of implications for the domestic economy.

So, this is about the flexible regime we will be discussing more with examples of oil price shock and then things will be more clearer, the advantages and disadvantages. Now, what about the other extreme case - so, one is an exchange rate is market determined, the other is exchange rate is entirely determined by the monetary authority or the Central Bank. So, that is called the fixed or pegged regime.

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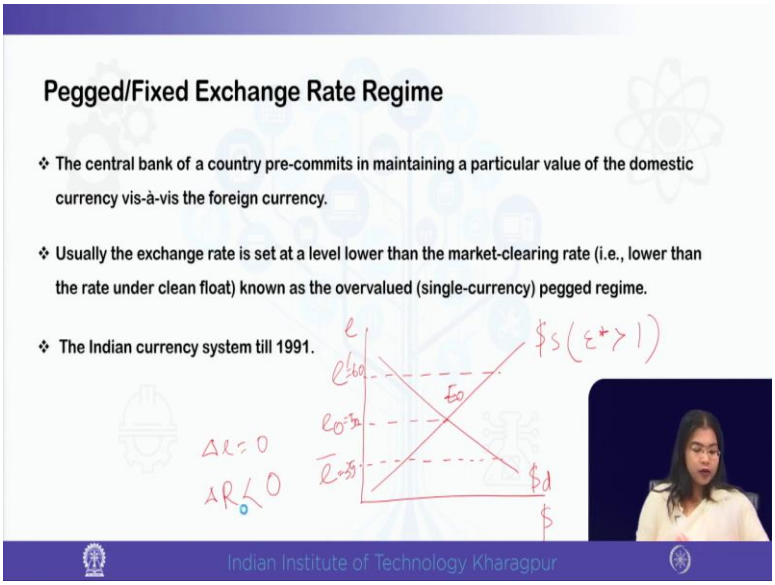

So, if the central bank of a country pre-commits it not only dictates the exchange rate, it is also committed to maintaining the exchange rate. So, it has to take necessary measure ok. So, if there is some external shock as we mentioned or even you can consider this typical example. So, where there is increase in domestic interest rate which causes large inflow of foreign currency.

But in pegged regime the central bank will not allow the rupee the exchange rate to appreciate or depreciate it has fixed the exchange rate to a particular level and it will take appropriate policy to maintain the exchange rate at that level. Generally, what we see is that the exchange rate is set at a rate which is less than the or below the market clearing rate you can see.

And that is called an overvalued pegged e, this is very interesting. Why if the exchange rate is set below the market clearing level why it is called overvalued you can think about this. So, under this assumption that epsilon star is greater than 1. So, suppose for the time being that e0 is the market clearing rate. So, often we see that if the exchange rate is pegged in the market it is fixed at a rate which is below the market clearing rate say e bar.

And this is called overvalued pegged e why this is called overvalued? Because suppose e0 was 50 rupees per dollar, but e bar is fixed at say 35 rupee per dollar; so, this is overvalued why? Because earlier at e0, 1 dollar is equivalent to 50 rupees now, at e bar 1 dollar is equivalent to 35 rupees. So, that means, what that means, rupee as if you are making rupee deliberately stronger. So, this is overvalued and dollar you can say is undervalued ok.

So, if the exchange rate is fixed at a level lower than the market clearing level this is called overvalued. And often in the pegged regime we see overvalued pegged regime; that means, the exchange rate the Central Bank pre-commits itself to maintain the exchange rate at a level lower than the market clearing level. And it has to take appropriate policies to maintain the exchange rate at that level ok.

And if the exchange rate is set at a level higher than the market clearing level that is called. So, suppose it is e dash which is e dash is equal to say 60 rupee per dollar. So, that will be called undervalued, but then you are making rupee deliberately cheaper. But, but mostly we see this undervalued. Pegged e the idea is we want to make the imports

cheaper, but there is huge cost because the exports become uncompetitive and also the reserve of the Central Bank will change because now, e will not change.

So, the change in e is 0. However, the reserve of the Central Bank will change as we will see with the example of. So, in case of under overvalued pegged e we will see that our change in reserve will be negative the Central Bank has to deplete reserve. So, this we will see in our next lecture with the example of oil price shock, but you can think of other disturbances also. So, the example of a fixed regime or pegged exchange rate regime is the Indian currency system before the reforms so, before 1991.

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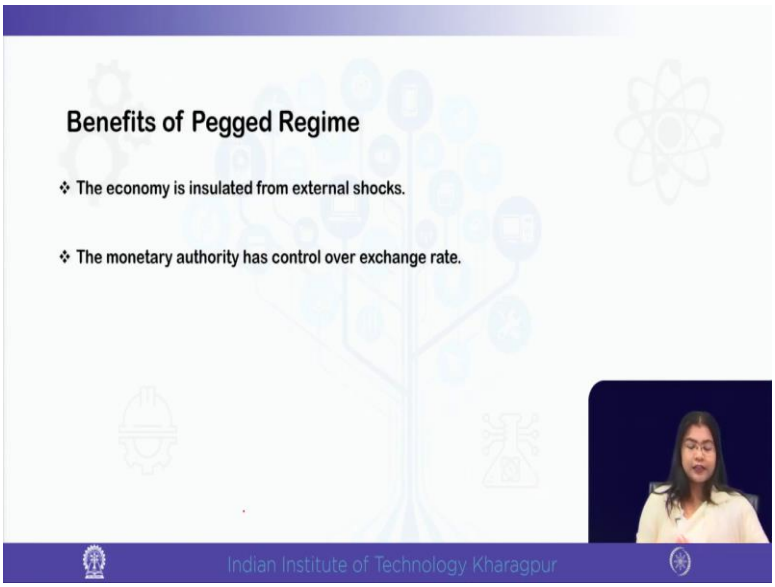

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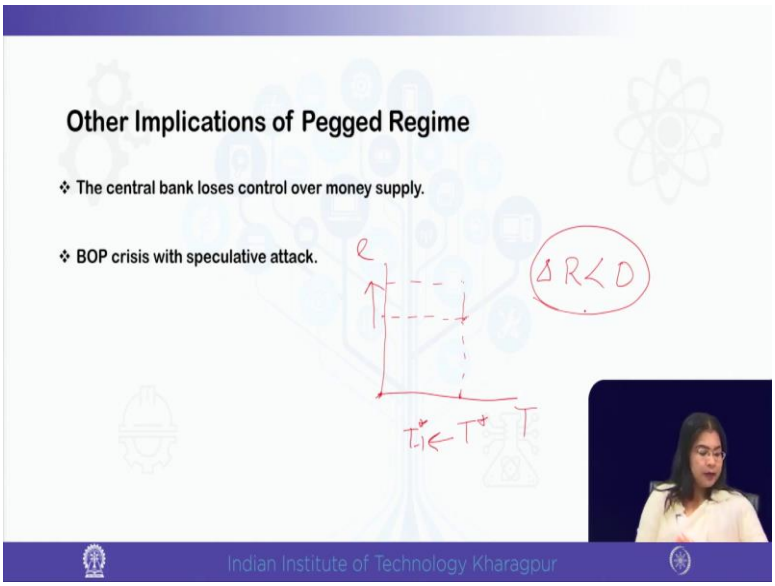

And the cost is as I mentioned that the cost is in terms of the balance of payment crisis with speculative attack. So, I will be discussing about the speculative attack part in the next class. So, it is about the speculators. So, what happens? Suppose you plot the exchange rate over time. So, if you think that the suppose the Central Bank announces that at period say T star it will depreciate the currency, it will make the domestic currency cheaper ok.

At period T star if it wants to depreciate the value of the domestic currency like this. So, what will happen? If you know that domestic currency will become cheaper. So, you try to convert the domestic currency into a foreign currency. So, demand for dollar will increase. So, the more and more asset holders will go to the Central Bank to convert their domestic currency into the foreign currency.

So, what will happen? The supply of dollar with the Central Bank will fall. So, what will happen? The reserve will become means the reserve of the Central Bank will run down at a very fast rate. So, if the Central Bank announces at T star it will switch to a clean float or it will make a move towards a depreciated exchange rate.

But the reserve will start run down from now onward because if you fold back. So, the speculators they will think that let me convert my currency period T star minus 1. So, they will do so, in period T star minus 2. So, you fold back you come to period 0. So, balance of payment crisis is speculative attack.

So, speculators try to convert the domestic currency into foreign currency if they expect that at some period T star the Central Bank will depreciate or make the domestic currency cheaper.

So, they try to convert the domestic currency right now ok. So, this is called a speculative attack. So, what we discussed that the pegged regime is subject to balance of payment crisis? Because the government or the central bank has to run down its dollar reserve exports become less competitive and Central Bank loses control over money supply.

But the major advantage of pegged regime which is put in favor of those like a pegged regime is that the economy is insulated from external shock and the monetary authority has control over exchange rate. However, the cost is very huge because the it has an inbuilt balance of payment crisis as we will see in the subsequent lectures ok. So, because of time constraint I am not able to go into the deep of the speculative attack and balance of payment crisis, but we will discuss it with the example of oil price shock.

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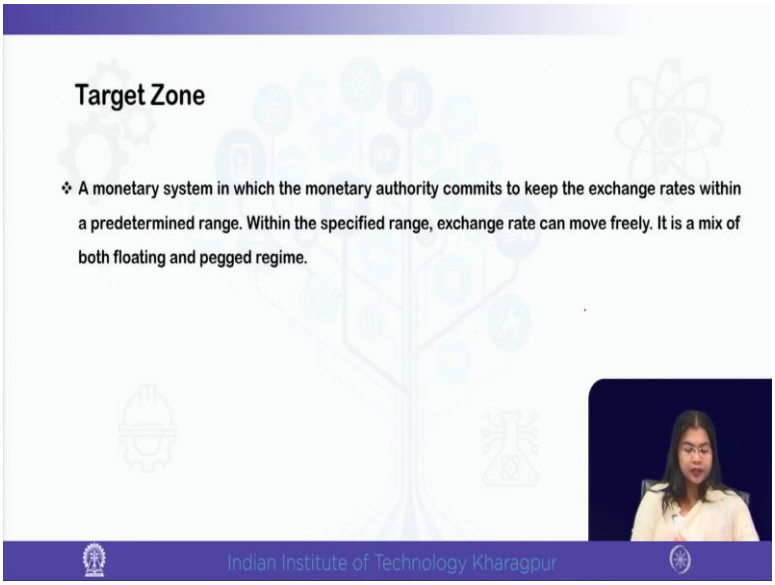

So, you see we have discussed mainly the broad two categories of exchange rate, but there is one third category which is a combination of both flexible or floating regime and pegged regime. So, that is called target zone. In target zone what happens a band is mentioned or a range is mentioned upper bound and lower bound within this specific band the exchange rate can move freely ok.

So, as long as the exchange rate is within this band it is market determined and it can move freely, but it cannot go the exchange rate cannot go beyond this band then the monetary authority will interfere. So, it is you see within this particular band the exchange rate is flexible or floating, but it cannot go beyond this band then the monetary authority has to interfere like in case of fixed regime or pegged regime. So, this is called a target zone. Now, there are other sub categories also which we cannot discuss due to time constraint.

For example, in case of say floating regime it can be a group a single currency can be floated like the Indian rupee is floated independently. So, that is called independent float or it can be a group float also a group of currency can be floated together. For example, the European monetary system before we had euro so, that was floated together or even for fixed or pegged regime we have a single point peg where, the currency is fixed at a particular value. There is another type of pegged regime that is called crawling peg.

In crawling peg the rate is revised in quick succession. So, you change the rate very frequently ok. So, these are there are many sub categories, but due to time constraint we cannot go into deeper. We are just focusing on our purpose is to see the how the oil price shock can have implication on the domestic economy under different exchange rate regime.

Because you see this is a vast area ok this exchange rate part is a vast area. So, those who are interested you can definitely go for any type of Advance International Economics related course or Open Economy, Macroeconomy related course. So, it is a very vast area, but we do not have that much of time or even lecture left in our course.

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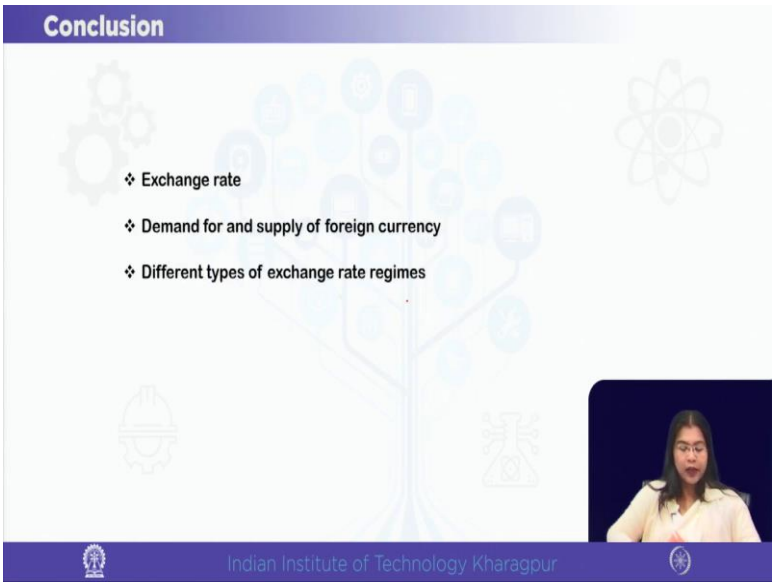

So, what we discussed in today's class we defined the exchange rate and we discussed about the different sources of demand for and supply of dollar and we plotted the demand curve and supply curve of dollar. And finally, we discussed the mechanism of how exchange rate is determined under different types of exchange rate regime the clean float and dirty float and pegged regime and also target zone and we also discussed the advantages and disadvantages.

Now, these advantages and disadvantages will be more clearer to you, when we will be discussing with the example of oil price shock.

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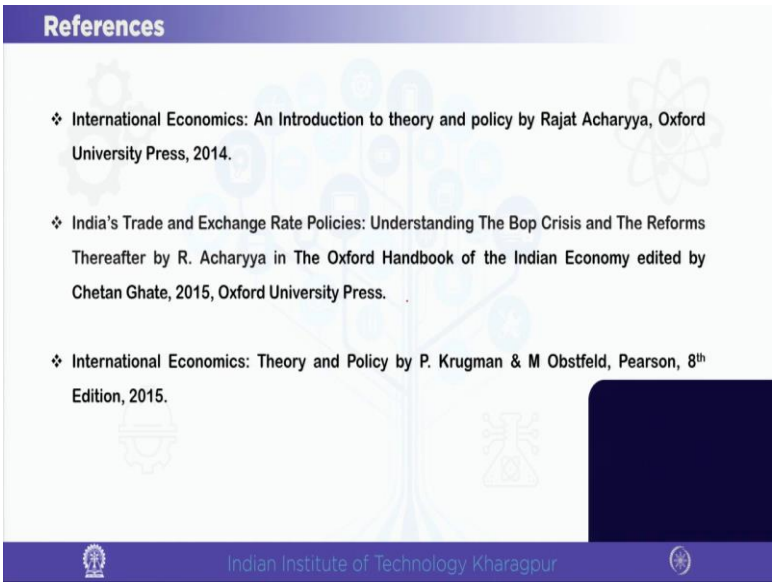

So, I stop here in this lecture, but you see you can follow any standard International Economics related book like the book of Krugman and Obstfeld or even you can follow some other book like books of A Caves, Frankel and Jones or say book of Salvatore. So, there are so many books on Open Economy Macroeconomy or International Economics also which you can follow.

And we have also followed another book of International Economics by Acharyya 2014 and there is also some particular paper that we have mentioned and there is a book on Indian Economy edited by Chetan Ghate. So, these are the main references we have followed for our lecture.

So, thank you very much. See you in the next class when we will be discussing about the Impact of Oil Price Shock.