Financial Institutions and Markets
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Lecture – 57
Foreign Exchange Market – II

So, after the discussion on the meaning of exchange rate and the how the exchange rates are quoted, now in this session we can discuss about the how the exchange rates are determined. How the exchange rates are determined, what are those factors which effect the exchange rate and why there is a fluctuations or there is a change we observe in the exchange rate. So, this is what basically the discussion what we can make in this particular session.

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Exchange Rate Movement

- When a currency declines in value, it is said to depreciate. When it increases in value, it is said to appreciate.
- The percentage change in the value of a foreign currency is computed as

$$\frac{S_t - S_{t-1}}{S_{t-1}}$$

where S_t denotes the spot rate at time t
Positive % change represents appreciation of the foreign currency, while a negative % change represents depreciation.

All of you know that the exchange rate is a always is very much fluctuating. The currency value against another currency is changing in a continuous manner; sometimes the value is increasing, sometimes the value is decreasing. So, if the currency value is declining we are telling that it is depreciating, whenever the currency value is increasing we are telling that this particular value against this currency value against another currency is appreciating.

So, this is the common language always we use to define the change of the exchange rate in the different periods and different time. But, the question here is that whenever we talk

about this that there is another concept is related to this that is called the devaluation, you might have heard about this word that is called the devaluation. We are telling that whenever the value is declining we call it that the if there is a depreciation which is happening for that particular currency with respect to another currency and if the value is increasing we are telling that there is a appreciation which is happening with respect to another currency. But then what is devaluation? Is it same with depreciation or is it different from the depreciation, so that is basically another question always comes to the mind to the reader.

You see the meaning is same whenever the value is depreciating or value is declining we call it is a depreciation or the value is depreciating and another thing is the devaluation. What do you mean by this? You see the depreciation is a process which is basically done by the market forces, depreciation is always occurring due to the changes or the fluctuations of the market forces. But whenever you talk about the devaluation; devaluation is a policy measure which intentionally always done by the government or the regulator.

The devaluation is manmade or made by the individuals made by the regulatory bodies made by the government, but whenever you talk about the depreciation, depreciation is a market determined factor market determined process. And, if there is some kind of fluctuations happens with respect to the factors which are affecting the exchange rate then there is a possibility of the depreciation. But, devaluation is always done by the regulatory body or by the government intentionally to increase this performance of the export for that particular country or there must be some economic reasons behind the devaluation, but depreciation is determined by the market forces.

So, that is the basic difference between the devaluation and depreciation; devaluation is a market mechanism, but depreciation is a market mechanism, but devaluation is not a market mechanism, it is a done by the regulatory body or the government. So, whatever it may be whether the currency is going to be depreciated or currency (Refer Time: 04:40) thinking about the depreciation or appreciation. How it basically measured? When we say that the particular value is currency value against another currencies depreciating or appreciating, then we calculate the change the price of that particular exchange or in the exchange rate of that particular currency with respect to another currency.

So, let S t is the exchange rate in a time period t S t minus 1 is the exchange rate at the time t minus 1. Then if you calculate the percentage change then we can say that is basically the that particular value let that is basically delta the change. The change basically tell you though whether the currency is depreciating against another currency or appreciating against another currency.

So, the positive percentage change if you see the delta if you for example, percentage the positive percentage change represent appreciation of the foreign currency while a negative change represents the depreciation of the foreign currency. So, that is the way the appreciation and depreciation for example, the rupee versus dollar was 72 rupees yesterday then it has become 74 today.

Then if you are calculating this change today then it is 74 minus 72 divided by 72 then; obviously, it is positive the delta value is positive. So, if it is positive that means the foreign currency is appreciating; it is not home currency it is appreciating the foreign currency is appreciating because the value of the home currency is declining. The foreign home currency is depreciating and foreign currency is appreciating, but for example, it was 72, then it become 70, then it will be 70 minus 72 divided by 72.

Then by default it will be negative; that means, the home currency is appreciating, but the foreign currency is depreciating. So, in that context if you are your reference point is foreign currency then you can use this, but if your reference point is the home currency then your interpretation should be reversed should be opposite. So, that is the way the exchange rate movements are represented in the market or in the system.

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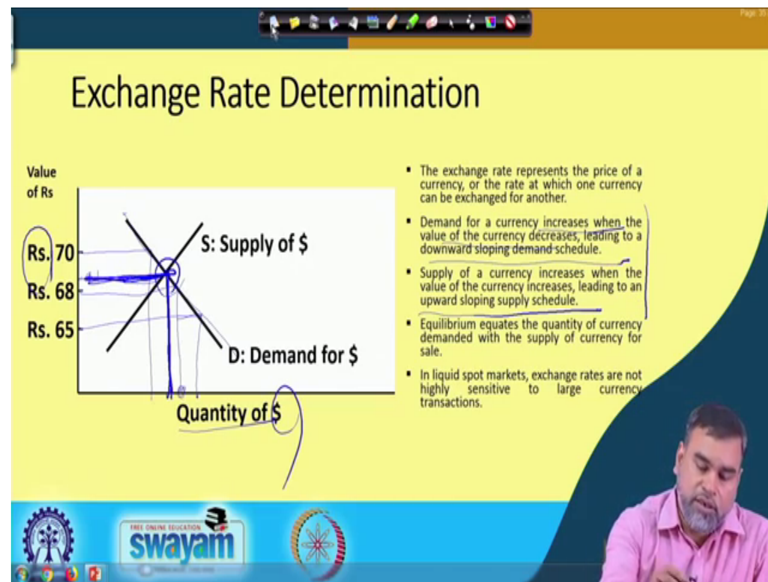

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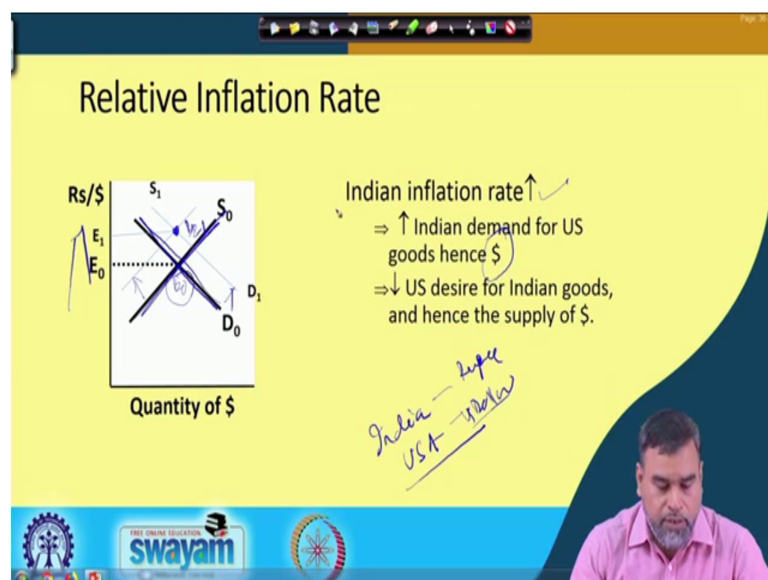

So, let us see that how this particular what are those factors which are responsible for this movement. The particular factors whenever we talk about there are many factors which are basically affect this exchange rate. So, already as other factors always we think we discuss or we determine in the context of the different markets, here also the exchange rate is again determined by the demand and supply forces of the foreign currency.

Here let the home currency is the rupees and foreign currency is the dollar and then already I told you that the exchange rate is the price of a currency or the rate at which

one currency can be exchanged with another currency right. So, the equilibrium exchange rate in a particular time period is determined by the demand and supply of the foreign currency in that particular economy in that particular system.

So, when it increases when it decreases. So, if the demand for the currency increases when the value of the currency decreases then there is basically will lead to a downwards sloping demand curve. And, supply of currency increases and this value of the currency increases which basically going towards the upward slope in the supply curve. If you see here for example, demand this it was 65 the demand was this, whenever it was let 48 the demand was this demand has gone down. What demand for what? The demand for the dollar because, the dollar value is depreciating.

So, then go on if you go by the 70 then again further the quantity of dollar available in the system further go down. So, because of that there is a downward sloping demand curve and the supply; obviously, that is again you can say that the price and demand relationship you can observe. So, the supply basically of will increase whenever the value of the particular currency is increasing, in that particular context the value is increasing they are ready to provide more supply.

Because, the particular values they can convert or they can get more money by conversion of that particular currency with respect to that particular currency other currency. So, that is the way the demand and supply is determined and the equilibrium can be established wherever the demand and supply; demand and supply is intersecting to each other. So, that is the equilibrium exchange rate which basically we can determine in the economic system.

So, that is the way the exchange rate is determined in the financial market, but the question here is; that means, there are what factor determine this exchange rate? Obviously, the factors which are affecting the demand and supply of the foreign currency or demand and supply of the home currency whatever it may be; the demand and supply factors which are affecting the currency in that particular system that is the responsible factors which are affecting the exchange rate determination in that particular context.

So, let us see: what are those factors which are affecting this demand and supply of the currency. The first one is the relative inflation rate you remember it is relative inflation rate we do not consider the inflation rate of a particular country, we consider the inflation

rate for both the countries. That is why we are using this word relative inflation rate that you can keep in the mind. We are telling that inflation rate in India is 5 percent, inflation rate in India has increased to 7 percent.

That has no implication no meaning whenever you are interpreting the determination of exchange rate, but if you are saying that this inflation rate in India has gone up against another particular with respect to or in comparison to the another countries inflation rate then there is a possibility that this will have the impact on the high impact on the exchange rate. We will start the example the inflation rate, let the there are 2 countries here we have taken one is your India one is India and another one is USA.

There are 2 currency, we have the Indian rupee and you have the dollar US dollar. So, we have the 2 currencies for example, the inflation rate in India has gone up, if inflation rate in India has gone up then what is happening in India. Indian demand for US goods will increase because, Indian commodities will become costlier. If Indian commodities will become costlier in comparison to US Indian commodities if US commodities are cheaper then the demand for US commodities will increase in India.

If the demand for US commodities will increase in India then the demand for dollar will increase right. At the same time, what will happen in US? The US desire for Indian goods will go down because, Indian goods become costlier. If India goods become costlier then the supply of the dollar will go down. Because, America will not buy this products from India because, high price because of the high price they will not buy. If they will not buy the Indian commodities then what is happening? Obviously, there will be no flow from US to India and that flow is basically nothing, but the supply side of the dollar.

So, therefore, high inflation rate in the Indian system will increase the demand for the dollar and it will decline the supply of the dollar. So, because of that let this is your original demand curve this is your original supply curve now what is happening because of change in the inflation rate the demand has gone up and the supply has gone down.

So, then this was the original equilibrium where it was e 0. Now, this has become here basically it has become e 1. So, the exchange rate has gone up, exchange rate has gone up in this it was e 0 then it has become e 1 this is the way for dollar basically the demand

is more, but supply is not there. So, if the demand is there supply is not there then foreign currency will appreciate, but the home currency will deprecate.

So, here the exchange rate if you talk about we are talking about from the foreign countries or foreign currencies prospective. So, here you can observe that the there is a increase in the exchange rate of that particular foreign currency with respect to the home currency. Then we can see that what are those other factors, one is you can say that is basically your inflation rate.

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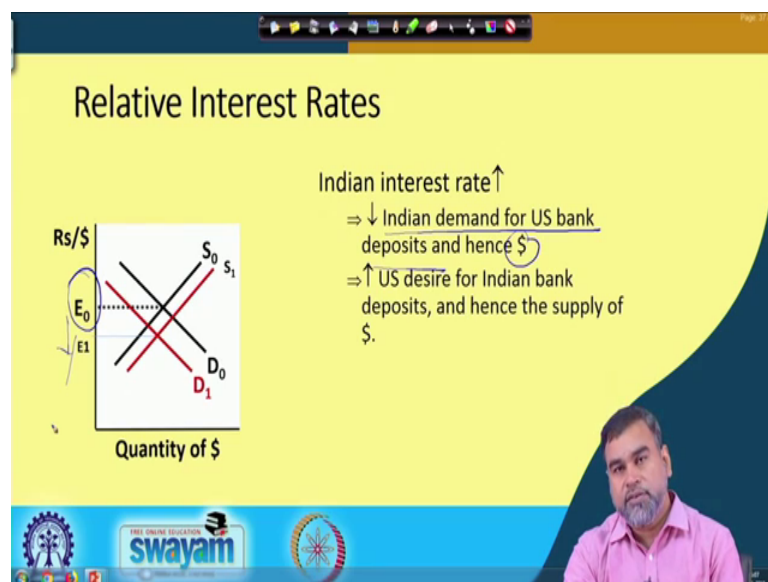

Then another major factor we have that is interest rate. Then the how the interest rate is affecting? The exchange rate, let the Indian interest rate hypothetically you have 2 countries already we have taken, then India's interest rate has gone up. If India's interest rate will go up then what will happen? The Indian demand for US bank deposits will go down. Why? Because, India is giving more interest if Indian banks are giving more interest, then the demand for US bank who are the people who wants to deposit the money in the US bank they may not be deposited the money in the US bank they want to deposit the money in the Indian bank.

So, that is why the Indian demand for US bank deposits will go down. So, therefore, the demand for dollar will go down. If the demand for dollar will go down, but at the same time what is happening the US desire for Indian bank deposits will go up, because in India they are getting more interest. You see we are taking very simplistic example

simplistic cases. The cases may be complex, but you can keep in the mind these are the fundamentals which are basically affecting the exchange rate determination.

You can put lot of conditions you can put lot of hypothetical situations through which that particular relationship may not hold good we are not basically discussing those things here. What we are discussing? That, how the change in interest rate in one country is going to affect the demand and supply of the foreign currency and by that the exchange rate basically will be changed, or will be fluctuating over the time.

So, if the US desire in that particular point of time if US desire for Indian bank deposits will go up then the supply of the dollar will go up because dollar will come into India. Then finally, the availability of the US dollar in the Indian system will go up then what is happening that what is what will happen then the demand for dollar will go down, but at the same time the supply is going up.

So, then what is going to happen by general, general intuition supply is more demand is less then the price will go down. So, now, the exchange rate which was there is zero this has come down to E 1. So, then this is the way this interest rate changes in the economic system can affect the demand and supply of the foreign currency. And, once the demand and supply of the foreign currency gets changed then the exchange rate also gets changed or gets affected by that.

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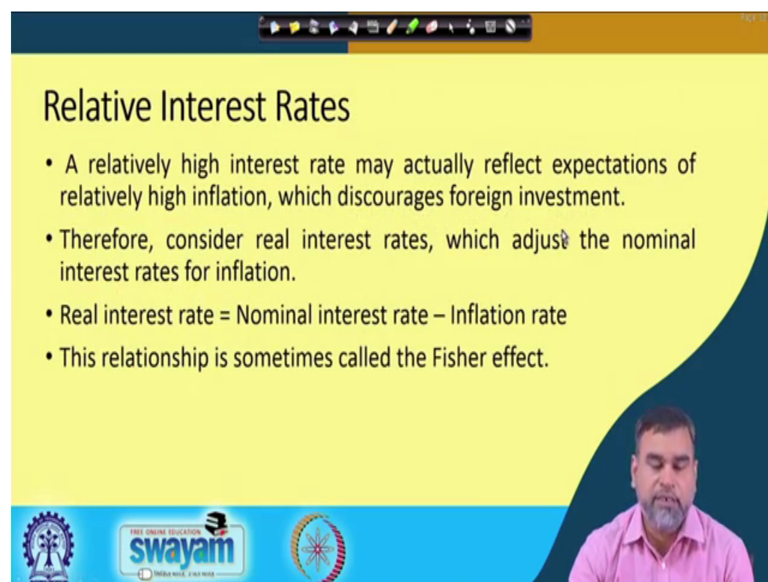

Then we have other factors, let we can take the another factor we have that is interest rate sorry interest rate we are continuing. So, another question here if you keep in the mind then which interest rate whether we should consider real interest rate or nominal interest rate? Already, all of you know that the real interest rate is nothing, but the nominal interest rate minus the inflation which we call it Fisher effect.

So, relatively high interest rate may actually reflect expectations of relatively high inflation. Generally, if you see what is the relationship between interest rate and inflation, the interest rate if interest rate is very high that means what we are assuming the expected inflation also is going to be high there is a; that means, the inflation rate is high because of that their increasing in the interest rate to decrease the money supply in the economic system to make this price become more stable. So, that is why if there is a inflation in the system the it will discourage the foreign investment.

So obviously, the demand for dollar and supply of the dollar will get affected and here we are telling that the demand for US citizens towards the Indian bank deposits will go up because of the supply of dollar will go up. But, if there is high inflation in the economic system then what is going to happen the real rate of return what they are going to generate from the market that may not be realized.

If the real rates are not realized then what will happen this will basically discourage the foreign investors. If it will discourage the foreign investors then what basically will happen, that; that may change this dynamics of the demand and supply of the particular foreign currency. So, whenever we are going to incorporate or we are going to analyze the concept of interest rate as the determinants of exchange rate we generally consider the real exchange rate we do not consider the nominal exchange rate.

Therefore, always consider the real interest rates which adjusts the nominal interest rate for inflation that already you know that the real exchange rate real interest rate is nothing, but a nominal interest rate minus the inflation rate; that actually always you keep in the mind unless it may have some different kind of dynamics while they will play while determining the interest rate in the system.

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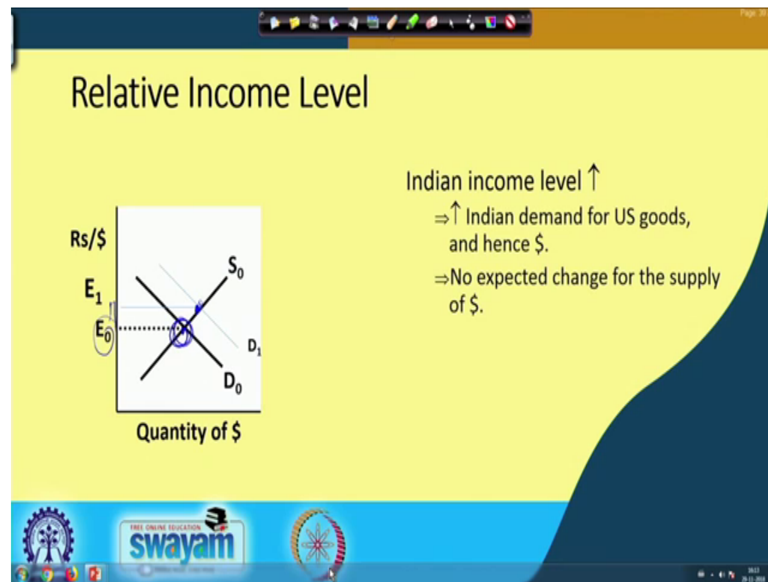

Then another factor we have that is relative income level, if the level of income in India will go up if you assume the level of income in Indian system has gone up. If the level of income will go up then what will happen? Now, Indian people have more money right. So, if Indian people have more money they want branded products, more luxury products, more comfort products, better technological products in that context we feel that US technology is better, US products are better because it is imported from US.

So, in that context what is happening? That the Indian demand for US goods will increase because people can afford there are taste and preferences will change if the taste and preference will change then what is happening the US demand for Indian demand for US goods will increase. Then what is happening, the demand for dollar will increase. But, the that will have no impact on the supply because any way this supply side factor because Indian income they can demand more US products thats why the demand for dollar will go up, but there is no such theoretical logic we can establish between the income with the supply of the dollar income of increase in the income of the home country will have not much impact or will have no impact on the supply of the dollar in that particular home country.

So, this supply curve will remain same as usual now the demand curve have shifted towards the right because the Indian demand for US goods have increased because the peoples taste and preference, they want the foreign flavor from that because of that what

is going to happen that the demand for dollar will go up. So, if the demand for dollar will go up then what if you observe here it was the original equilibrium point now it has move in to this. So, the exchange rate has gone up. That means what? The Indian rupee has been depreciating or has depreciated and the foreign currency has been appreciated. So, that is the logic what basically you can get whenever you are saying that there is a relative income level of Indian economy has gone up.

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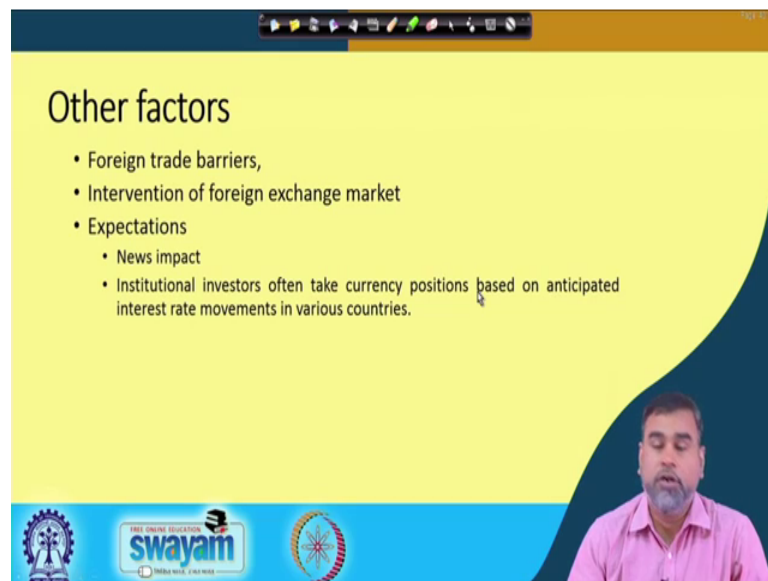

So, that is another factor, then we have some more factors also that already you know that one most important factor is trade barriers. We have different kind of tariffs, you have the quotas, you have import duties. Those factors also contributes significantly the current account balance of the economic system.

If the current account balance which talks about the export and import, that gets highly affected whenever the trade barriers will increase if the trade barriers will be more or the let or the we have lot of import duties. If government of India will put lot of import duties on other countries products then what is going to happen the demand for those commodities will go down because that will become costlier. Then obviously, the demand for those commodities will go down then the demand for foreign currency in the home country will go down.

So, that will have the impact on the trade and as well as the exchange rate. So, that is why the trade barriers is one of the important factors, we have the another factor we have

different exchange rate market intervention by the regulator. Sometimes what happens because of some reason if there is some kind of fluctuations high fluctuations are observed in terms of the exchange rate fluctuations in the foreign exchange market. Then the Central Bank or Reserve Bank of India can intervene in to that.

To control that they can take or the basis of the requirement they take a whatever possible measures they can take depending upon whether they want to increase the foreign currency or they want to decrease the foreign currency. Depending upon that policy basically they change and that will have the impact on the demand and supply and once the demand and supply gets affected, then automatically the exchange rate gets affected.

Then we have another factor the expectations of the market participants and here you see major factor the news impact any news which comes to the market which is related to the foreign exchange that will have lot of implication on the fluctuations of the exchange rate. Because, the news are basically coming to the market randomly the and every already you know that the news can be positive news can be also can be negative news. And all of you now that there is an asymmetry always happens in the market because, negative news have more impact than the positive news.

But, whether it is negative or positive that is going to affect the demand and supply of the foreign currency and accordingly what is going to happen or any policy measure government has announced something which may be conducive for the exporters or may not be conducive for the exporters. So, then what is happening their expectations may change if the expectations level may change then automatically what is going to happen that will have the impact on the demand and supply of the foreign currency.

Finally, the exchange rate and institutional investors often take currency positions based on the anticipated interested moments in the various countries the from the beginning depending upon certain other fundamentals they look at that how this interest rates in that particular economy is going to be changed. Accordingly, they take their positions and that will also have impact on the demand and supply that already we have discussed.

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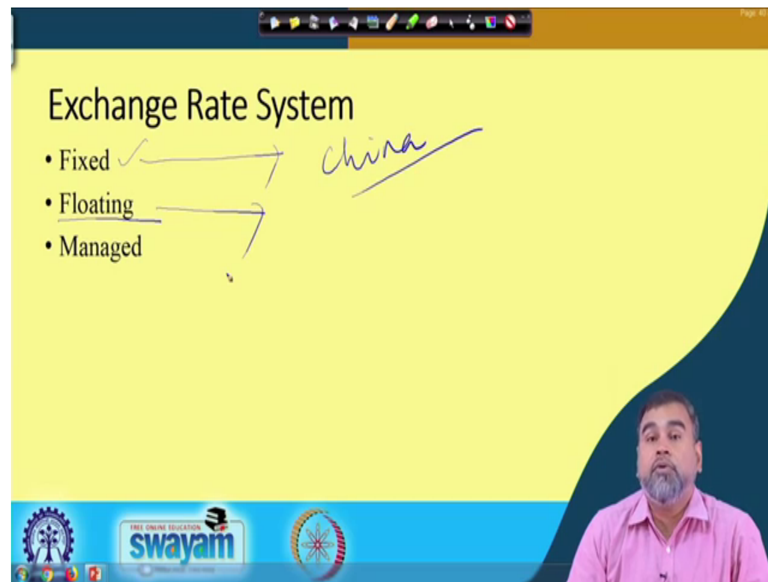

Then we have there are 3 types of exchange rate system that what we are we have just now discussed we have discussed about the mostly the floating exchange rate system which is market determined system. We have a fixed exchange rate where the exchange rates are basically always fixed by the government by the regulator and they follow a particular range and the interest rate only or the exchange rate can move only into that. And basically the country like China and other countries they follow this fixed exchange rate system where, the exchange rate is not market determined the exchange rate is determined or fixed by the government.

Then we have another kind of exchange rate that is called the floating exchange rate, pure floating exchange rate there all those factors whatever we have discussed or any factor which affect the exchange rate or demand and supply of the currency that basically will decide that how much exchange rate will be there with respect to that foreign currency that is purely market driven, but another one is managed exchange rate or sometimes it is called the dirty float exchange rate. What is that? Here, the market basically is responsible for determination of the exchange rate, but if there is any requirement then government can intervene into that to control that.

So, Indian context we have a managed exchange rate system because generally our exchange rates are market determined, but if there is any kind of situation arises then the Reserve Bank of India or the government can intervene into that to make this particular

market stable or to control this high fluctuations of the foreign exchange in that particular system. So, this is the way the exchange rate systems are defined in this particular foreign exchange market.

So, this is about the determination of the foreign exchange and the factors which are affecting the foreign exchange and the foreign exchange rate system. Further we will be discussing about the foreign exchange market how the Central Banks intervene into that and some issues related to the foreign exchange reserves and the FDI and FIA kind of issues which are playing a significant role on the development of the foreign exchange market across the countries

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So, for this you can go through these references.

Thank you.