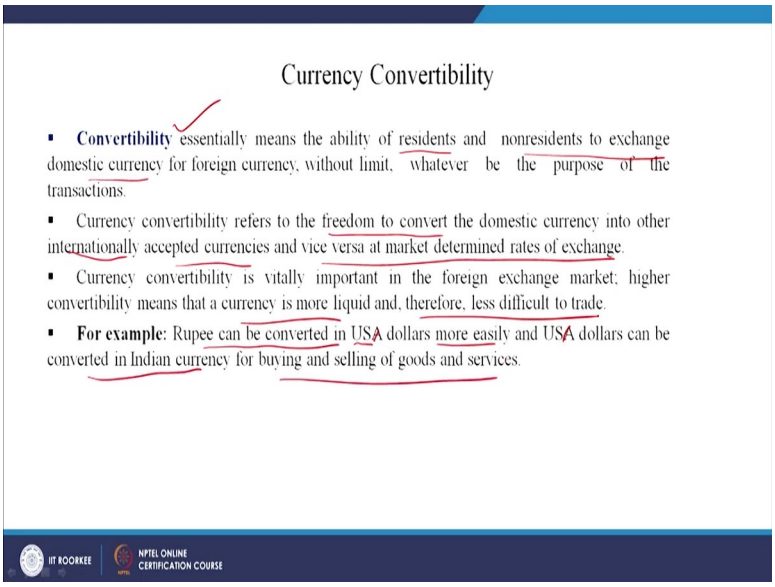
International Business
Prof. J. K. Nayak
Department of Management Studies
Indian Institute of Technology, Roorkee

Lecture – 33
Currency Convertibility, Theories of Exchange Rate, Purchasing Power Parity

Hello everyone. Welcome to our course on International Business. I am sure you must be doing pretty fine when you are listening to me. So, in the last lecture, we had started with the currency convertibility, right. And before that we had discussed about foreign exchange, the factors affecting the foreign exchange, right. So, how foreign exchange is determined and what factors affected, and why it is important for international business, right. So, we had discussed on those.

So, today we will be continuing with the same, and first we will discuss about rupee convertibility or convertibility first we will discuss today and then we will go into the some of the theories of foreign exchange. There are basically (Refer Time: 01:09) theories we will talk about, but let us start with the rupee convertibility.

(Refer Slide Time: 01:14)



So, currency convertibility as you understand essentially we discussed that it means the ability of residents and non-residents to exchange domestic currency for foreign currency. That means, for example, you want to trade you make some buy some goods or you know some services, in that case you need some foreign dollars from foreign

currencies for the transaction, right. So, in such conditions you would require this foreign currency, right.

So, at that point of time convertibility is very important because you have to give your rupees and in exchange you have to take that foreign currency. So, in convertibility becomes very important, because otherwise if there is no convertibility or very you know it is very rigid, then the point is business transactions become very difficult, it is not very smooth, ok.

So, currency convertibility refers to the freedom to convert the domestic currency into other internationally accepted currencies like dollar, euro, peso whatever, right and vice versa at market determined rates of exchange. So, what is the rate of exchange?

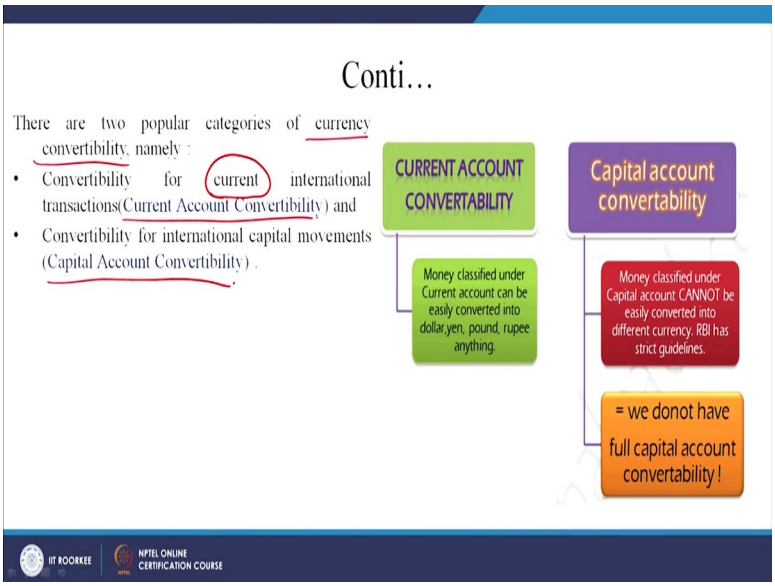
And for example, today we say India 1 dollar is equal to 71 rupees or it might be 72 whatever around 71, 72. So, how does it come to that number magical number come? So, that is basically largely dependent on the demand and supply forces in the market, right. So, how much is the rupee strengthening against the dollar or is the rupee falling against the dollar? So, what is the according to demand and supply and it is a very very dynamic feature, ok.

Currency convertibility is vitally important in the foreign exchange market because higher convertibility means that a currency is more liquid and therefore, less difficult to trade, right.

Suppose, a currency is not easily convertible then that means, the foreign partners would not like to get associated with us and they would not like to make business because the transactions are not smooth, it is not easy. So, every time they nobody would like to get into a you know bureaucratic and a very long process, right. Nobody wants to waste time.

For example, rupee can be converted in US dollars and more easily and US dollars can be converted into in Indian currency for buying and selling of goods and services. This is an example, ok.

(Refer Slide Time: 03:49)



So, there are two popular categories. When we talk about currency convertibility, two important types are there. One call the current account convertibility, the second is called the capital account convertibility.

Now, these are very important, very it is not it is easy to understand also. So, what it says? The convertibility for current international transactions. As you can understand from the word current, right something that is on, ok. So, when you have a convert when you need some convertibility for a current transaction that is an ongoing transaction, so it is called current account convertibility.

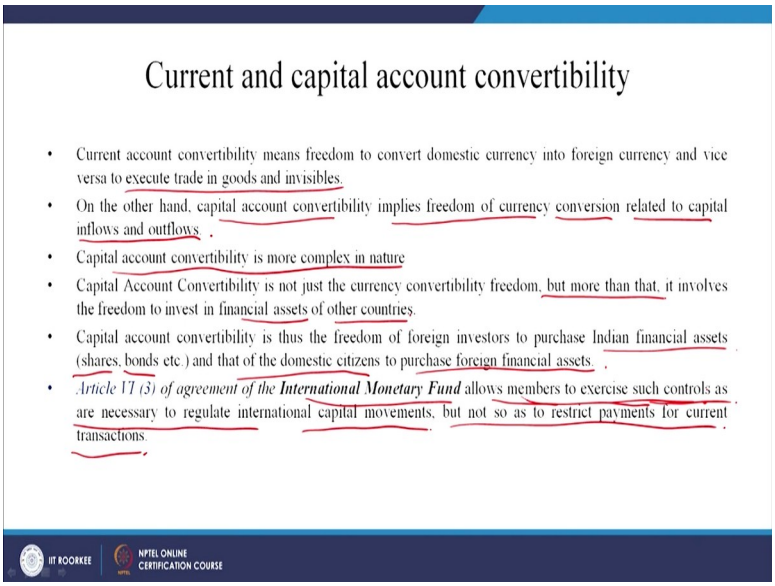
So, anything that you want to buy directly you know goods and services for that whatever transaction you want to make and in that when you want to exchange the convert that rupees into dollars or rupees into euros or euros into rupees whatever it is called a current account convertibility.

On the other hand, when the convertibility is for international capital movements it is called capital account convertibility. So, let us see that. So, current account convertibility, the money is classified under current account can be easily converted into dollar, yen, pound, rupee or anything for that, right.

On the other hand, capital account convertibility says money classified under the capital account cannot be easily, it is a slightly complex, it is slightly complex than the current

account. So, this is more complex, right this is less, right into different. RBI has strict guidelines for example, in Indian case the RBI has very strict guidelines to for capital account convertibility. We do not have a full capital account convertibility as of now, right.

(Refer Slide Time: 05:36)



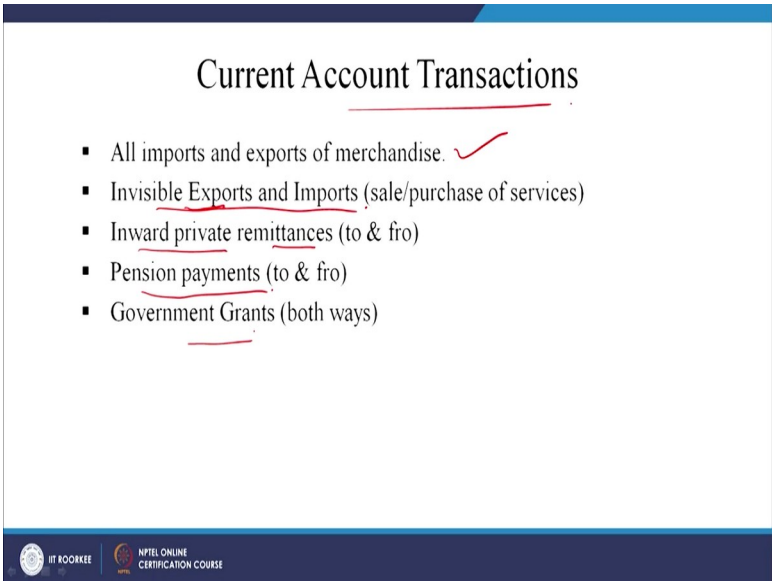
So, what it is saying let us see. Current account convertibility means freedom to convert domestic currency into foreign currency and vice versa, to execute trade and in services invisibles means services, ok.

On the other hand, capital account convertibility implies freedom of currency conversion related to capital inflows and outflows. Let us see what does it mean. So, as I had said capital account convertibility is more complex in nature than the current account convertibility, right. Capital account convertibility is not just the currency convertibility freedom, so that is this is very important, but more than that. What is more than that? It involves the freedom to invest in financial assets of other countries. So, this is what it makes more complex, right.

Capital account convertibility is thus the freedom of foreign investors to purchase Indian financial assets for example, shares, bonds, etcetera in the Indian market and that of the domestic citizens that means, like you people like us to purchase foreign financial assets, ok.

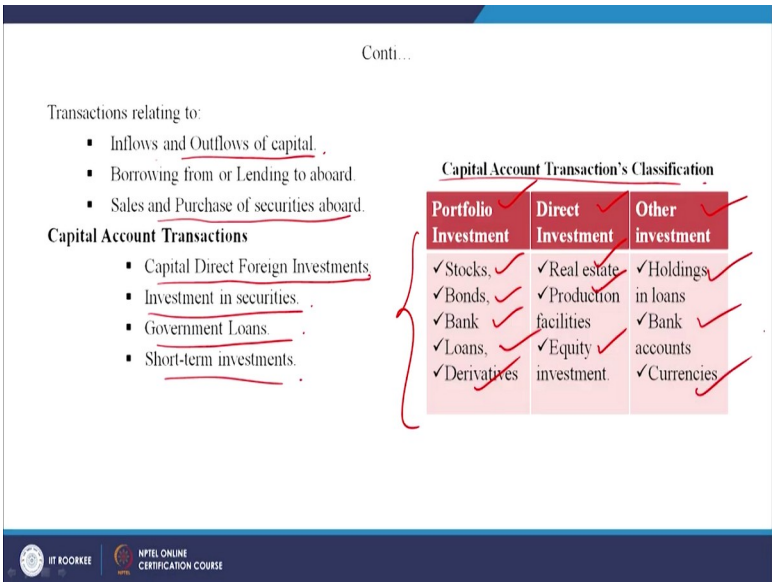
Now, article 6 or 3 of agreement of the International Monetary Fund IMF allows members to exercise such controls as necessary to regulate international capital movement. So, the IMF's desires that there has to be a free movement, right, but not so as to restrict payments for current transactions, right. So, it allows the members to exercise controls, right.

(Refer Slide Time: 07:11)



What is this current account transaction? Now, let us see some examples. All imports and exports of merchandise this is for current account, right. Invisible, this is service oriented, right exports and imports. Inward private remittances, so somebody is working, he is sending salary or whatever. Pension payments. Government grants. So, these are all the come under the example of current account transactions, ok.

(Refer Slide Time: 07:45)

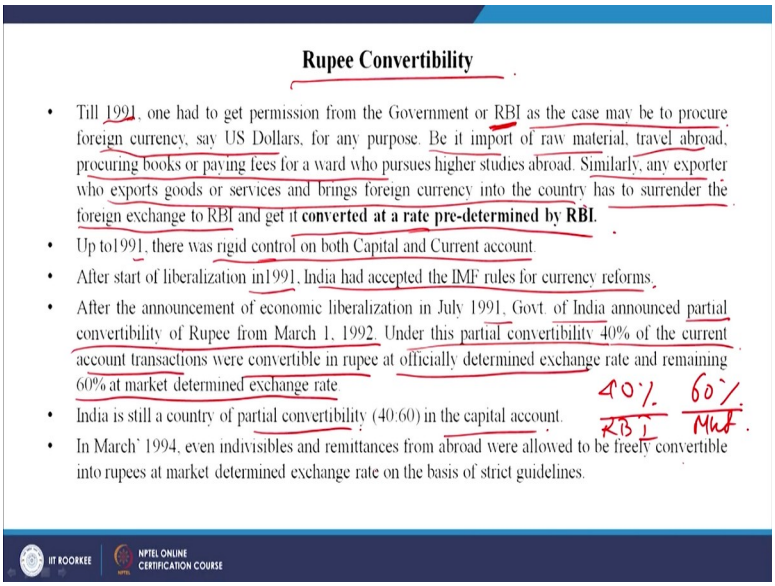


What is there in let us see the other one. Transactions relating to inflows and outflows of capital. Borrowing from or lending abroad. Sales and purchase of securities abroad, right. So, all this is abroad actually, right.

So, capital account transactions are like capital direct foreign investments, investment in securities, government loans, short term investments. Now, you can see this classification how capital account transactions are classified. So, under portfolio investment, direct investment and other investment.

So, under portfolio investment you have stocks, bonds, bank loans, derivatives, and a direct investment you have real estate, production facilities, equity, right. So, somebody is making FDI or something, right that case. Other investments are holdings in loans, bank accounts, and currencies. So, this is the basic difference between the capital and the current account convertibility.

(Refer Slide Time: 08:38)



Now, what is the case in India? Till 1991, one had to get permission from the government or the RBI, the RBI the central bank as the case may be to procure foreign currency say the US dollars for any purpose, right. 1991 was a time when we had liberalization. Now, be it import of raw material, travel abroad, right procuring books or paying fees for a ward who is studying abroad anything, you want some any transaction, so you need permission.

Similarly, any exporter who exports goods or services and brings foreign currency into the country has to surrender the foreign exchange to RBI and get it converted at a rate predetermined by the RBI. So, this exercise was highly controlled, till 1991 it was extremely you know there was lot of rigidity and it was not liquid at all right. It was very less liquid.

Up to 1991, so this there was rigid control on both capital and the current account, ok. But in 1991 we saw some change, right, India opened up its boundaries and we went for liberalization, privatization and globalization. So, India accepted the IMF rules for currency reforms.

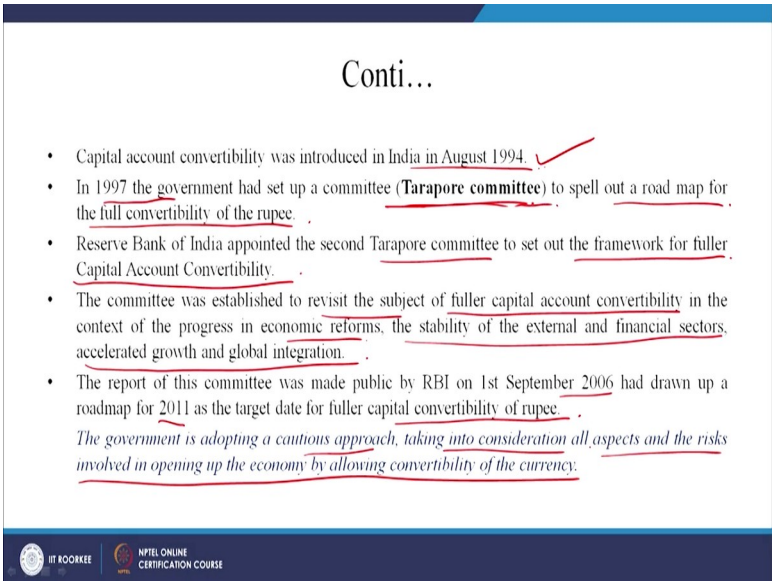
After the announcement of the economic liberalization in 1991, the Government of India announced partial convertibility of rupee from March 1, 1992. Now, this is very important date because this was the time when India was seeing a major change in its

economic condition. So, under this partial convertibility 40 percent of the current account transactions were convertible in rupee at officially determined exchange rate.

So, the RBI was determining the exchange rate, right. And remaining 60 percent at market determined exchange rate. So, what had happened? So, 40 percent and 60 percent. So, 40 percent is what the RBI would determine, 60 percent is the market forces would determine, right.

India is still a country of partial convertibility in the capital account, right. In March 1994, even indivisibles and remittances from abroad were allowed to be freely convertible into rupees at market determined exchange rate on the basis of this strict guidelines. There was a committee, so I will talk about this.

(Refer Slide Time: 11:06)



Capital account convertibly was introduced in India in august 1994, ok. So, capital account convertibility introduced in 1994. In 97, the government set up a very important this is called a Tarapore committee, to spell out a roadmap for the full convertibility of the rupee, ok. RBI appointed the second Tarapore committee to set out the framework for full capital account convertibility because capital account has its own difficulties, so they set up a committee to discuss on that.

The committee was established to revisit the subject of full capital account convertibility in the context of the progress in economic reform. So, as reforms were going happening,

so they have started thinking whether it should be we should move ahead towards a full capital account convertibility. The stability of the external and financial sectors accelerated growth and global integration. For looking at these conditions they thought over it.

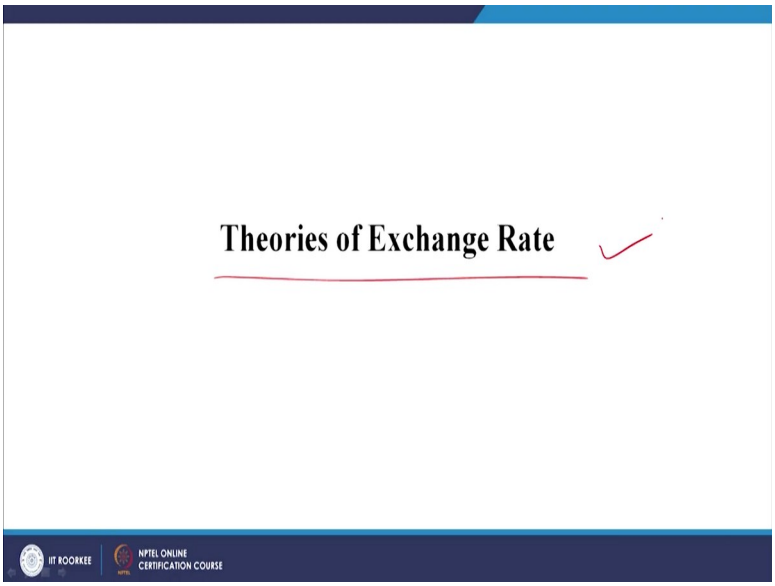
The report was made public on 1st September 2006, and had a roadmap for 2011 as the target date for fuller capital account convertibility of rupee. The government is adopting a cautious approach taking into consideration all aspects and the risks involved in opening up the economy by allowing convertibility.

Now, what are the major risks that can happen? Right. For example, why is the government thinking about it? See, it is not that simple that we open up the market as we wish because by opening up the market we are that means, allowing others also to buy assets into in India.

So, that how intelligent is it and how safe is it we do not know. So, till we are not sure about our own productivity, our people's productivity, our nation's policies and our strength, we cannot make it fully open, right. So, the government has been going with a lot of caution they have been going slowly, right for that.

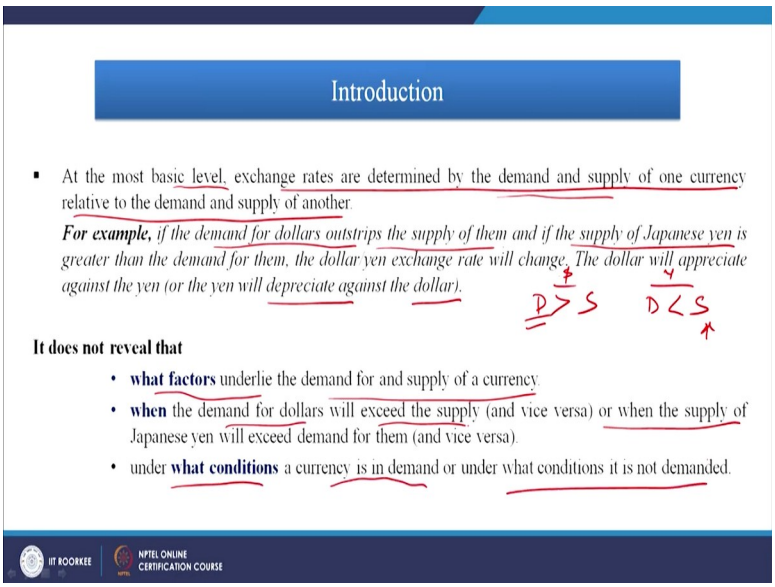
So, you have understood now capital account convertibility and current account convertibility, what convertibility means, right. So, it is very important we have understood.

(Refer Slide Time: 13:20)



Now, so when we are talking about the after this we will talk about a few exchange rate theories, right. So, what is this let us see.

(Refer Slide Time: 13:25)



As we have started, we have understood at the most basic level, exchange rates are determined by the demand and supply of one currency related to the demand and supply of another. So, we have said we have understood that exchange how do you determine the exchange rate.

The exchange rate is determined by the demand and supply of one currency in comparison to the other. For example, let us say how much of demand of rupees there in comparison to the dollar or how much of euro is in demand, what is the supply level. So, this demand and supply level in the market dictates the transaction the exchange rates, ok.

For example, you see if the demand for dollar outstrips the supply of them that means, demand is greater than the supply and if the supply of Japanese yen is greater than the demand for them. That means, in case of this is dollar, right and this is the yen, now in this case demand is less and supply is more let us say, right. The dollar yen exchange rate will change. The dollar will appreciate against the yen. The dollar will appreciate against the yen or the yen will depreciate against the dollar.

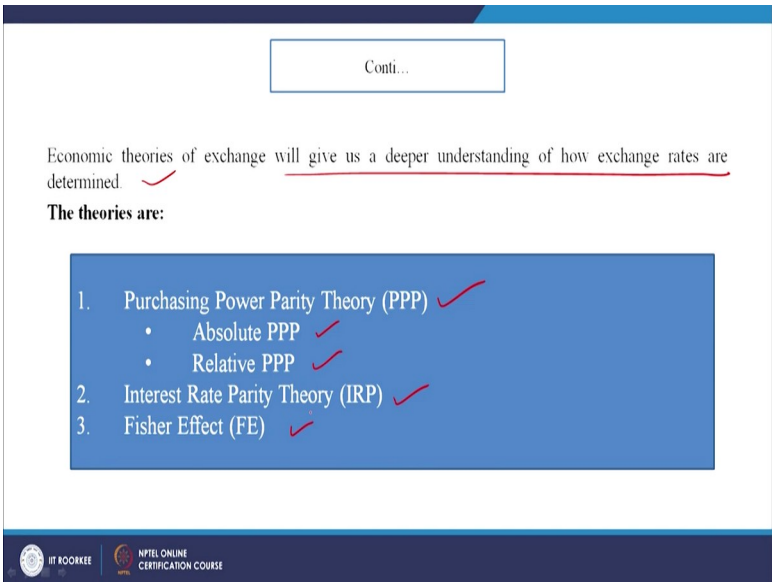
Can you let us revisit again, what is it saying? In case of dollar the demand is more the supply is less. What the demand; the dollar outstrips the supply, right. So, demand is pretty high, supply is comparatively less. So, there is a high demand. Now, in the case of yen the supply is more that means, there are more you know yen in the market, but the demand is still not as much.

So, what will happen now? That yen will depreciate against the dollar or the dollar will appreciate against the yen. Now, this is a situation where the dollar becomes the yen becomes cheaper. So, as it becomes cheaper automatically what happens it becomes it helps the Japanese exports, ok.

But it does not reveal what factors underlie the demand for and supply of a currency. What are the factors? When the demand for dollars will exceed the supply, when the demand for dollars will exceed the supply or when the supply of Japanese yen will exceed the demand for them it is very difficult to say, right.

Under what conditions a currency is in demand and under what conditions it is not demanded, right. So, because it can be predicted, everything can be predicted, but the point is there are so many invisible theories and so many invisible factors involved in it that to capture all of them in a nutshell and at one go is a very very difficult task. It is not easy at all right.

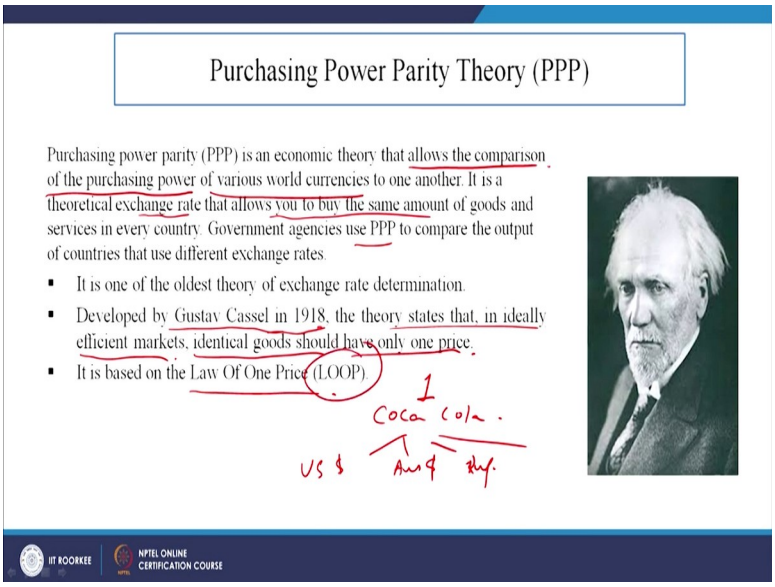
(Refer Slide Time: 16:13)



So, economic theories of exchange will give us a deeper understanding of how exchange rates are determined, right. So, there are 3 theories we will talk about. One, the purchasing power parity theory, right in which it is there are two types, again absolute purchasing power parity and relative Purchasing Power Parity.

Then, we will talk about the Interest Rate Parity theory and the Fisher Effect, right. So, let us see if we can complete all of them today, right.

(Refer Slide Time: 16:40)



So, what did he saying? Purchasing power parity theory, this is given by, this is one of the oldest theories of exchange rate determination, right. It was developed by Gustav Cassel in 1918, he must have been a very wise man.

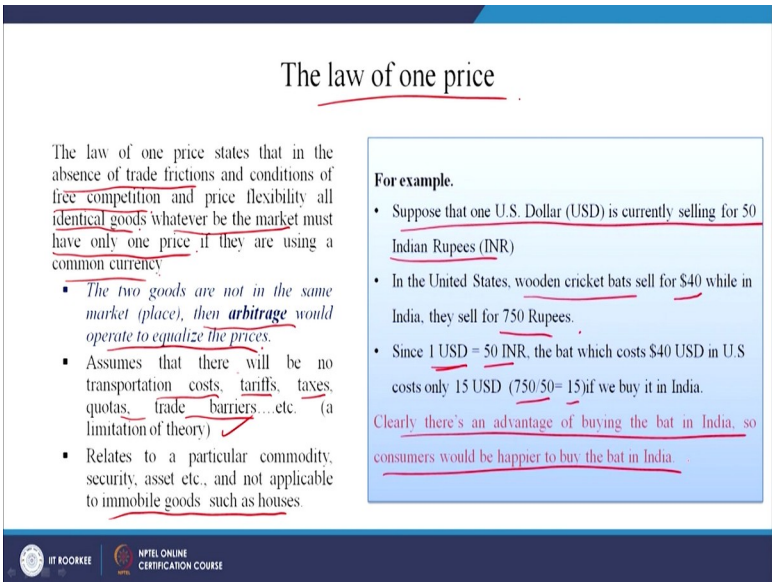
What did he say? Purchasing power parity is an economic theory that allows the comparison of the purchasing power of various world currencies to one another. So, let us see again what did he saying. It allows the comparison of the purchasing power how much your currency can buy, right in comparison to another currency. It is a theoretical exchange rate that allows you to buy the same amount of goods and services in every country.

That means, to buy let us say you want to buy a Coca-Cola let us say, you want to buy a Coca-Cola, so how much are you going to pay in US dollars, how much you are going to pay in Australian dollars, right say, how much are you going to pay in Indian rupees, right. So, how much you are going to pay in some other country.

So, what did he saying is basically, it allows you to buy the same amount of good that is one bottle of Coca-Cola and services in every country, how much you are going to spend, right. So, government agencies use PPP, this purchasing power parity to compare the output of countries that use different exchange rates, right. So, the government uses this to compare the output, right.

Now, as I said its one of the oldest theories, right and this theory is states that in ideally efficient markets. So, you know the efficient market theory and identical goods should have only one price. If there is an efficient market and the identical goods are there and you are using the same currency the price should be same, right. It is based on the law of one price loop, right.

(Refer Slide Time: 18:46)



So, let us see this. So, what is this law of one price? The law of one price states that in the absence efficient market, right, in the absence of trade frictions that means, there is no trade friction, and conditions of free competition and price flexibility all identical goods whatever be the market, whatever market it is must have only one price if they are using a common currency.

So, if you are using a common currency that means, suppose let us say in market abc if I use buy through dollar the same value of good this what would be the bottle of Coca-Cola in terms of dollars in India, in terms of dollars in America, in terms of dollars in England in different markets. Suppose we use a common currency what would be the price, right.

The two goods are not in the same market, then if the two goods are not in the same market then arbitrage would operate to equalize the prices. Now, you have understood what is arbitrage. Arbitrage means when there is a differential in price in two markets, so a person would a person who is intelligent and opportunistic in nature would like to buy it at the from the market where it is less at price and sell it at the in the market where it is of a higher fetches a higher price and the difference that he gets is what is his profit, right.

So, assumes that there will be no transportation cost, tariff, taxes, quota, trade barriers etcetera. So, but this is a limitation of the theory because it says these are some of the

things which it assumes that they it will not be there, but how is it possible, right. But if you keep it then it is very difficult to measure. So, that is why these assumptions are generally made, ok.

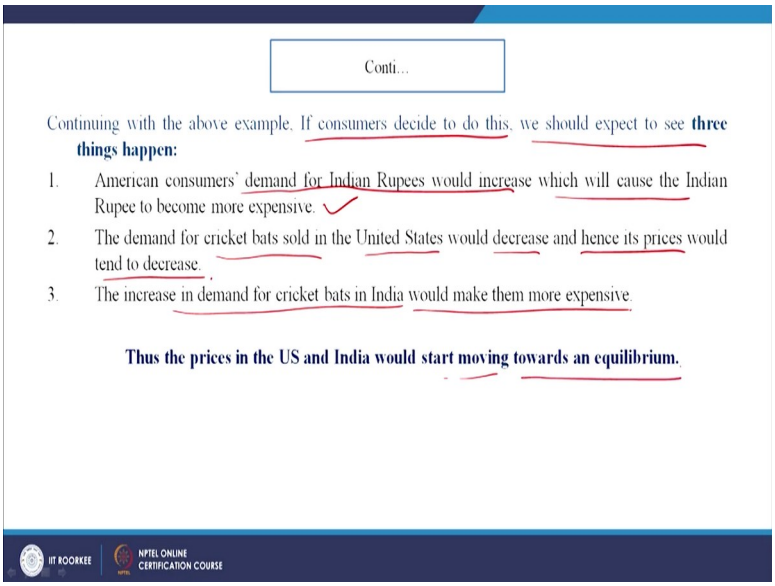
It relates to a particular commodity, security, asset etcetera and not applicable to immobile goods such as houses. We do not talk about immobile goods, right. Let us take this example. Suppose, that 1 US dollar is currently selling for 50 Indian rupees. For a calculation we have taken 50, it is not actually 50, 70 now. In the United States suppose a cricket bat sells for 40 dollars while in India they sell for 750 rupees.

So, since 1 US dollar is 50 Indian rupees the bat which costs 40 dollar in the US, right cost only how much in Indian, if in the terms of Indian rupee how much? Now, 750 / 50 = 15 or this 40 * 50 = 2000 rupees in Indian currency, but whereas, we are actually getting is 750. So, clearly there is an advantage of buying the bat in India. So, consumers would be happier to buy the bat in India.

So, this is what actually happens in the international market. That this is how the transactions between countries happen. For example, if the Japanese in suppose in yen if you buy and in you can buy let us say the yen is cheaper, then you can buy more of the bats buy through the 40 dollars suppose or 100 dollars whatever amount that fixed amount you can buy more of the products.

So, that, and you can sell maybe at a higher price in again US market. So, that is the difference which business people or exporters get, right that during the international transactions, ok.

(Refer Slide Time: 22:20)



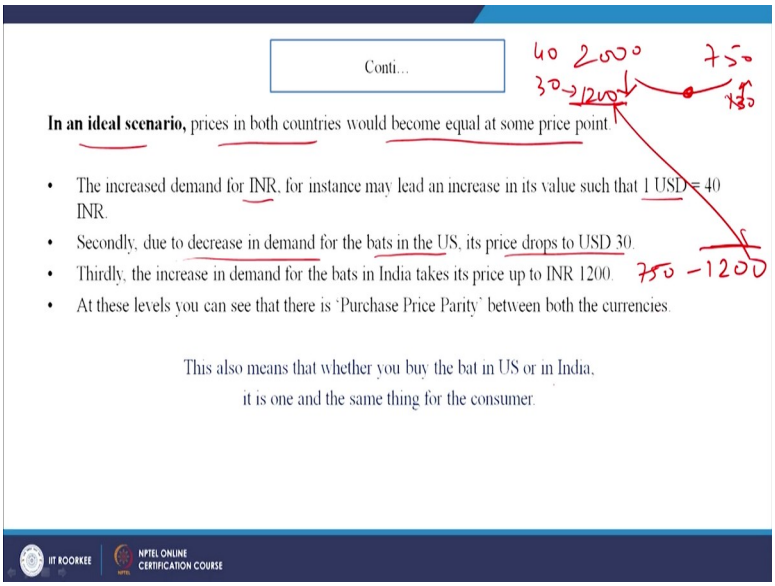
Continuing with the above example if consumers decide to do this we should expect to see 3 things, what are these? American consumers demand for Indian rupees would increase, right which will cause the Indian rupee to be more expensive with time, slowly, when the Indian rupees demand will go up, right because with Indian rupees they are able to buy more number of bats because obviously, they cannot buy through dollars directly know.

So, they have to exchange the currency. So, the demand for the rupees will go up. Now, with as the demand for the rupees is going up. So, the rupee will tend to become more expensive with time.

The demand for cricket bats sold in the United States would decrease and hence its price would tend to decrease, right because it is becoming costlier in United States. The increase in demand for cricket bats in India would make them more expensive. So, these are all interrelated.

So, as the increase in demand for cricket bats goes up because it is cheaper also, right, slowly the price would tend to move up because a demand is growing. Thus, the prices in the US and India would start moving towards an equilibrium. So, this is very interesting, right.

(Refer Slide Time: 23:31)



In an ideal scenario what would happen? Prices in both the countries would become equal at some price point. So, for example, you started with 2000 as per US and India had 750. So, this will start growing and here the demand will start falling. So, there will be a point, there will be a point where they both would maybe at let us say 1300 rupees or something at some point they would you know match.

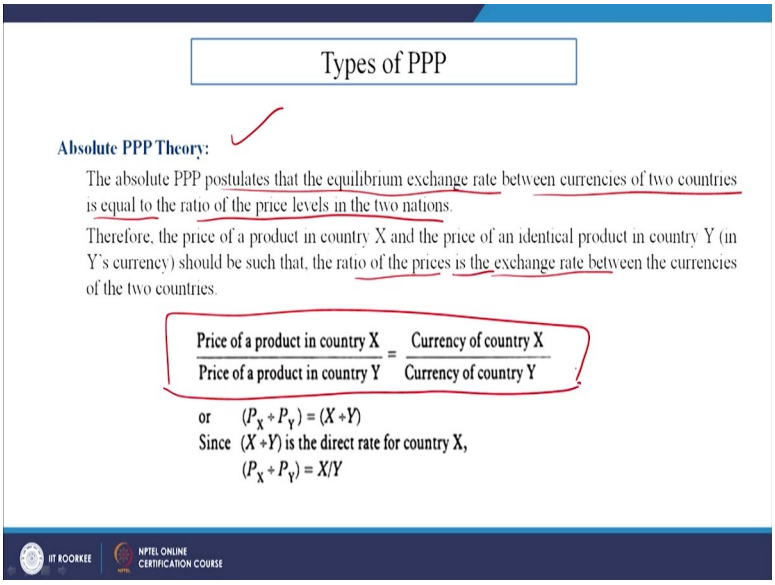
The increased demand for rupee for instance may lead an increase in its value, so that 1 US dollar = 40 Indian rupee, instead of 50 it will become 40 Indian rupee, let us say if it the demand goes up, right. Second, that means, what? The Indian rupee has become costlier now, right. Earlier it was for 1 dollar you had 50 rupees. Now, with 1 dollar you can only buy 40 rupees.

Secondly, due to decrease in demand for the bats the price drops to 30 dollars, right. So, the price which was 2000 or 40 dollars, now has come down to 30 dollars. So, 30 dollars means how much? In our condition now, it is almost 1200 rupees because it is now 40, right.

So, thirdly the increase in demand for the bat in India takes its price up to 1200, from 750 it moves up to 1200. So, you see, so now, there is an equilibrium point that is reaching. So, here and here, so if you look at this. So, we are coming to a point of equilibrium.

At these levels you can see that the price that there is purchase price parity between both the currencies, ok. This also means that whether you buy the bat in US or in India its one and the same thing for the consumer, ok.

(Refer Slide Time: 25:19)



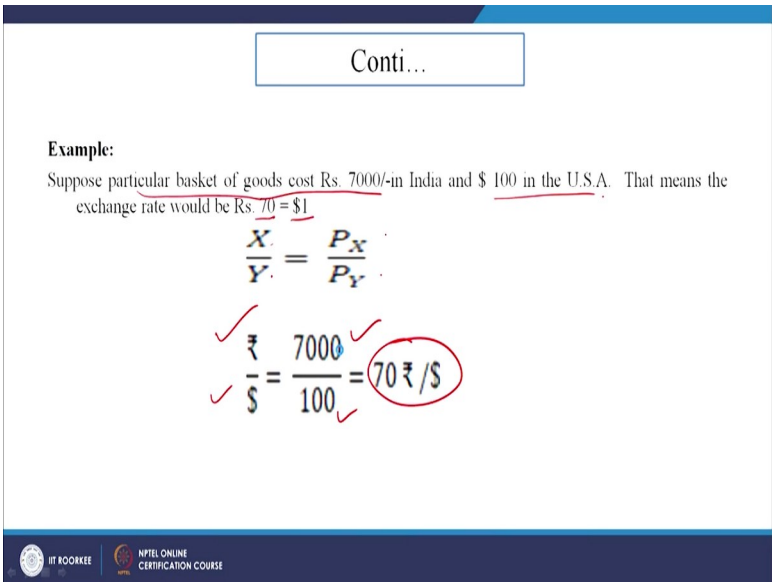
Types of PPP. So, what are the various types of PPP? So, as we said the first one is the absolute PPP, right. So, what is it saying? The absolute purchase power parity, right postulates that the equilibrium exchange rate between currencies of two countries is equal to the ratio of the price levels in the two nations. We will see what does it mean.

Therefore, the price of a product in country X and the price of an identical product let us say the bat again in country Y, in Y's currency should be such that the ratio of the prices in the exchange rate the ratio of the prices is the exchange rate between the currencies of these two countries. Now, what is it saying let us see.

So, the price of a product in country X / price of a product in country Y = currency of the value of the currency of the country X / currency of the country Y, the value, here we mean the value, right, or P X divided by P Y is equal to X divided by Y.

Since, X divided by Y is the direct rate for country X, right, P X divided by P Y is equal to. So, you can understand, so this is important, right. So, we understand that price that this ratio between the price equal to the value of the currencies, right.

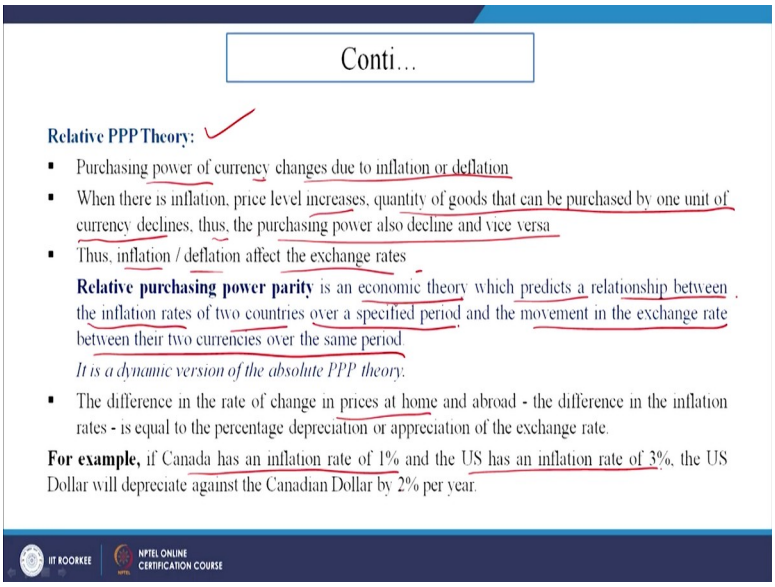
(Refer Slide Time: 26:47)



Suppose, take this example particular. Basket of goods cost rupees 7000 in India. A basket of goods let us say a bat, a wicket keeping gloves, a ball, you know stumps whatever and 100 dollars in the USA.

That means, what does it mean the same basket of goods is 7000 in India, so that means, what 70 rupees = 1 dollar. So, X / Y = P X / P Y let us see. So, what is its saying? So, rupee/ dollar, right is equal to 7000 / 100 which is 70. This is what it tries to find out, ok.

(Refer Slide Time: 27:25)



Now, this is the first one. You talked about the absolute this is absolute, right. But let us see the other one. Now, there is another form which is called the relative PPP theory. Now, what does it mean? It says the purchasing power of currency changes due to inflation, inflation or deflation whatever. So, it is inflation basically.

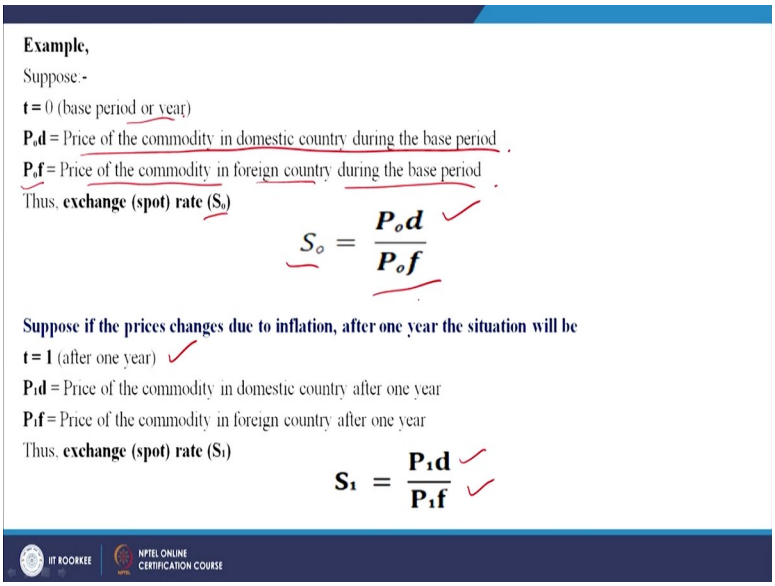
So, whenever there is inflation price level will go up, increases. Quantity of goods that can be purchased by one unit of the currency will go down because it is costlier now. So, thus the purchasing power also declines and vice versa. Suppose, it would have gone the price level would have gone down, so quantity of goods would have now improved. So, it would have been vice versa.

Thus, inflation or deflation affect the exchange rates. So, it has a major impact. What does it say? Relative purchasing power parity is an economic theory which predicts a relationship between the inflation rates of two countries, right, right, over a specified period and the movement in the exchange rate between their two currencies over the same period.

So, it is a dynamic version of the absolute PPP theory. So, the absolute theory was more less dynamic, this is more dynamic in nature. The difference in the rate of change in prices at home and abroad minus the difference in the inflation rates is equal to the percentage, depreciation or appreciation of the exchange rate.

So, this difference is important to us. Let us say, if Canada has an inflation rate of 1 percent, ok, 1 percent Canada. US has an inflation rate of 3 percent. So, the US dollar will depreciate against the Canadian dollar by 2 percent per year. This is what it means to say, ok.

(Refer Slide Time: 29:28)

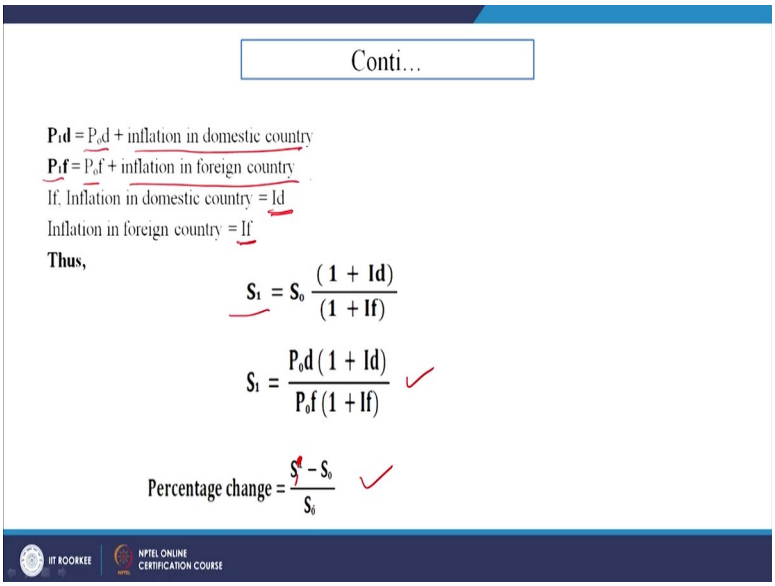


Let us take this example. Suppose, t is equal to 0 base period, right P o d or the price of the commodity in domestic country during the base period. P o f, price of the commodity in foreign country, f stands for foreign domestic during the base period, right.

So, the exchange rate the spot rate, the exchange rate means this the spot rate means the at the same point of time, right. What is the exchange rate? Is equal to S o is equal to P 0 d, right price of the commodity in the domestic country during the base period by the foreign in the foreign country, right.

Suppose, if the price changes due to inflation, after 1 year the situation will be what? Let us see. After 1 year. So, P 1 d and P 1 f price of the commodity in domestic country after 1 year, price of the commodity in foreign country after 1 year.

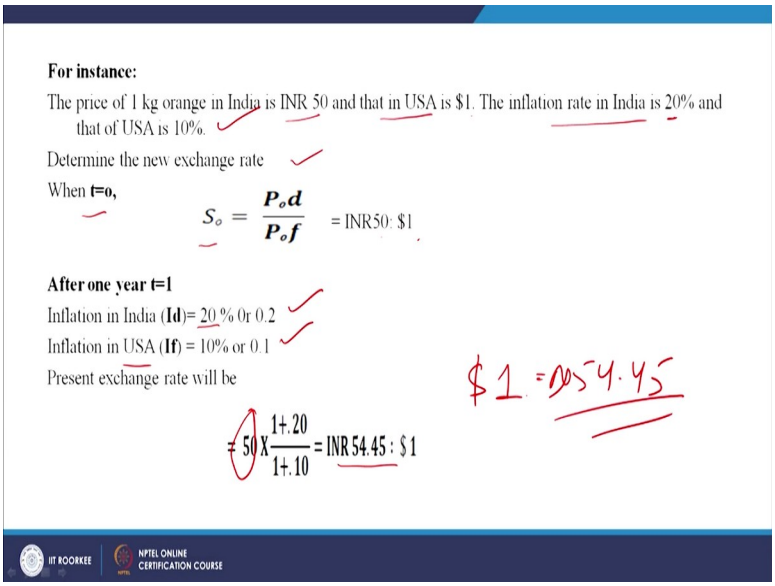
(Refer Slide Time: 30:29)



So, the exchange rate now S one is equal to P 1 d by P 1 f, right, the new rate. So, P 1 d is what? Now, the P 0 d the base year rate plus inflation in the domestic country. P 1 f is the P 0 f plus inflation in the foreign country. If inflation in domestic country is equal to Id inflation in foreign country is equal to If let us say.

So, what is S 1 now? S 1 is equal to S 0 that means, the rate spot rate at the base period base year, right * 1 plus id into 1 plus If. So, this is what is the finally the formula looks like. So, P 0 d which you this one, right applying here, so we get this. So, this is the percentage change, this is I mean here S 1 - S 0 / S 0, right.

(Refer Slide Time: 31:14)



So, this is the problem we will wind up here with this example. The price of 1 kg orange in India is let us say Indian rupees 50 and that in USA is 1 dollar, right. Inflation rate in India is 20 percent, assume, just it is not there, but assume. USA is 10 percent. Determine the new exchange rate, right. So, when t is 0 what is the S 0 spot rate? Now, this one. So, that is 50 is to 1, 50:1, right.

After 1year inflation is 20 percent or 0.2, in USA it is 10 percent or 0.1. So, what is the new formula? So, 50 this one, 50 by 1, which is 50, right, into 1 plus 0.2 divided by 1 plus 0.1, right. So, this formula, just if you look, this one, right, this part. So, that becomes 54.45 is to 1.

So, that means, 1, now the at the present rate the new spot rate is exchange rate that is the 1 dollar is equal to now instead of 54, it is 54 50, it is 54.45 rupees, right. So, this is how the purchasing power parity theory works, right.

So, we will today because there is less time we cannot continue. We will continue this into in the next class, right.

And till then, thank you very much. Have a great day.