International Finance
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Lecture - 15
Foreign Exchange Exposures: Transaction Exposure

Welcome, we will be discussing in session 15 on foreign exchange exposure. So, in foreign exchange exposure; exposure before starting the foreign exchange exposure; we should understand the difference between exposure and risk, exposure when there is there is a volatility in foreign currency market; it create exposure. And volatility when crystallize it create some kind of loss. It is a risk when exposure are crystallize. It is a risk and before risk all whatever the volatility we test these are the exposure; exposure and risk two different concept. And on that basis three different kind of exposures are exposures are being identified for foreign currency market.

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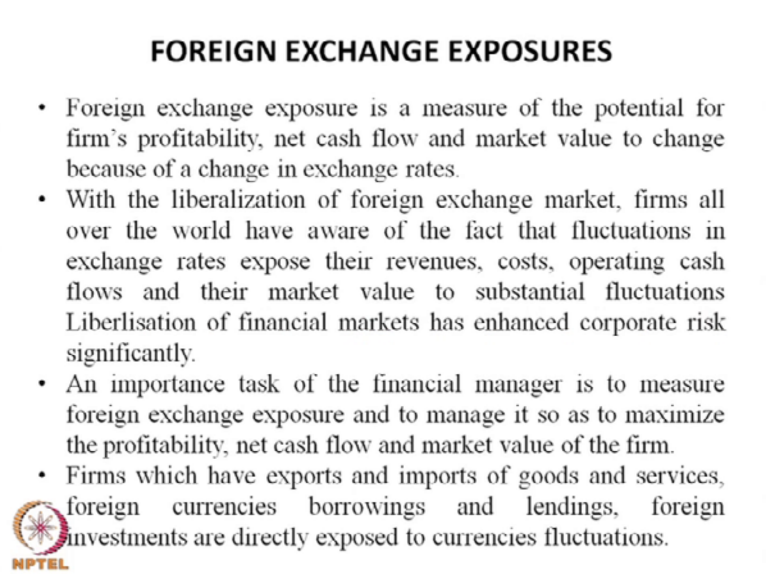

We will be discussing what is called transaction exposure, what is then second we will be discussing about what is called a translation exposure, and also we will be discussing about operational exposure. So, we will discuss about foreign exchange exposure. Foreign exchange exposure I mentioned here in a market determined exchange rate regime exchange rate fluctuate on the basis of demand and supply. And this fluctuation of exchange rate create risk in the foreign exchange market, and when foreign exchange exposure is a measure of potential firm's profitability.

That is when exposures are foreign exchange exposure or the corporate are having assets and liability in denominate in foreign currency. It affect their profitability, it affect the net cash inflow and also because it affects the profit and also operational expenses. So, when foreign exchange in a corporate and foreign exchange assets and liabilities are there when exchange rate fluctuate the value of the assets and liability also fluctuate the assets and liability provide what is called a profit. And the when assets liability themselves fluctuate profit and profitability also fluctuate; the net cash position any open cash in foreign currencies are there that also fluctuate because exchange rate itself fluctuate.

With the liberalization of foreign exchange market the corporate now having exposure a different foreign currency. they are They have corporate particularly big MNC have their own subsidiary, have their own company, have their assets and liability segregate to different currency. And all the subsidiary, all the assets liability which are denominated in different currency are exposed to foreign exchange fluctuation and this foreign exchange fluctuation create some kind of risk for the corporate the risk are being are being segregated into two part what is called one part is transaction risk. Another part is what is called what is called a economic exposure or transaction exposure economic exposure and translation exposure.

When asset, liability which are daily in nature particularly export import payments payment receivables payments and receivables are there denominated different currency. Everyday transactions take place. The everyday fluctuation exchange rate create transaction exposure when asset liability spread over the year and the future cash flow also affected because of the foreign exchange fluctuation. These create what is called economic exposures and when the company having number of subsidiary in abroad. The converted subsidiary are trading in different foreign currency and when converted the foreign currency into a domestic money there will be foreign currency exposures are there. These are called translational exposure or accounting exposure and translational exposure accounting exposure only for a timeframe because we generally prepare the balance sheet once in a quarter or once in a year and as asset and liability converted into converted into home currency at a particular rate and since rates are fluctuate which rate they have to convert the foreign currency that creates translation exposure. So, we will be discussing about all these exposure in different session. Today we will be discussing about transaction exposure and try to address the issue of transaction exposure and some kind of assessment of transaction exposure.

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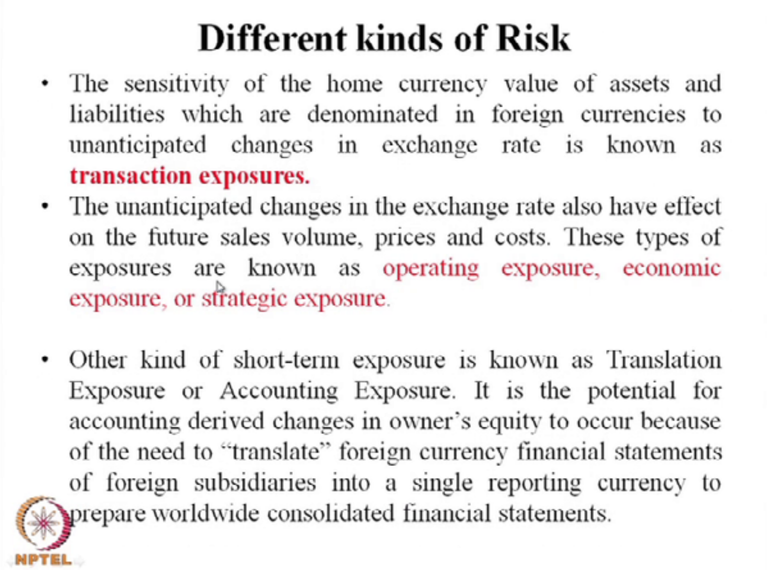

So, as I mentioned a sensitivity of home currency value sensitivity of home currency value of assets and liability which are denominated in foreign currency to unanticipated changes in exchange rate is known as transaction exposure because home currency value changes. Because why it is changes the exposure or assets liabilities are in other currency in foreign currency when they convert into domestic currency; the domestic currency fluctuation of domestic currency create some kind of transaction exposure or transaction risk.

So, unanticipated changes in exchange rate also have effect in future sales future prices and cost because when exchange rate changes; the future sales also affected, because of because of fluctuation of foreign currency the operating cost of the company also changes. Because of fluctuation of foreign currency, this type of exposure which affect the future position of the foreign corporate it is known as operating exposure or economic exposure or strategic exposure and other kind of short term exposure is also known as translation exposure or accounting exposure. As I mentioned different MNC have different subsidiary in different countries and when the MNC or the home company or the parent company wanted to have these balance sheet. They want to mark the subsidiary balance sheet into home parent balance sheet and give what is called the balance sheet of the entire company. Since subsidiary balance sheets are marked with the parent company balance sheet to provide the entire company balance sheet the subsidiaries are being traded or assets and liability are in different currency. The conversion of foreign subsidiary assets and liability create some kind of exposure.

These exposures are accounting exposure because on accounting sense the exposures are there in real sense. There is no exposure since we prepare the foreign, we prepare the your balance sheet at a particular time point of time. On that particular point of time there is translation exposure and other than there is no exposure. Since for that reason translation exposures are not a exposure; it is only for conversion of subsidiary balance sheet into parent company balance sheet some exposures are there in real sense. There is no exposure.

However, in real sense we have transaction exposure because day to day transactions are being affected because of fluctuation of foreign currency. We have economic or operating exposure or strategic exposure because our future plans, future sales, future prices, future operating cost are being affected because of fluctuation of foreign currency. We have a strategic exposure, because of that reason and we are going to discuss about the transaction exposure and also operating exposure in differentiation to this session discussing about transaction exposure.

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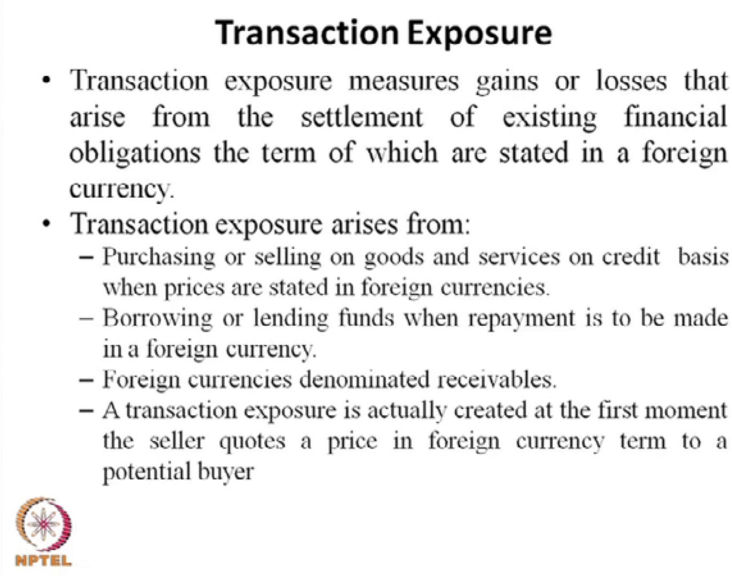

Let us discuss about transaction exposure transaction exposure. As I mentioned it is it measures the gain gains or losses that arise from the settlement of exchange rate. The settlement of existing financial obligation, because the financial obligation may be existing financial obligation may be a export may be import and whenever there is a fluctuation of exchange rate the value of the export is go on changing. Value of the import also go on changing and because of this reason the corporate or the exporter may have may face what is called a transaction exposure. The transaction exposure arises from purchasing or selling on goods and services on credit basis when prices are stated in foreign currency.

We are purchasing some goods or we are selling some goods; then the goods prices are in foreign currency. Whenever there is foreign currency fluctuation the price the value of the value of the goods and services changes. We have foreign transaction exposure when borrowing or lending funds when payment is to be made in a foreign currency. When a borrowing foreign currency from aboard and we have to pay principal we have to pay regular interest since the fluctuation of foreign currencies are there. The principle value changes, the interest payment also changes, we have transaction exposure. We are lending foreign currency, we are giving foreign currency to some other person.

The person is repaying in the form of principle in the form of what is called interest payment since the principle interest future payments are there future receivables are there. Since the exchange rate fluctuates future receivable also fluctuate. It is a transaction exposure foreign currency denominator receivable all kind of receivable. It is a export receivable, it is a interest payment receivable. It is principle payment receivables. All receivables if the receivables denominated in foreign currency, the currency fluctuation change the value of the receivable and it is a transaction exposure. A transaction exposure is actually created at the first moment; the seller quote a price in foreign currency term to a potential buyer when a transaction exposure is created when it will be created when a seller quote a foreign currency to a foreign buyer the foreign buyer is will pay a not instantly after some time will pay. Whenever there is a time difference in payment it creates a transaction exposure.

So, transaction exposure is because of exports side because of import side because of foreign currency payment. Foreign currency receivable foreign currency lending foreign currency borrowing all transaction and all this transaction create transaction exposure because the underlying asset is a exchange rate whose value fluctuate and there will be exposure or there will be risk in foreign currency transaction. So, all transaction which are denominated foreign currency are foreign currency exposure.

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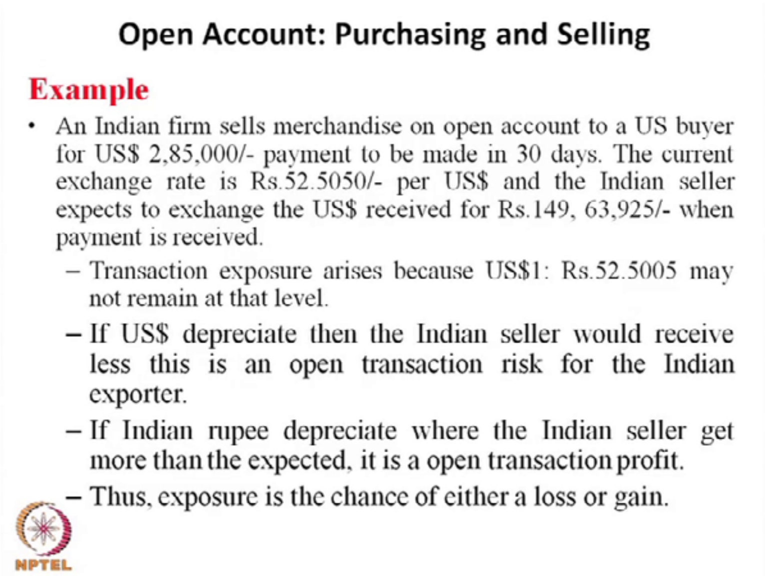

And how to assess the exposure, we will (( )) through different process are there for assessing the exposure to understand the assessment of transaction exposure. Let us do a problem. You can see the problem. The an Indian firm sell merchandize an on open account to a US buyer for US dollar 285000 payment to be made in 30 days. The current exchange rate is 52 5050 per dollar and the Indian seller expect to exchange us dollar receipt from for 1149000 63925. When payment is received; the transaction is exposure arise because the dollar may not remain as 5250 525050. What does it mean? Here this example which I mentioned here Indian firm sell merchandize export to a US buyer and US buyer suppose to pay 2 85000 in 30 days. So, there is 30 days time period. The US buyers will supply foreign exchange, but to amount 285000 dollar.

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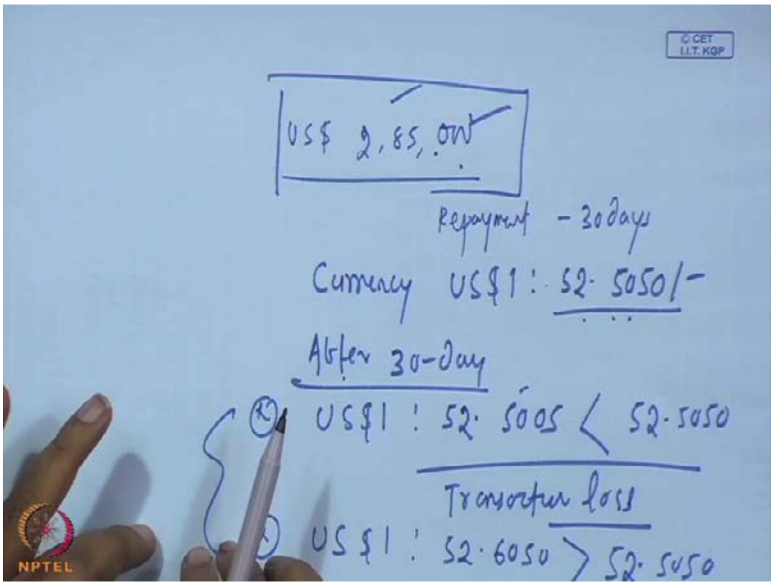

So, when the merchandize the Indian firm export US dollar Indian firm export US dollar amount export amounting to 285000 and this export receipt export payment come to the Indian firm Indian firm after 30 days. Repayment will be after 30 days when actually export when they actually export that time Indian currency was currency market currency market US dollar was quoted one dollar 52 5050. And after 30 days the exporter will get 285000. And the 285000 suppose today they get today the person the exporter get will convert at 52 5050 and get the rupee amount. But after 30 days we do not know what will be the rate of US dollar and this create a transaction exposures because dollar and rupee conversion rate. After 30 days may not continue 52 5050 and it would create what is called a transaction exposure? A transaction exposure how it create a transaction happen? A transaction is export amounted to US dollar 285000 and this at the current rate of 52 5050.

But, this dollar may not remain 52 5050 it create. So, whenever the person get 285000 dollar. At this rate may not continue. It create transaction exposure. Suppose the US dollar after 30 days after 30 days US dollar quote as suppose quote one dollar is equal to 1 dollar quote at 52 5005. So, when 5005 quote when the exporter got after 30 days this amount of dollar 285000. You will convert at current rate the current rate is 52 5005 which is less than 52 5050 which was prevailing before one month when actually exported. So, it creates a transaction loss it create a transaction loss. Suppose scenario two is there suppose US dollar quote 56050. So, this is more than 5050. It will create a transaction profit for the exporter. But exporter cannot know whether he is a he will be in loss or he is in profit. So, anything is a create risk for him the risk is the risk for exposure is a transaction exposure. So, so chances of loss or again depends upon the future market and future market is uncertain and this transaction lead to a uncertainty and it is a truncation exposure.

Now, this is called open account purchaser. Selling is a open account because this account what you discuss; why it is called open account. It is a open account because this dollar 285000 is open in the sense that we have not the exporter had not purchase any kind of risk management product for converting the converting the future cash flow at a particular constant amount. Because if the exporter purchase a risk management product in the form of forward contract in the form of few foreign currency futures or option is value of future value remain constant. So, there may not be any transaction exposure. Here there is a open account that is no purchase of foreign currency hedging product. So, is a open account it is value is open value is may come down may increase depends upon the future cash future US dollar and Indian rupee exchange rate. the open Because it may go up, it may come down. It depends upon the market exchange rate. So, there is a open account because there is no, there is there is no foreign exchange forward or foreign exchange future hedging product purchase by the exporter.

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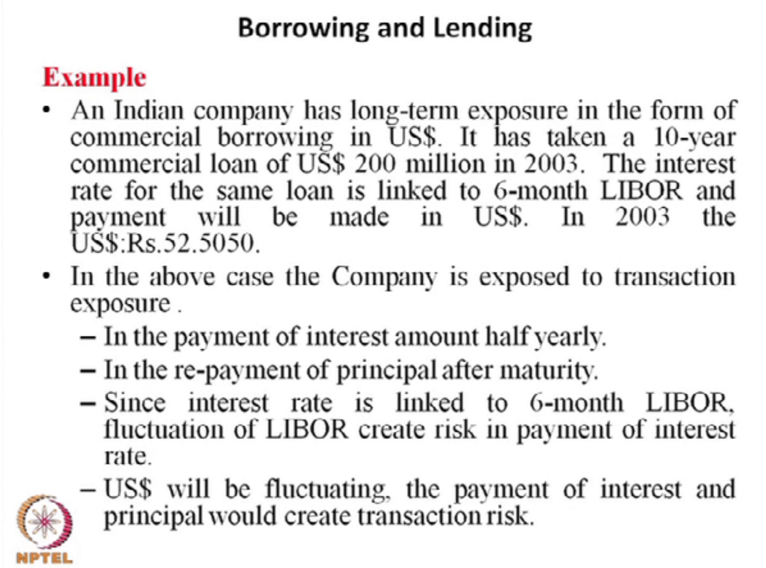

Now, coming to another problem what is called a borrowing and lending problem; here also we have to understand that I mentioned earlier the any kind of borrowing or any kind of lending where foreign exchange is involve. It create a transaction exposure, a corporate is borrowing foreign currency. So, corporate has to Indian corporate is borrowing foreign currency in from abroad. Corporate has to pay the principle after maturity and till the maturity the corporate has to repay what is called interest amount in foreign exchange. So, there will be a risk and the risk is since the payment and future oriented any fluctuation of exchange rate it is the exposure. So, it will create a foreign exchange transaction exposure.

Similarly, a Indian corporate lends a foreign currency to some abroad partner abroad person to abroad person is also create what is called foreign currency transaction exposure because the lender receive the lender receive interest payment from the borrower in foreign currency. The lender receive the principle payment from the borrower in foreign currency which are future oriented. So, all these transaction which are future oriented which are which repayments are future oriented period transaction exposure.

So, let us discuss a borrowing and lending side. If you see the problems here an Indian company has long term exposure in the form of commercial borrowing in US dollar. It has taken a 10 year commercial loan of 200 million US dollar in 2003. The interest rate for the same loan is linked to 6 month Libor and payment will be made in US dollar. In 2003 the u the US dollar and Indian rupee spot rate was 52 5050.

So, here where two kinds of exposures are there. First kind is you have to understand here there is a long term exposure because a Indian company has got a commercial borrowing from in the in US dollar for 10 years. He borrowed in 2003. He supposed to repay the principal in 2013 10 years will be over. So, that time the principle payment will be made, but in the meantime the Indian company has to pay interest payment. The interest payment generally is 6 month every 6 month interest payment will be there.

At the interest payment linked to Libor 6 month Libor every 6 month. What is the Libor rate? That rate interest payment will be there since Libor itself fluctuates. It create another kind of risk; the foreign currency is fluctuate it create a risk Libor fluctuate it will also create risk. So, here the Indian company face Indian company faces the commercial two kind of risk. One is foreign currency exchange rate fluctuation risk and Libor rate fluctuation risk. Two different risk are there.

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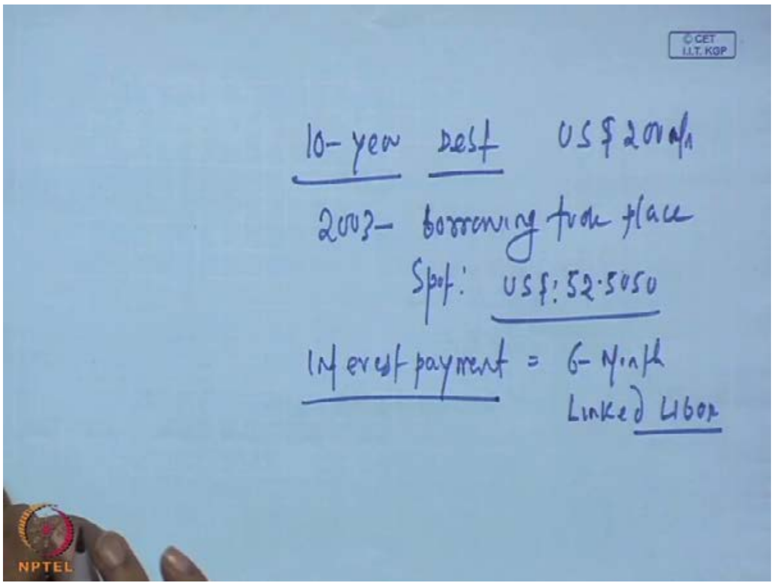

So, here long term exposures are there. So, long term exposure 10 years 10 year debt borrowing or commercial borrowing involving US dollar 200 million. And then in 2003 when the actual borrowing took place borrowing took place at that time the spot rate was US dollar 52 52 5050 are the spot rate. At this rate the Indian company got the 200 million dollar and he suppose to pay return the return the 200 million dollar after 10 years that is 2013. In between the company has to pay interest rate which is link to interest payment. Interest payment is 6 month every 6 month has to pay and this link to Libor London interbank offer rate London interbank offer rate is a fluctuating every moment and 6 month. Libor it linked to 6 month Libor. So, every moment the interest rate fluctuate. Every minute there is a risk every 6 month the company Indian company has to pay interest rate, so every in the in foreign currency. So, Indian company does not know what will be the foreign currency after 6 month or there is a transaction exposure risk. So, now, the payment half yearly you have to take payment.

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Transaction Risk: Principal Re-payment

- Since US$ may fluctuate over the year, it create transaction exposure.

	2003	2004	2005	2012
Rs. Per US$	52.5050	53.5060	54.6000	60.2000
Principal (US$200Mn)	10501	10701	10920	12040
Transaction Exposure	0	200	419	1539

So, the payment will be made half yearly. So, there will be risk the payment linked to Libor is fluctuate there is a risk. Suppose we understand the suppose the here if you see that suppose in 2003 when actually development took place that time the dollar was rate was 52 5050.

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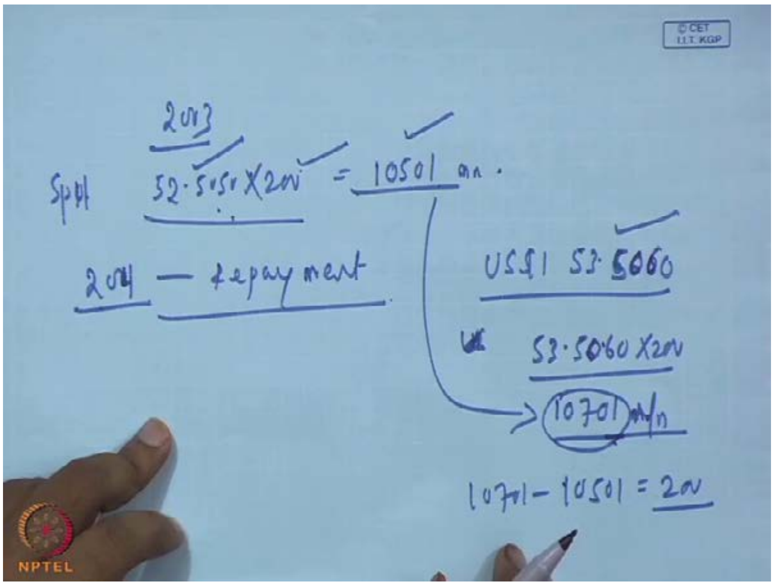

So, principle he got how much principle he got? The 20032003 suppose a spot rate spot rate was 52 5050 into 200 million he got 200 million US dollar. He got how much 10501 501 millions of rupees. So, he got million rupee 10501 million rupee. He got now in 2004 2004. Suppose you wanted to repay 2004; if you wanted to repay suppose that time dollar was dollar is selling at 53 5050. It is not 52 5050. Now increase to 53 5050 there is a transaction risk similarly, suppose 2005 you want to repay the loan.

So, it will be 546060 the repayment will be 10920. So, dollar is changing. So, amount of principle payment also fluctuate in 2012. Actually repayment take took place that time dollar is 62000. So, in he has to pay the Indian company has to repay 12040 amount of 40 amount of what is called principle amount. So, but he got how much he got 10501 principle. But because dollar is fluctuating and 2012 actual repayment took place that time he will pay 12040.

So, he received in 2003 the Indian company received 10501 rupee remain constant at 52 50. There will be no transaction exposure. Once the rupee increases suppose 53 5060 the amount will be 10701. So, transaction exposure is 200 million. Similarly, rupee similarly, 2005 suppose you want to repay that time rupee is 5460. The actual repayment will be 10920 rupee millions of rupee transaction exposure is 419 millions of rupees. But how we calculate this I have calculated this 52 is a spot rate. Now, suppose in 2000 2004 you want to repay repayment suppose take repayment of principle took place at 2004 in

2004 US dollar is US dollar 53 605060. Suppose it may be different suppose 5060. How much should he repay 200 million dollar to rupee 5350? So, how much you repay 53 5656 5060 into 200, so this amount to 10701, but actually how much he got 10501. So, but he is repaying same principle interest. I am not calculating here interest will be separate risk. So, only principle payment repayment suppose to return principle 200 dollar or equivalent of rupee of 10501 millions, but actual repaying 10701 millions of rupees. Why this arises? Because exchange rate, when he borrowed that time exchange rate 52 5050. Now, it is 53 5060 because of this is extra amount he is paying extra amount is how much 10701 minus 10501. This is 200 millions of rupee extra he is repaying. Only principle amount there is transaction exposure and this same thing I have calculated here for 2005 2012. And the principle itself creating a different amount. He is paying because of change in exchange rate or fluctuation in exchange rate. It is a transaction exposure principle amount only.

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Transaction Risk: Interest Payment

- Transaction exposure arises because of
  - Libor fluctuations
  - Exchange rate fluctuations

	Sep-03	Mar-04	Sep-05	Mar-12
Rs. Per US$	52.5050	53.5060	54.6000	60.2000
6-Month Libor rate	6.25%	6.85%	7.05%	7.25%
Interest Amount (US$ Million)	6.25	6.85	7.05	7.25
Interest Amt in Rs Million	328.16	366.52	384.93	436.45
Transaction Exposure (Rs. Million)		38.36	56.77	108.29

Let us come to the interest payment side. Interest payment side every 6 month he has to repay the interest every 6 month. He suppose to repay the interest here, suppose in September he is borrowed in march now every 6 month 6 month has come September 2003 6 month Libor has Indian rupee. At that time 52 5050 and Libor is 6.25 percentage; the interest amount will be 6.25 percentage. So, 6.25 6.25 millions of US dollar and interest amount in millions of rupee rate is 52 5050 into 6.25 millions of rupees it will be 6 328.16 millions of rupee. So, there will be no transaction exposure why because the current rate is 52 50 the spot rate remain constant suppose for trade change for trade is a march 2004. Again after 6 month again interest payment will be there. So, at that time rupee at that time rupee become 53 5060 dollar. Libor also change to 6.85. So, 6.85 he has to pay. So, now, 366 multiply the into 6.85 6.858 into 200 dollar 6 yearly 6 month interest rate. So, it becomes 366.52. But since dollar has changed to from 52 to 5050 to 53 5060 the difference has come around 38.36 extra payments are there.

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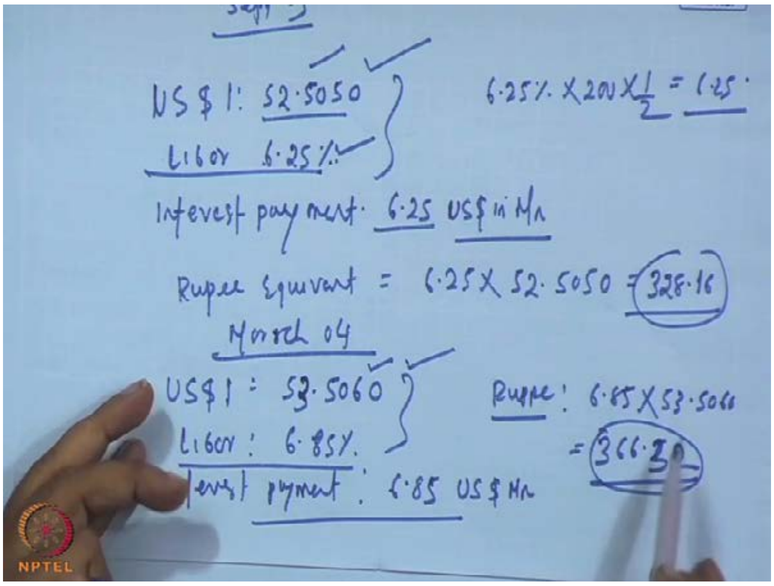

So, here the calculation is like that suppose at the September dollar rate remain constant as one dollar is 52 52 5050. Libor interest rate is 6.25 parentage and 6 month interest payment interest payment will be 6 month basis 6 month basis. So, 6.25 6.25 millions of US dollar in million because the amount principle borrowed is 200 million every 6 interest rate analyse is 6.25. 6.25 into 200 dollar into 1 by 2 because yearly interest rate 6 month interest rate amount will be 6.25. The calculation is 6 month interest rate is 6.25 percentage into 200 million US dollar into half 6 half yearly. So, it is come 6.25 millions of US dollar, but if interest rate remain constant at 52 5050. Then rupee equivalent will be rupee equivalent of interest payment will be 6.25 into 52.5050 it is coming around 328.16.

If here interest rate; if dollar rate remain constant then it will coming 620 this September 03. Now, next month is March 04 suppose March 04 has arise, so but here dollar may not remain constant one dollar suppose increase to 52 53 53 5060. Now, dollar may not remain constant after 6 month. Now, it is appreciated rupee depreciated to 535060. Now, what will be the interest payment Libor? Say at the same time Libor may not remain constant at 6.25 Libor itself is fluctuating.

So, Libor become 6.85 percentage then interest payment interest payment will be in interest payment will be in US dollar. It will be 6.85 US dollar in million US dollar in million. But this rupee equivalent how much rupee equivalent will be rupee equivalent will be 6.85 into now dollar has changed to 53? So, 53 5060 this is coming how much? This is will be 366.52. This now you see 6 month before it was 328.16 millions of rupee, now 6 month after it become 366.52. There is transaction risk.

So, the Indian company need to pay more. Why it is paying more? The principle amount remain constant 200 million. Here, he is paying more because rupee has depreciated from 52 to 5050 to 53 5060. One reason second reason is the Libor is fluctuating from 6.825 to 6.85. This two reason because of this two reason the Indian company is paying more and this open position he has not purchased any kind of risk management product to make to make the Libor constant or to make the rupee constant. There is open position in two side. One side is dollar side conversion rate is open position interest payment side. Libor is open position both open position create a transaction risk for the company and company is going on paying a different amount a at different phases of payment and this is called a transaction exposure and in lending and borrowing side and same thing I mention here rupee is go rupee go rupee dollar conversion goes on appreciating rupee is go depreciating further and at the same time Libor also appreciating. So, there will be more transaction exposure in this process and this process the transaction exposure is two way one way is Libor fluctuation another way is rupee dollar fluctuation. Both side the transaction exposures are there.

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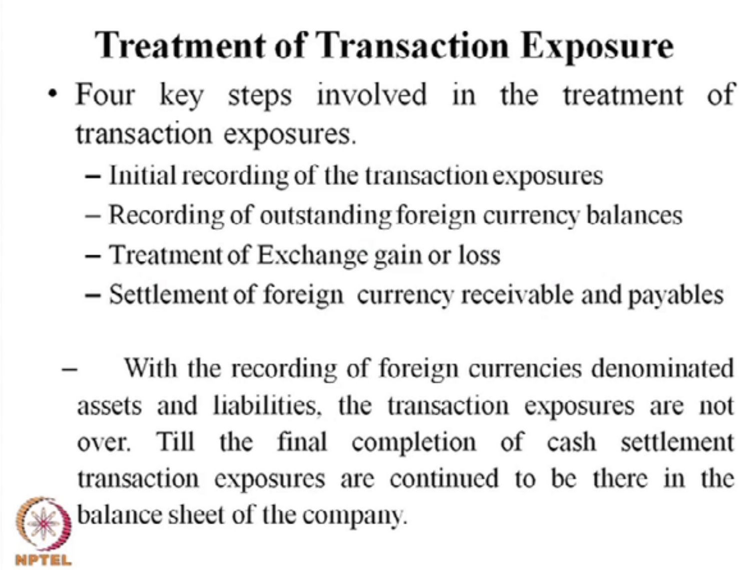

So, then question is how to how to treat this transaction exposure or how to manage this transaction exposure? There should be treatment for transaction exposures are there because transaction exposure create uncertainty in the payment and receivable side. It create uncertainty international trade, it create uncertainty borrowing lending side, it create uncertainty in any kind of foreign exchange transaction side. So, it need to be prevented or need to be absorbed in a different management practices, the practises available to us through what is called transaction exposure management system. Then transaction exposure management systems are there the four key step involved in treatment of transaction exposure.

So, first is you have to record the transaction exposure initial recording of transaction exposure is very important. Then second is recording of outstanding foreign currency balances because we have to identify transaction exposure first time and what is the open position of transaction exposure or in foreign currency that has need to be identified and then you have to understand whether I am gaining because of transaction exposure. I am loosing because of transaction exposure.

So, that some kind of forecasting you have to make for gain and loss of transaction exposure and finally, settlement of foreign currency receivables and payment. Here you have to settle the foreign currency or transaction exposure loss or gain by going for a what is called risk management product and risk management products are available to us in the form of forward contract huge foreign currency. Futures foreign currency options and also, me extent we have the negotiating skill. Suppose negotiating skill in the form of operational risk assessment approach and this process. Also, extent help in minimizing the transaction exposure if you negotiate with your party that I am going to pay a constant amount then transaction exposure automatically removed. But the negotiation skills dependence upon the bargaining power of two parties; the part one party is very high bargaining power he can negotiate. But two parties are both are same bargaining power they have to come to and negotiation side and they negotiate that that should be transaction exposure. Let us take the transaction exposure 50 50 side. In this process you can minimize the transaction exposure.

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Treatment of Transaction Exposure

Example

An Indian garment exporter, as on 20th December 2011, had exported US$ 1,65,000 worth of garments to US on 3 month credit basis when the US$ was equivalent to Rs.51.5500. The payment would be made in 3 installments due on 20th March-12 (25% payment), 15th April-12 (65% payment) and rest on 20th May 2012. In the meantime, rupee-dollar exchange rate changed and it was Rs.50.8500 on 20th March, Rs.51.6500 on 15th April and Rs.53.25 on 20th May 2010 per US $. Estimate the transaction exposures.

So, transaction exposure how to treat it there are different way to treatment and the treatments are available towards in the form of forward currency management system in the forward currency management system. In the form of future currency foreign currency option and foreign currency forward price and we will be discussing about forward foreign currency forward side. How you can use the transaction exposure management system?

Let us discuss problems first. Problem an Indian exporter export on 20th of December 2011 US dollar 165000 worth of garment to a equivalent to a US to US on 3 month credit basis. When the US dollar was equivalent to 51 5500 an Indian exporter is exported garment worth of 165000 US dollar on 20th December 2011. And that particular day that particular day the exchange rate market quoted rupee as 51 5050 per dollar the payment would be made. It is a after three month payment will start on credit basis. He exported he the Indian exporter exported on credit basis means the US person got the export on credit side. He has to repay within 3 month in different instalment amount and payment would be made in 3 instalments due on 20th march 2012. 25 percent of the amount that is 165000 will be paid on 20th march, 15th April 2012. 65 percent of the 165000 will be paid in on 15th April and rest amount on 20th may 3 instalment 165000 US dollar will be repaid by the US importer to the Indian exporter.

However, three instalments would be paid in three different time period and in three different time period rupee dollar fluctuating in the market. And we have a transaction exposures. Here, the Indian merchant is a transaction exposure in the meantime rupee dollar fluctuation are there and it was expected that the exchange rate will be 50 85 point 20th may, 20th March 5325 on 15th April and 5325 on 20th March 20th May of per US dollar.

So, in this process exchange rate fluctuating and the rupee dollar will be 5085 on 20th March 5165 on 15th April and 5325 on 20th may. So, these different exchange rate, all these three different all these exchange rate, rupee dollar exchange rate different from the current spot 5155. So, there is a transaction exposure. The question is here you have to identify the transaction exposure and estimate the amount of exposure.

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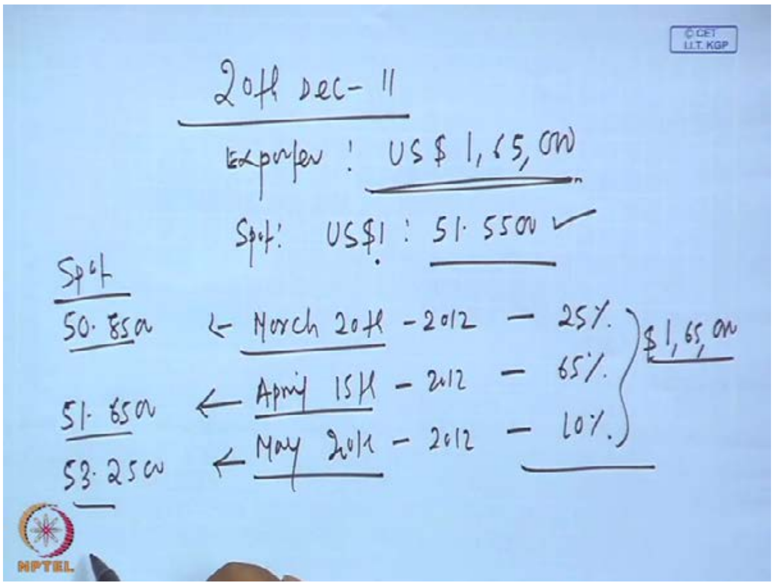

Now, let us do the problem what is the problem on 20th April. On 20th December 2011 Indian exporter exported US dollar some exported what garments equivalent of one US dollar 165000. And on this rate spot market exchange rate was one dollar is equivalent to 51 500 and this was exported on this time 51 5050 was Indian rupee. Now, this repayment of US dollar 165000 paid about 3 instalment. The instalment due instalment due first due has on March 20th 2012. How much 25 percentage second due is April 15th 2012? 65 percentage and last May 20th 2012, that is 10 percentage, this percentage of 1 lakh 65000 US dollar.

So, this a due date and this due date the percent recorded that on March. On March, the spot rate would be on the march the spot rate would be 5050 50 85 and on April it will be 50 51 65. And on May it will be 53 25. So, this is a spot rate spot rate prevailing. This now this all this spot rates are different from the spot rate of export debt exported debt. The debt 20th December the Indian exporter exported goods of worth 165000 US dollar that debt the exchange rate was 51 550. But he is getting the instalment payment in three different time period in three different rates. And all these rates are different from these rates. So, there is a transaction exposure. So, this transaction exposure need to be address and need to be assessed whether there is a gain or loss.

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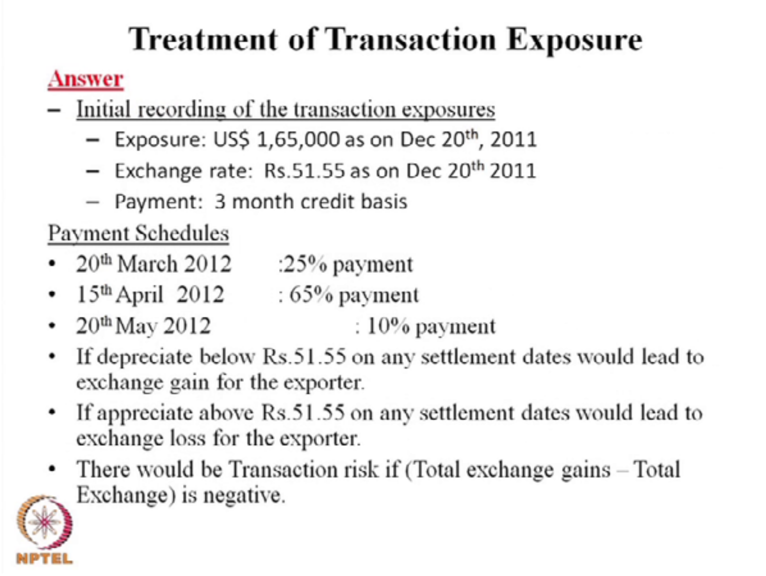

So, now let us do this problem. Now, if you see if you see the payment will be made on different time period. Now, on 20th April first payment instalment payment should be that.

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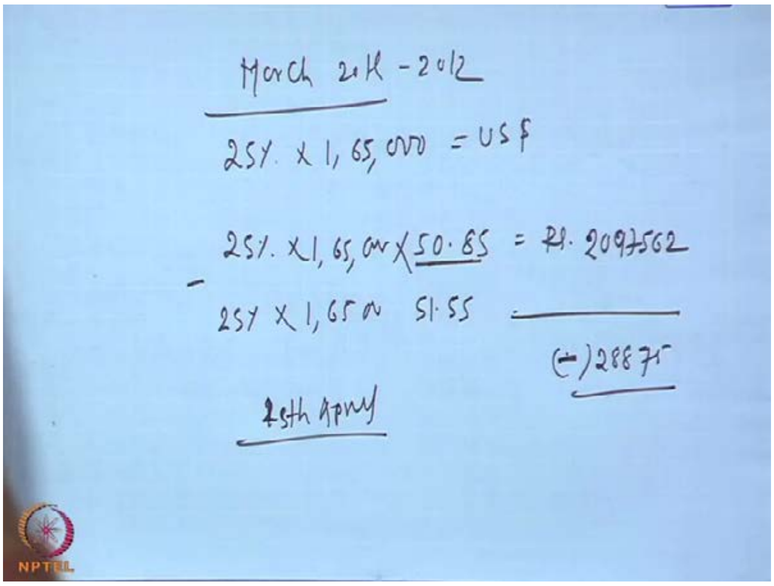

So, first instalment payment is on March 20th 2012. How much 25 percent of 165000? This is equivalent of US dollar 165000 and this 165000 would be converted into March date spot rate the March date spot rate is 50 85. So, 25 percentage into 165000 into 50 85 will be equivalent to how much rupee? How much rupee it will be? It will be gained suppose it in different way.

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Treatment of Transaction Exposure

20-Dec-11		
US$ 1	51.55	
	US$	INR
Sales	165000	8505750
Receivables	165000	8505750

20-Mar-12		
US$ 1	50.85	
	US$	INR
Installment Due	41250	2097562.5
Receivables	41250	2097562.5
Exchange Gain		-28875

15th April 2012		
US$ 1	51.65	
	US$	INR
Installment Due	107250	5539462.5
Receivables	107250	5539462.5
Exchange Gain		10725

20th May 2012		
US$ 1	53.25	
	US$	INR
Installment Due	16500	878625
Receivables	16500	878625
Exchange Gain		28050

	INR
Total Exchange gain	38775
Total Exchange Loss	-28875
Net Exchange gain	9900

So, the receivable side if you see that 51 55, so sales done 165000, so if you at 51 85 the equivalent amount was 8505750. Multiplication of this 2 and Indian exporter suppose to receive this much of dollar, this much of rupee now on 20th March. First instalment he is receiving instalment amount that is 16525 percent of 165000 that is 412500 US dollar and this will be converted into what rate? 50 8, because on 20th March US s dollar is 50 85. He is getting this much of amount.

So, exchange loss will be there. He suppose to get at 5155, but he is getting at 50 85. So, that is a loss of 2 lakh to 28875. How the loss is calculated? So, here suppose to receive how much suppose to receive rupee equivalent amount 2097562? But he suppose this is prevailing at March. But actually suppose to receive 51 55 because at the current the spot rate of December. So, there is a loss of loss of what if you calculate this minus this loss will be around loss will be negative side 228875 to March loss will be 28 28875.

Similarly, on similarly, on 20th April, 15th April next instalment date is 15th April. 15th April if you see here the US dollar is 5165. But contracted 50 50 5155 now US dollar is depreciated rupee is a rupee depreciate US dollar appreciated.

So, instalment is 70 65 percent 65 percent of 1 lakh. 65 is 10725 US dollar. How much suppose to receive this into this? 10725 into 5165 rupee amount is this much of rupee amount, but rupee amount this much receivable also this much. But actually there is a gain here why rupee depreciated from 51 55 to 5165 10 paisa gain. 10 paisa gain 10 paisa rupee depreciated for that reason he is getting 10725 extra amount, but in case of 20th march there is a loss of this much in 20 15th April. There is a gain of this much, but final payment 20th may 20th on 10 percent suppose to get 25 percent is already got in 20th April 20th march 65 percent we got in first 15th April.

So, another 10 percent suppose to get in 20th May. 10 percent of 165000 is 16500 and rupee that time further depreciate to 53 25. So, he is getting a amount of say 878625 and rupee depreciated he got a extra amount to the gain is in place of 51 55. He is getting per dollar 53 25 there is a gain here.

So, total gain is he is getting a gain of total gain if you calculate total exchange gain is this plus this is equivalent to 38775, total loss because of rupee appreciation to 88875. There is a loss here net gain is 9900. So, net transaction gain is 9900 Indian rupee; however, there is a fluctuation rupee is against US dollar create a transaction exposure and transaction exposure is spread over three different instalment. Three different instalment three different rates are available and this creates a transaction exposure.

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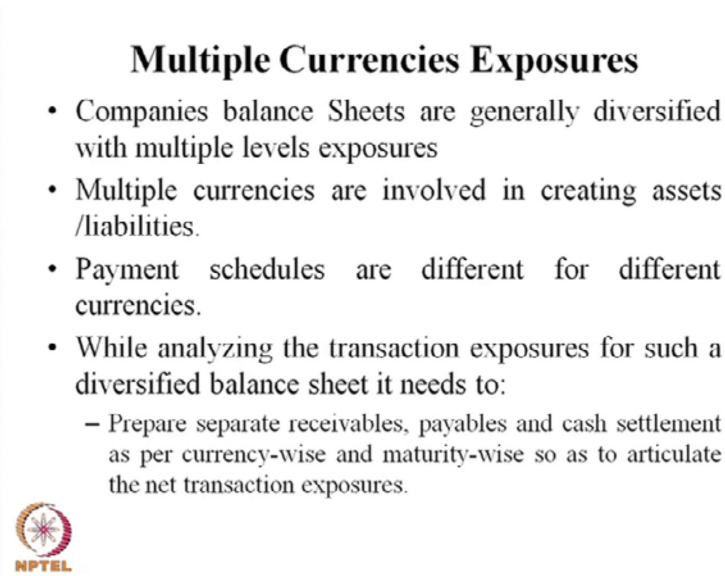

There is also multiple currency exposures are there. Multiple currency exposure because each currency have a own gain and loss will be there. So, there will be multiple currency exposures are there.

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Multiple Currencies Exposures

- An Indian Textile exporter has following exposures as on March 20, 2010. Estimate the net transaction exposures currency-wise.

Receivables/Payables	Value	Maturity Days
US$ Import Payable	90000	45
Euro Export Receivable	25000	55
US$ Interest receivable	11000	45
US$ Interest Payable	9,000	45
Euro Loan Installment Payable	80,000	55
US$ export Receivable	87500	45
Euro Export Receivable	70000	55

If you see here the US dollar imported to importable euro; euro exportable and US dollar receivable US dollar payment euro payment. All this are there different maturity period different receivables and payments are there and on this basis how to estimate the transaction exposure we can we can go for euro receivable 55 days euro payable 55 days.

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Currency-wise & Maturity-wise Exposures Estimation

Euro Receivable for 55 days maturity	95000
Euro Payable for 55 days maturity	80,000
Net Transaction exposure in Euro	15,000

US$ Receivable for 45 days maturity	98500
US$ Payable for 45 days maturity	99,000
Net Transaction exposure in US$	-500

So, net transaction exposure of euro is 15000. Similarly, US dollar receivable 45 days 98500 US dollar payable for 45 days 99 net transaction exposure for US dollar is 500. So, there is a different dollar different net exposures are there net transaction exposure gain is there in case of euro dollar euro currency net transaction exposure US dollar loss is there 500. So, there is a different maturity period different currency type exposure importer are there.

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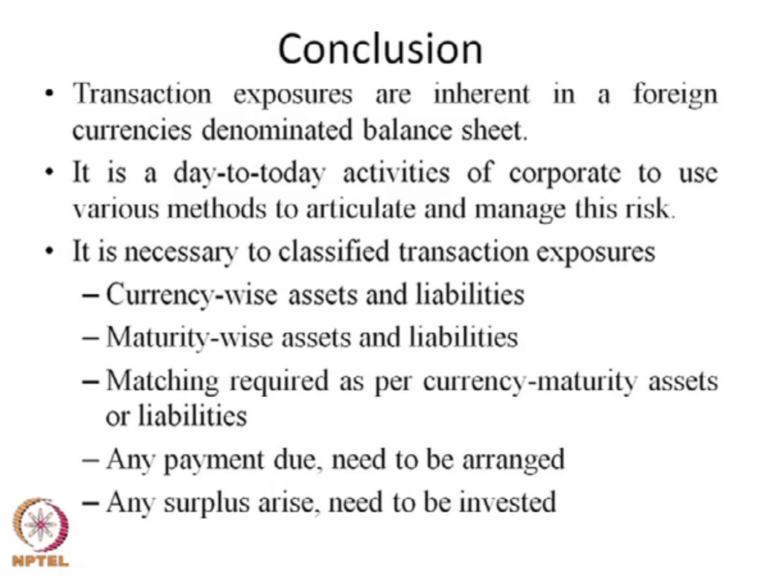

So, conclusion a currency-wise exposure currency liability assets are there. The asset liability fluctuation create a exchange rate risk exchange rate risk create transaction exposure. How do transaction exposure we can have to do? You have to segregate the transaction exposure currency-wise maturity-wise and surplus and payment side and on that basis you can identify transaction exposure on different amount wise and try to address the transaction exposure. And at through identification through settlement process and further treatment of transaction exposure can be done through the forward currency exposure and forward currency payment side.

Thank you.

You can see the references. Here references are same thing Resnick Halliday, Resnik Irwin 2004 and multinational financial exposure Alan C further than you.