Management of Commercial Banking
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Lecture 18
Commercial Bank Risk - III

In the previous session we discussed about the credit risk and in that session we discussed about the, what is credit risk, and what are those different sources of the credit risk, and as per the Basel norms where, the banks are also exposed to different other types of risk like your market risk, operational risk, liquidity risk etc.

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In today's class or in this particular session we will be covering of two different types of risk one is your market risk and the other one is the operational risk. So, already what we have discussed in the previous class that the operational risk is also playing a very major roll. In today's context because of the complexity in the market system.

And this heavy reliance on the technology and heavy reliance on the different kind of activities which is not operated by the human being or which is not driven by the only human capital. So, because of that we are exposed to certain kind of risk which is arising due to technology and all.

And as well as the frauds which are manmade and the failure of the other aspects, natural calamities and all these things. Then, market risk is obviously there which is consider as a systematic risk which is affecting the business of any organization at any circumstances, so because of that the Basel committee has given the importance to this type of risk whenever we talk about the measurement or the exposure towards the risk by the commercial banks.

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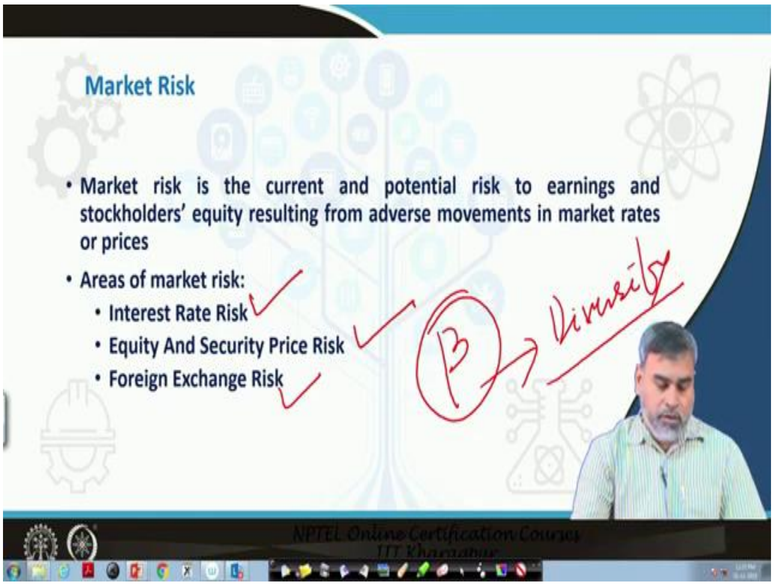

So, let us see what do mean by the market risk, whenever we talk about the market risk, the market risk is nothing but, how the current and potential earnings of the particular company or particular bank is getting affected due to the change in any kind of macroeconomic fundamentals, and the macroeconomic fundamentals can be anything.

Here, we are talking about three things one is your interest rate, stock price or bond price anything and foreign exchange risk, if there is a fluctuation in the interest rate, then obviously the value of the balance sheets items of the commercial banks get affected.

If there is a fluctuation in the stock prices or the equity prices or any bond prices, then the value of the investments get affected, if the value of investments get affected, then automatically the profit and the shareholders value gets affected and because we are living in a globalized economy or the markets are integrated we have the existence of many multinationals.

We are highly exposed to the exchange rate risk because, the expose or the risk always involved whenever the operations are happening in many countries so if there is a fluctuation in the exchange rate then obviously, the balance sheet of that particular company or the particular industry gets affected and because of that it also affects the profile or the value of the balance sheets items of the particular commercial bank.

There are many other factors like it can also happen due to the inflation it can also happen related to the other macroeconomic indicators but here, mostly the market risk arises due to the major factors like interest rate, the equity prices or the other asset prices in the financial system, then we have the foreign exchange rate.

So, that is why we have consider these three aspects here we can also consider the other thing. So, if you remember that whenever we go for the asset pricing, in the asset pricing basically the beta which is consider as a market risk, and you remember this risk is relatively difficult to diversify in the portfolio management process.

It is difficult to diversify what the banks basically have to maintain or to adjust their assets and liabilities by that they can less expose to or even if they are expose to this what at least the mismatch between asset and liabilities will not be taken place if the proper kind of strategy has been implemented for the management of the market risk in that particular bank.

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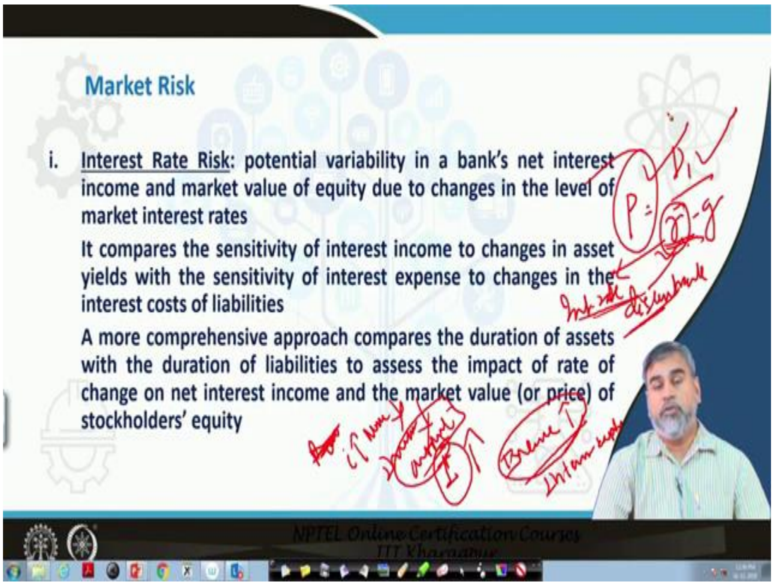

Then coming back to one by one that whenever we talk about the interested risk, the interested risk is what? It basically shows the potential variability in a bank net interest income and market value of equity due to changes in the level of the market interest rates.

How, because you see once the interest rate gets sensed if the interest rate increases let, I is equal to interest rate that will increase then the interest income will increase. And interest expenses also will increase. But, if the interest income wearing assets are more, then the interest wearing expenses then the net income of the particular bank can increase.

If it is vice versa then income also will go down, and already we know that whenever we talk about the price of stock. This is what, it is a discount model $D_1/(r – g)$ and what is your r? The r is the discount rate, and this r gets affected whenever there is a change in interest rate. So, discount rate gets affected whenever there is a change in the interest rate. So, automatically the price of the particular stock also gets affected due to the interest rate.

Let us think from the macro point of view, if you thing from a macro point of view, what happens, that if there is money supply then interest rate can increase, if interest rate will increase then, the money supply will go down. If the money supply will go down, then investment in the equity market will go down, then obviously, it will have the impact on the output. It is a normal macro economic sense.

But, here if we are putting in a simple a dividend discount model or any discount flow model we have seen that the interest rate has a clear cut impact on the cost of equity, whether if the cost of the equity gets affected automatically the price of the equity is also gets affected. So, this is what the change in the interest rate will have a huge impact on the net income of the commercial banks and as well as the stock price performance of the bank.

So, then if compares the sensitivity of interest income to changes in asset yields with the sensitivity of interest expenses to change in the interest cost of liabilities. Generally we call it the dollar gap analysis or the rate sensitive analysis that we will discuss further, but this is what basically how the interest rate basically affects that and the bank has to develop the particular strategy how they can, hence that particular or reduce that interest rate risk in the particular system because anyway interest rate is going to be changed.

And predicting the, direction of change in the interest rate is also relatively every riskiest strategy in the financial system, always we know that. And from there also we can go for a thorough analysis of the duration of assets and duration of liabilities which is called the duration gap analysis which is linked to the value of the equity.

That also will discuss in detail but the question here is that how exactly the interest rate or really the interest rate is going to affect the price of the stock and how the interest rate is going to affect the net interest income if the interest rate changes will have the impact on these two which are supposed to be the indicators of the bank performance, then the banks are basically expose to the interest rate risk which is the part of the market risk. This is what basically we are trying to discuss her

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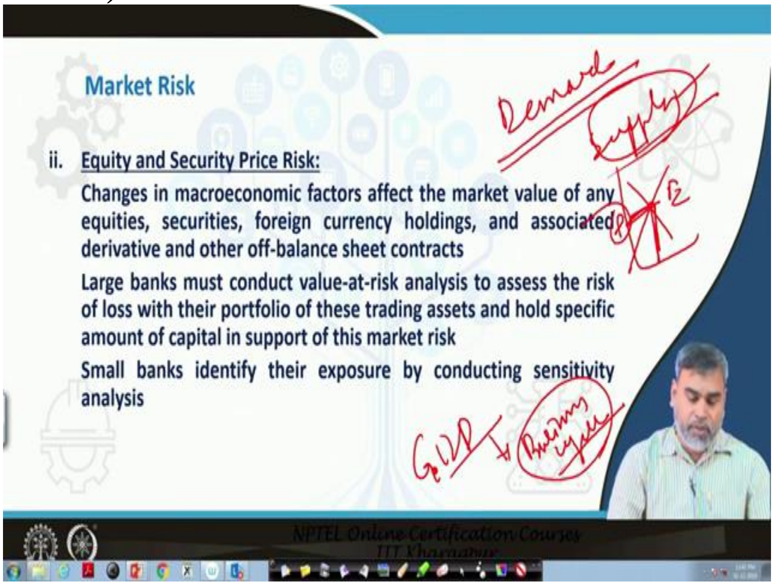

Then next is basically what, an equity or security price risk. So, changes in the macroeconomic factors affect the market value of any equities, securities, the foreign currency holdings, the derivatives and the other off balance sheet items. What does it mean, any changes in the macroeconomic factors for example, if you talk about the change in the GDP, growth rate of the GDP which is basically considered here, growth rate of the GDP is consider as the business cycle indicators.

So, then if there is change in the business cycle then it will have a huge impact on the demand and if the demand gets affected then we have supply side which is not that way changing in nature. So, then what will happen this will make it disbalanced or dis-equilibrium in the system between the demand and supply then automatically the value for any asset for any asset price is determine with a demand and supply, equilibrium basically decided on the basis of the demand and supply.

So, if there is any disruption in terms of demand or in terms of the supply then automatically what will happen, that the price gets affected, so the price gets affected then it will have a spillover impact on the different segments of the economy because all the economies are highly integrated and once, this spot possessions gets affected, then obviously the products which are designed on the basis of the spot market like your derivatives instruments their prices also get affected.

So, even if you have many complex products like CBO, CDO there are many products what are the banks have competed it and how to use it in the system. But still, the value of those products gets affected once the macroeconomic condition, then the system gets affected.

So, macroeconomic fundamentals is the major reasons for creating the market risk in the system that includes the business cyclic factors, that includes interest rate that already we have discussed that is the price stability that is basically anything, industrial productions anything, whenever any macroeconomic indicator sense that will distraught the balance sheet of the commercial banks and as well as the pricing of the assets what the banks are using further investment to maximize the result.

So, what these banks basically do? There are many methods are recognized by the different bodies particular the regulatory bodies, including the central banks and as well as the Basel committees they have recommended that the particular thorough empirical analysis has to be carried out that what methods has to be adopted by that in the beginning the bank can measure that particular risk and accordingly they can make their contingency planning or the corrective actions can be made.

So, historical what we have observed the large banks basically conduct the value at risk, to assist the risk of loss with their portfolio of this trading assets and hold specific amount of capital in support of the market risk and how the risk can be adjusted or can be minimize the allocation of the capital, so that is why capital allocation is a basic or integral part of the risk management process.

How much capital we can allocate, to minimize that particular risk that also have to be consider. Small banks may not have that much expertise what is value at risk, and all that we will discuss in the next session, the small banks basically identify their exposure by conducting the sensitivity analysis. What do mean by sensitivity analysis, the sensitivity analysis is nothing but that whenever we try kind of a scenario building that if something will change by certain percentage then how the other things gets changed in the different scenarios.

So, because of that either we can go for a typical sophisticated risk modeling, risk methods to forecast the risk how we are going to expose towards that or we can make a scenario building by that this kind of risk can be measured in the beginning and we should be ready and the corrective actions can be made to get read out this kind of risk in this particular system. So, this is what basically or equity or price risks the security price risks which arise due to the macroeconomic changes.

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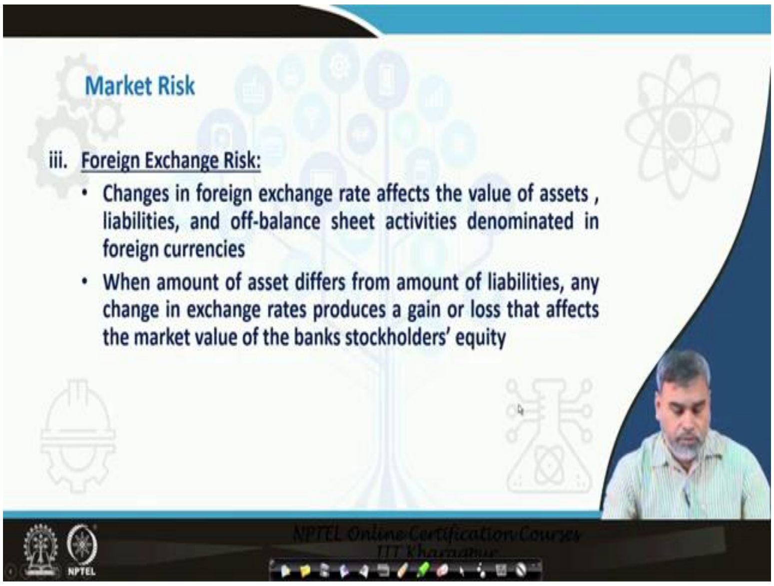

Foreign exchange risk it is already the part of the macroeconomic fundamentals only, the changes in the foreign exchange rate affects the value of the assets, liabilities and off balance sheet activities which are dominated in the foreign currencies or denominated in the foreign currencies because, the banks either have the operations in many countries because, banks are only the organization who does the foreign exchange business through banks only all those foreign exchange business basically always carried out, or the banks have provided the loan to the different agencies who are exposed to the foreign exchange rate fluctuations.

So, if there is a foreign exchange rate fluctuations, obviously the value of the other clients who have taken the loan, those things gets changed if those things gets changed they may not be able to repair the loan whatever they have taken from the bank, or the bank might have the foreign exchange exposure. So, all these things in aggregate will distraught the value or will change the value of the different kind of performance, measures of the commercial bank.

And as well as the off balance sheet items also gets affected like the value of derivatives, value of the loan commitments, the value of guaranties and all these things because of fluctuations in this data. So, when amount of asset differs from amount of liabilities, any change in exchange rates reduces a gain or loss that affects the market value of a bank's stockholders equity. End of the day because the markets are integrated and the profit ability has relationship with the stock returns or the cash flow has a relationship with the stock returns then once the cash flow gets affected then automatically the equity prices of that particular bank gets affected.

So, foreign exchange is an exchange rate fluctuation is a major factor which is affecting or which is basically creating with, due to that the banks are basically exposed to the different type of market risk in the system and by that the balance sheet gets affected adversely on the basis of the fluctuations. Or if it is in the positive side, may be balance sheet gets affected positively. But, they are exposed to this particular foreign exchange rate risk.

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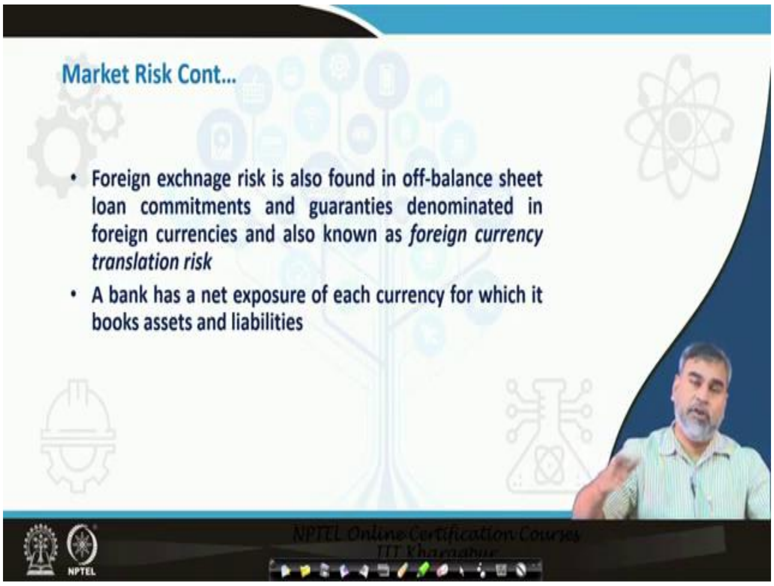

Then, if you see the off balance sheet items what basically we see, the foreign exchange risk also found in off balance sheet loan commitments already I told you that loan commitments gets affected the guaranties gets affected, and whenever this kind of thing basically gets affected, we basically call them, the foreign currency translation risk.

Because, we are basically converting into the foreign currency. Let, any commercial bank has given a loan guaranty or any kind of services to organization who based in foreign country. So, if there is and money has to be paid in terms of rupee, and bank is situated in India.

So, in that context if there is the exchange rate fluctuations then obviously, there is a rupee versus dollar or rupee versus pound and conversion changes, if those conversion changes then automatically what happens, that the total value of that particular system changes because, we are translating that particular currency to another currency. And because of the exchange rate fluctuations that particular conversion value gets changed. So, once that conversions value gets changed we are basically suffering from, certain kind of risk in that particular system.

A bank has net exposure of each currency for which it books assets and liabilities. You see that for each type of business bank calculate how much is the risk exposure towards that and if bank has the multiple business in terms of foreign currency then for each currency or multiple currencies are used for the transactional activities then for each currency the exposure banks calculate.

And end of the day they aggregate that how much total risk exposure they have towards the different type of currencies, what this particular business is, denominated that actually you have to keep in the mind. If it is highly denominated with respect to four currencies five currencies for each currency they calculate the exposure and finally the total risk can be measured through that.

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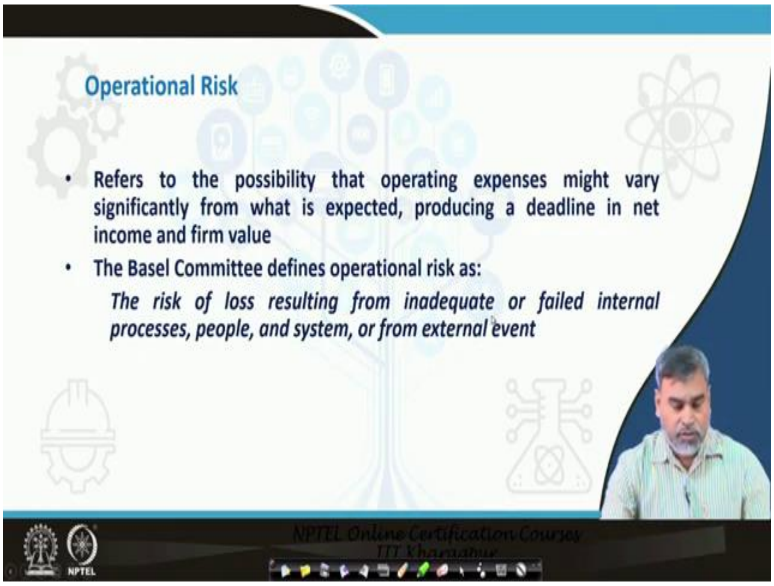

Then the other important risk is, operational risk and what do mean by the operational risk, the operational risk basically what it refers to the possibility that the operating expenses might vary significantly from what is expected, there may be a deviation what is the expected operating expenses and what is the actual operating expenses which produces a deadline in the net income and the firm value. Any expenses, any income of the commercial bank if it is gets changed then the final net income or the net profit or the value of firm gets affected by that.

So, according to the Basel committee if you see, how this operational risk are define, the operational risk is nothing but the risk which is resulting from inadequate or failed internal process which includes many things people, system and from the external event. External events mean it can be natural calamity it can be government policy it can be anything.

So, whenever we talk about this in aggregate and most of the variables are subjective nature but, that is why the operational risk calculation is relatively difficult all the Basel has recommended certain approaches for that we will discuss further that one. But, the question here is that whenever we talk about this we basically see that the operational risk is a combination of the many types of risk what the banks are expose to.

So, the combination of all segregation may not be possible at in adequate manner but, the aggregation can be possible in the sense that how much they exposure the commercial bank has towards that operational aspects that can be calculated in general and finally we can consider that particular aspect while deciding the target of the commercial bank or while targeting the particular return level or the risk level or the profit level of the commercial bank.

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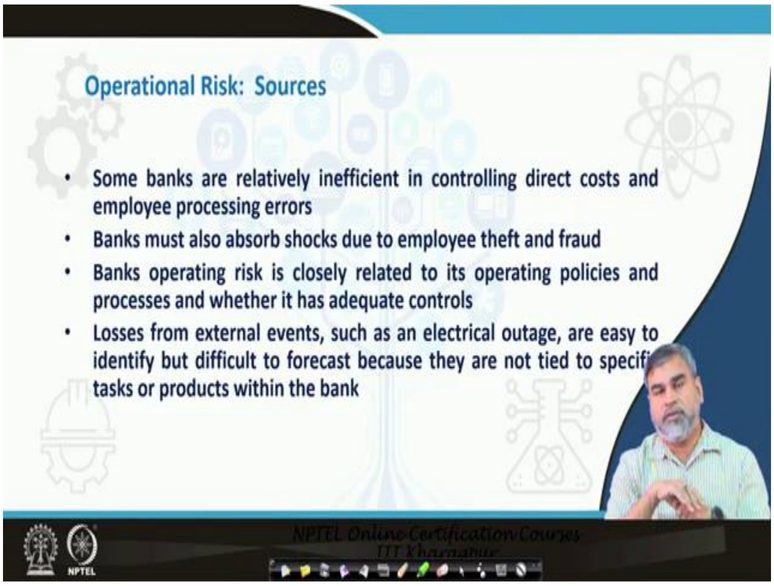

So, there if you see that some banks are relatively inefficient in controlling the direct cost and employee processing errors. There are many errors some time inefficient employees are there and the banks are not able to control the direct cost what they are incurring. So, then that time the operational cost of the bank increases.

That means it is also related to inefficiency of the employees the same work can be done in 2 minutes some employee is taking 20 minutes, or employee is not that efficient or is not regular to the office or even if the employee is coming the productivity of the employee is very less, so in that particular point of time the operating cost of the commercial bank increases.

So, that is why that means it is one thing is inefficiency with respect to the controlling the direct cost and the processing errors what the employees make, that is a first source of the operational risk and second one is which is very unique in nature, bank also must absorb the shocks due to employee thefts and the fraud.

And now a days the frauds are increasing like anything in across the financial system the because of the different behavioral biases and the greed and all these things makes the system more unethical and because of that the frauds are increasing and why the Basel committee has given much importance to operational risk, the reason is the probability of fraud or the occurrence of fraud in the commercial banking sector or in general in the financial sector has gone up.

And the fraud leads to a high level of risk in the system and theft is a part of that but, it may not occur every time but the fraud is happening frequently. You have many examples in the system now a days that which basically has witnessed many frauds which is happening in the system.

Because of that also the operational cost of the bank increases and the banks are suffering from the operational risk for that. Is also related to operating policies and process to understand whether the bank is adequately control those things or not. Losses from external events like electrical failure or technical failure these are easy to identify or difficult to forecast. When the failure will be there for example, you might have gone to the bank, bank will say that, we cannot provide with the services because the services system failure.

There is no connectivity, in the online banking system we are more confine towards this we are thinking about connectivity and all this thing, they said there is no connectivity, in that particular point of time it is very difficult that what exactly, the customer how the customer will get the services and how the banks basically try to minimize that particular cost.

So, or natural calamities something some fraud has taken place there is heavy rain because of that there is some problem with respect to that particular banks, and there are many things which can create the particular problem to the system. So, because of that what happens that in general the operating cost increases and by that what we can say that the total profit of the organization or the commercial bank gets affected.

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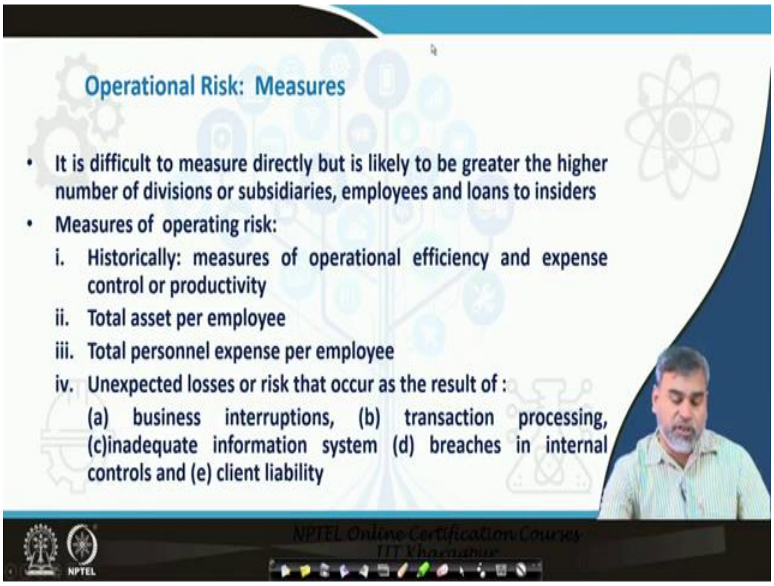

Then, we have another thing it is difficult to measure directly the operational cost but is likely to be greater the higher the number of divisions of subsidiaries, employees or the loans to the insiders. If you want to measure the operating risk historically the measures of operational efficiency and the expense controller productivity. Proxy is total asset per employee that means it shows the employee productivity, productivity ratio that already we have discussed.

The total personal expenses per employee, per employee how much expenses we are making, that means it show that whether the employees are efficient enough to generate the profit at the revenue for the organization or not, and the unexpected losses or risk, which can arise due to the business interruptions, transaction processing, inadequate information system, the breaches in the interval controls and the client liability.

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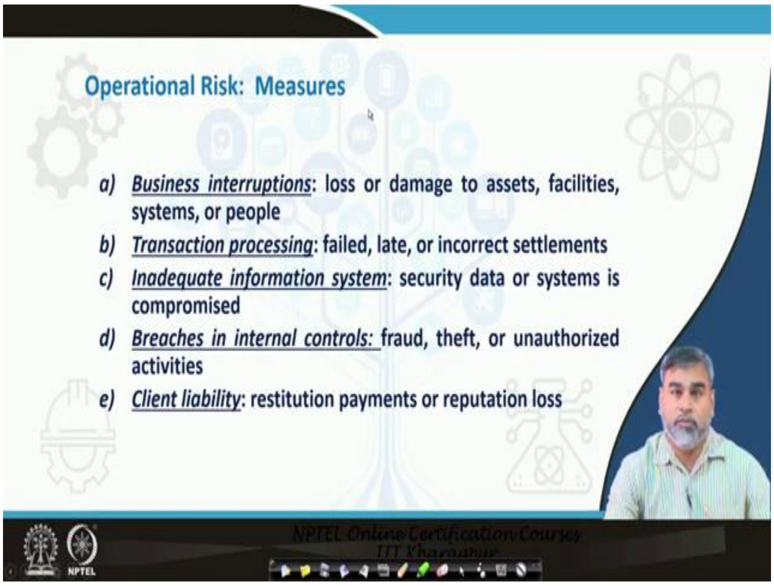

So, one by one if you see that how basically it works, or what is the different examples related to this, the business interruption means it is a loss or damage to the asset, the facilities, systems, or the people, anything can happen with respect to the interruptions in the business of that particular bank, transaction has been failed or because of the connectivity it is late, or the settlement wrongly somebody has made a wrong settlement again the settlement has to be reverted back.

For that we are consuming time, we are incurring cost for that employee we are also consuming certain cost with respect to correctness of the machines all these things the transaction processing is also can increase because of that, inadequate information system, sometimes the information or site is hacked or other people got the information because of that who takes care or may be took that advantage to get the benefit out of this.

And but which has an adverse impact on the banks profitability. So, because of that, that is why security is a major concern now a days, there are many online frauds, there are many cyber crimes which are happening and the sometimes the bank is bearing lot of loses because of that and bank is able to is not able to forecast those things in the beginning because of that there is no such provisioning is made within the commercial bank for this and what they are exposed this kind of risk always, fraud, threats and unauthorized activities sometimes we have seen that the activities which are happening that is beyond the power of that particular bank, sometimes the services of the letter of credit has been issued which is not in the perview of that particular bank.

But, again there is sometimes goes wrong then the commercial banks are incurring a huge loss we have the examples on this and that also leads to the adverse impact on the profitability and as well as the value of the equity because that creates a larger impact on the sentiment of the investors who are investing in that banks stock.

Then we have the client liability which is basically we can say that reputation loss or we can say that the payments basically, what they want to make they can stop this, or they can withdraw their money, then by that this is basically increases the availability of the money with the bank or they are exposed to more risk in terms of the operational activities that also leads to the more operational risk.

So, this is what these are the ways the sources of operational risk can be defined or this is the way this can be measured in a raw sense or in a simpler sense, but the actual there are different approaches what recommendations Basel committee has given that we will discuss in the forth coming sessions.

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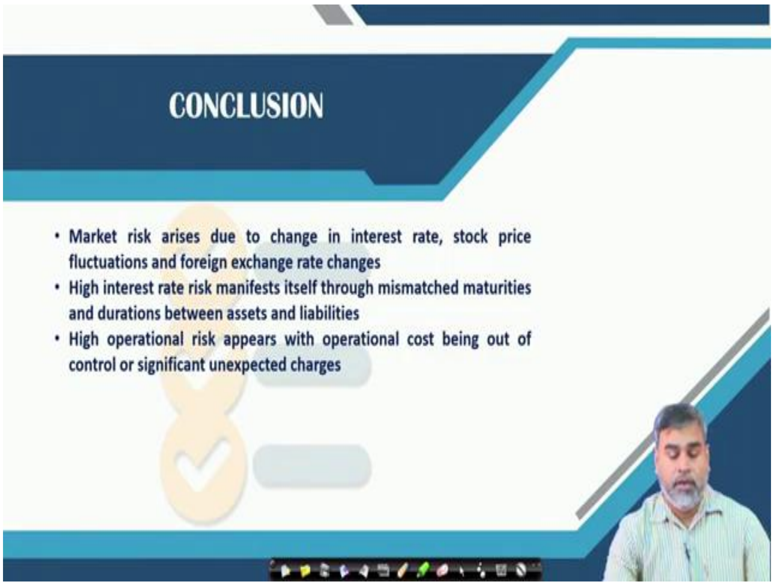

So, what we have discussed that, a market risk arises due to the change in interest rate, stock price fluctuations and foreign exchange rate changes. The high interest rate risk manifests itself through mismatched maturities and durations between assets and liabilities because it has adverse impact on the balance sheet or income statement of the commercial banks.

High operational risk appears with operational cost being out of control or significant unexpected changes which are happening in the system where this can happening due to the internal failure in efficiency of the employees, external forces then we have the frauds we have the threats we have the technical failure all these things are the major sources of the operational risk, always we can observe in the system and because of that the banks total risk can increase, in the forth coming session we will be discuss about other types of risk like liquidity risk, capital risk, solvents risk, reputation risk, legal risk etc.

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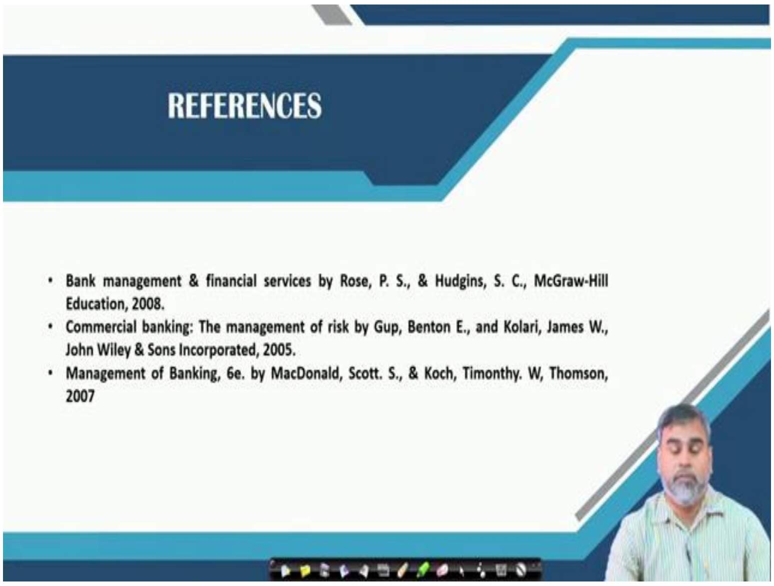

And for today's discussion you can go through these are the different references, for the detailed discussion you can also see these books. Thank You.