Management of Commercial Banking
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Lecture 59
Management of Bank Capital 3

So, after the discussion on the Basel I, we started the analysis on the regulatory capital issue and every bank has to maintain that particular level of capital adequacy ratio to ensure that the bank is stable and as well as the probability of failure of that particular bank is less. There are some loopholes were there in the Basel I. So, to overcome that particular loopholes, a new guidelines has been developed, which is popularly known as the Basel II.

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So, in this context we are discussing about the different characteristics or different norms for the Basel II and that is why, there are 3 pillars what the Basel II has basically highlighted. We will be discussing about that, then as well as the different approaches, what the Basel II has recommended to consider the different types of risk, what the bank is basically facing. That is basically credit risk, market risk, operational risk etc. Today's discussion will be based upon this two issues.

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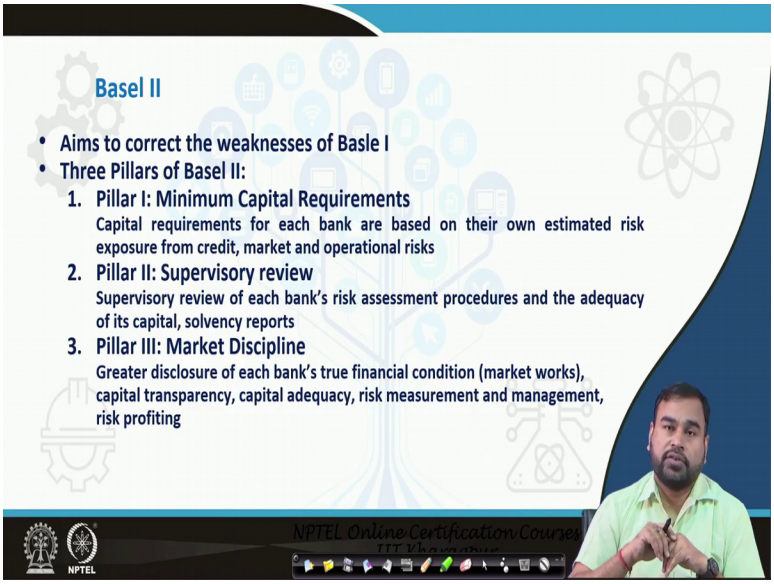

Coming back to Basel II characteristics, if you see that according to the Basel II, first of all the basic objective was to correct the weaknesses of the Basel I, there are certain things where the Basel I has not considered and Basel II was trying to overcome that problem by inclusion of some new kind of guidelines into that and there are 3 pillars, they have developed with respect to the Basel II, I is the pillar I, the every bank should maintain a, minimum capital adequacy ratio, so that means, which is based upon the minimum capital requirements.

So, the capital requirements for each bank are based on their own estimated risk exposure, which is coming from the credit risk, market risk and operational risk and we have a supervisory review, pillar 2. The supervisory review of each bank's risk assessment procedures and the adequacy of its capital and solvency report that has to be supervised regularly by the regulators and they have to ensure that the bank is basically maintaining that level of capital adequacy ratio to make that particular more stable in that particular period.

Then we have the pillar 3, which based upon the market discipline and here in the context of market discipline, the greater disclosure norms has been implemented. That means the bank has to always disclose the true financial condition of the particular bank at that particular point of time and by that they can provide the transparency in terms of the capital, in terms of the capital adequacy ratio.

Then what kind of risk measurement or management basically approach there following, for making that particular adequacy ratio stable and as well as they are generating the profit and also for cutting the risk, or they are able to eliminate the risk in a better way. So, these are the three pillars for the Basel II has recommended.

So, one is based upon the capital requirements. Second one is basically the supervision of the banks by the regulatory bodies to ensure that the bank is stable in that particular point. Then we have the disclosures basically, the bank has to make to understand or to analyze that financial condition in the better way and as well as to make this particular system transparent. So, these are the three pillars what the Basel II has recommended.

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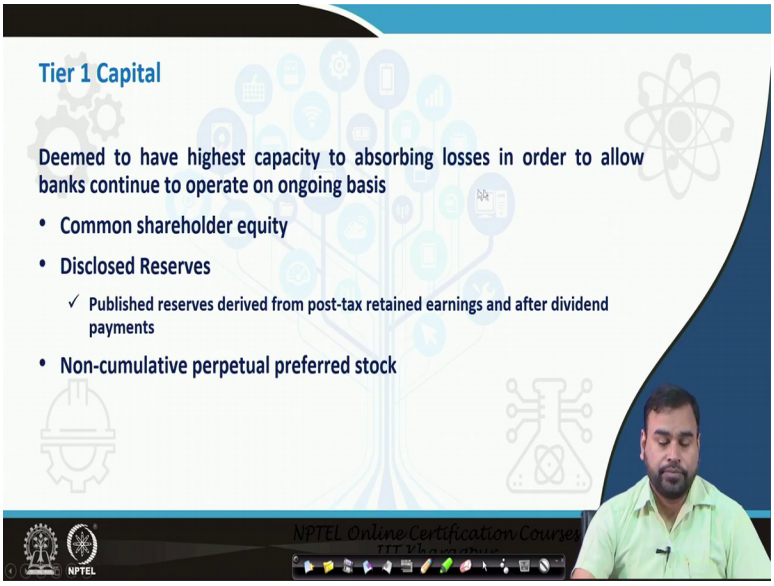

So, here according to the Basel II, again in the context of the capital management, the capital should have always maintained in such a way in the particular bank, because it has the highest capacity to absorb the losses, the capital only can absorb the losses, if there is any kind of non-performing assets or there is a certain kind of failures which is possible for the bank or maybe probability is there to incur these kind of losses, then the capital base is basically able to absorb those kind of losses in order to the banks continue to operate on the ongoing basis.

So, in this context, again, they are referred to this different tier based capitals tier 1, tier 2, tier 3 and here again, they have kept the tier 1 is the common shareholders equity, the same thing they retained whatever there in the Basel I and disclosed reserves is a part the tier 1 capital, which

basically talks about the return earnings again as usual in the Basel I and also the non-cumulative perpetual preferred stock, which was also a part of the Basel I. The tier 1 capital basically is defined in the same way, whatever way the Basel I has defined.

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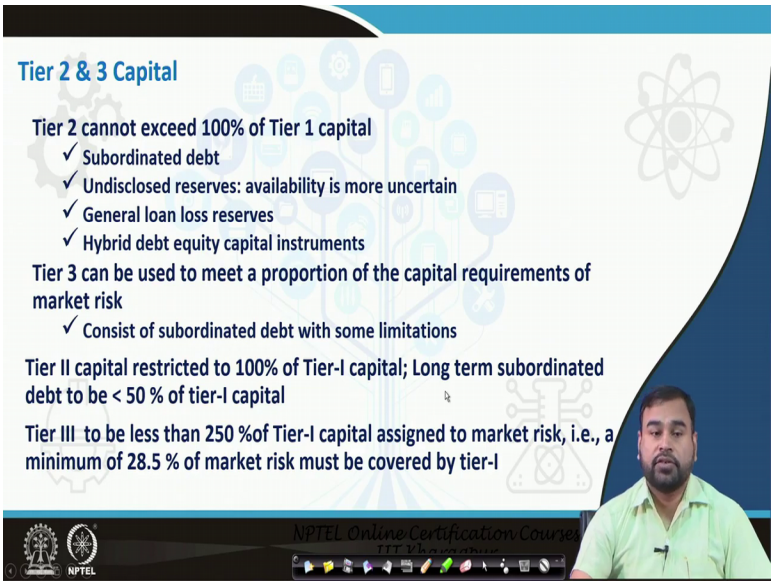

The second thing is that, they have defined certain kind of criteria with respect to the tier 2, tier 3 capital. Tier 3 capital was introduced late in the Basel I also and the same thing was continued in the Basel II. So, here according to the Basel II the tier 2 cannot exceed 100 percent of the tier 1 capital, this was already there and the tier 2 capital consists of the subordinated debt, long term subordinate debt on disclosed reserves.

The availability is more uncertain in this case. General loan loss reserves, where the bank keep, to avoid the losses or avoid the failures of the different kind of loan activities. Then hybrid debit equity capital instruments if the bank is holding at all. So, these comes under the tier 2. Then the tier 3 is basically used to meet a proportion of capital requirement for the market risk which was introduced in the Basel I off late and the same thing was continued in the Basel 2 and that basically consisting of the subordinated debt with some limitations.

All the subordinated debt is not a part of tier 3. Some subordinate debt is a part of tier 2 and some subordinated debt is a part in the tier 3 and the tier 2 capital restricted to 100 percent of the tier 1 capital that already we know. Then the long-term subordinated debt to be less than 50 percent of the tier 1 capital.

Whatever subordinated debt you are holding, that should be less than 50 percent of the tier 1 capital. Then tier 3 to be less than the 250 percent of the tier 1 capital assigned to the market risk; that means a minimum of 28.5 percent of the market risk must be covered by the tier 1. So, that is the regulation whatever they have imposed in the Basel II norms.

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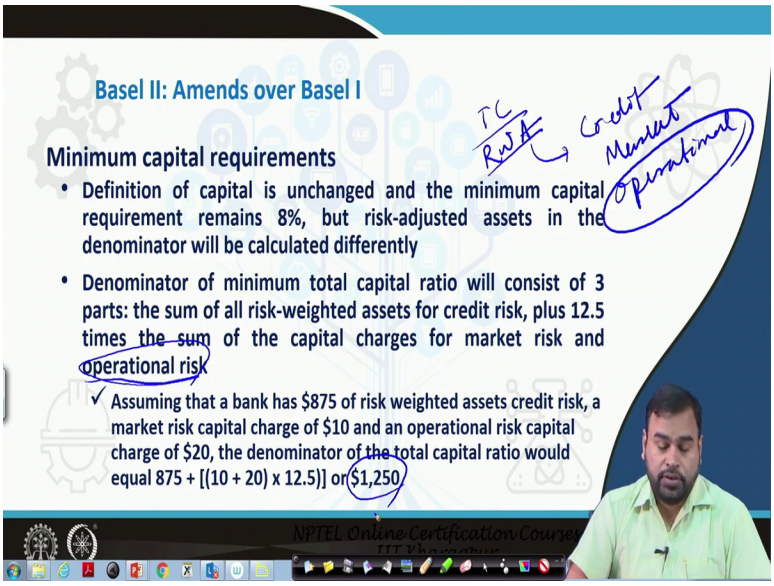

And in terms of the requirements, the minimum requirements they have made it the same way whatever way it there in the Basel I that means, the definition of capital is unchanged and the minimum capital requirements remains 8 percent, that means, the capital adequacy ratio should be greater than or equal to 8 percent and the denominator which is the risk weighted asset of minimum total capital ratio will consist of 3 parts.

One part is the particular risk weighted assets of the credit risk and another two parts one is for the market risk and the other one is for the operational risk. So, this is the new contribution which is made by the Basel II the inclusion of the operational risk. The inclusion of operational risk, the operational risk was not a part of the calculation of RWA or the Risk Weighted Asset in the Basel I. But that particular part was added in the Basel II which was supposed to be an important risk for the commercial banks and the operational risk means, it is basically your, fraud, legal risk, any.

Then you have any kind of natural calamities or any kind of risk which is basically not happening due to financial factors mostly it is unique to that particular bank. That is why it is a

part of the unsystematic risk. So, here, if you talk about this, then we have three components what we are adding to your, your total capital divided by RWA and this RWA is calculated on the basis of the words given on credit risk, then you have the market risk, then you have the operational risk.

So, operational risk is basically a new contribution what the Basel II has made while considering the minimum capital adequacy ratio for the commercial banks. So, if you see this example, if a your bank has 875 dollar of risk weighted asset, which is based upon the credit risk, the market risk capital charge of 10 dollar and operational risk capital charge of 20 dollar.

Then the numerator of the capital ratio would be 850, 875 plus 10 plus 20 into 12.5, 12.5 is the multiplier what they have considered the, act they have considered here, then your risk weighted asset, total risk weighted asset has become 1250. So, this is the way the calculation of the risk weighted asset has changed in the Basel II norms.

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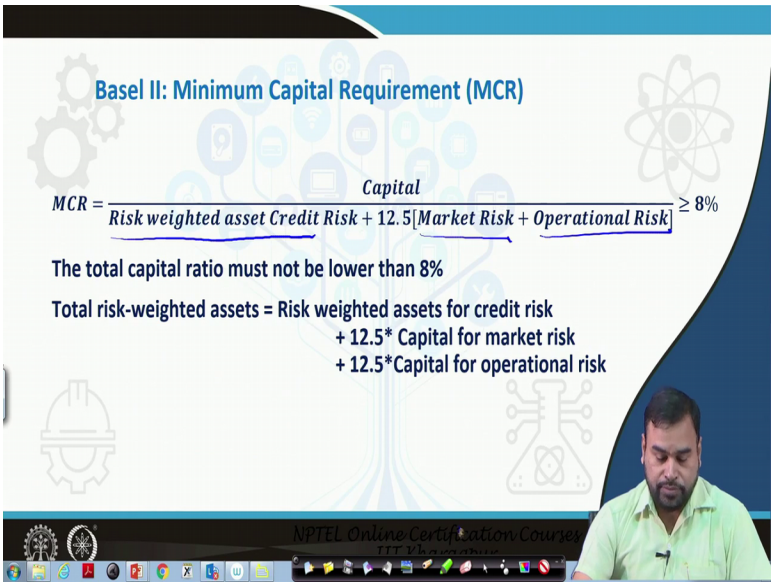

Then we can see that how basically this is working in this case, if you formalize it your minimum capital adequacy ratio is the capital divided by the risk weighted asset for the credit risk, plus the 12.5 into your market risk plus the operational risk. Market risk assets and the operational risk assets that is basically what is the capital charge for the market risk and the capital charged for the operational risk, that will give you, should be greater than or equal to 8 percent.

So, the total capitalized ratio should not be lower than 8 percent. So, the risk weighted assets for the credit risk loss 12.5 into more capital for market risk plus 12.5 into capital for the operational risk. So, that is what basically what, 12.5 percent basically that we can consider in this particular case.

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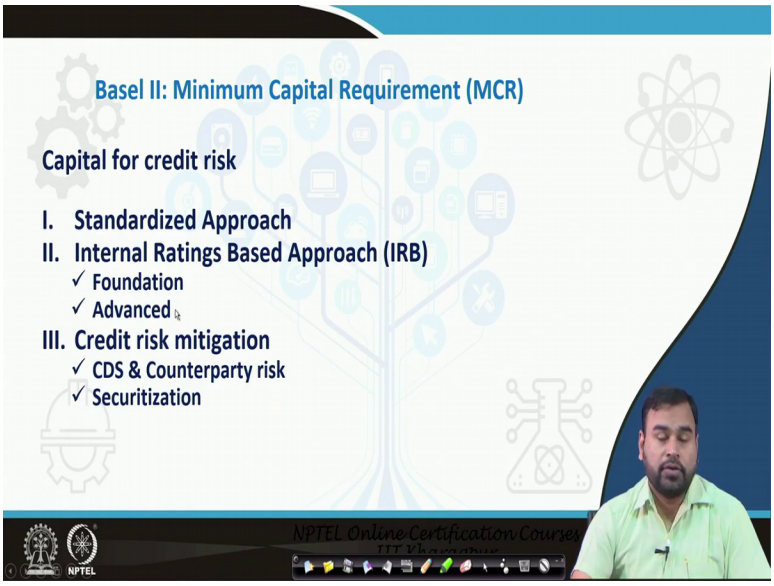

Then you see that, how to calculate this different type of risks. The major contribution of the Basel II was the calculation of the credit risk, market risk and the operational risk. So, in this case, if you see that the capital for the credit risk, whenever they have calculated, they have consider a standardized approach, then the whatever standardized approach we have discussed in the previous class, they have given the weights on the basis of the different assets whatever the bank is holding.

Some of them got 0 percent, where somebody got 20 percent, somebody got 50 percent and some assets got 100 percent risk weights and the off-balance sheet items again using the conversion factor, they were calculating that particular thing. So, that is the standardized approach that the bank can follow or they can go for internal rating based approach that is called the IRB.

There are two methods for that, one is your foundation method based upon the external rating agencies and another one is the advanced approach, which is developed by the bank itself, then we can have some credit risk mitigation strategy they can adopt, like your counterparty risk,

securitization and all these things also can be part of this particular measurement of the credit risk for that particular commercial bank.

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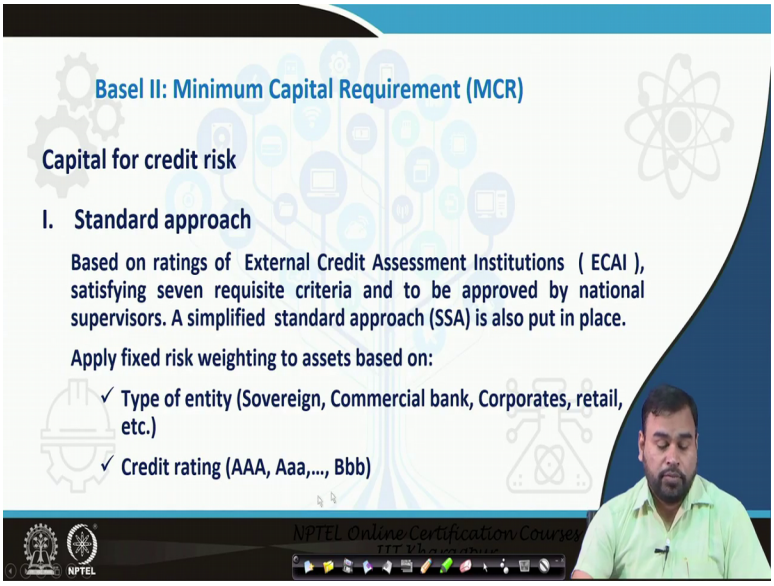

So, whenever we are talking about standard approach that already we have discussed this thing, this is basically based on the ratings of the external credit assessment institutions or credit rating agencies satisfying the seven requisite criteria and it is to be approved by the national supervisors and apply the fixed risk weighting to asset based on the types of entity like commercial bank, corporates, retail and all these things and the rating basically, which was given by the rating agencies that is triple A, double A, triple B etc.

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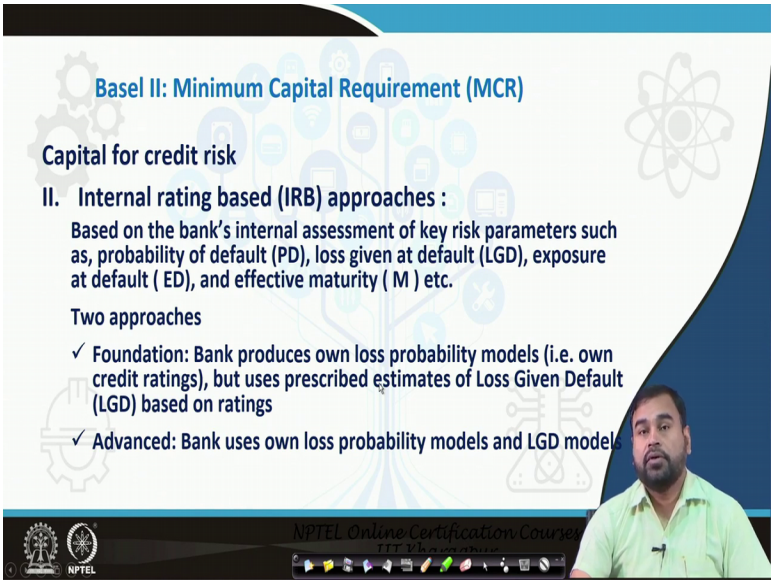

Whenever, you come to the internal rating based approach, there we, each bank can consider that particular or use that particular approach on the basis of the different parameters and it is based on the bank's internal assessment of the key risk parameters, such as probability of default, and the loss given at default and the exposure at default and effective maturity of that particular asset or a particular instrument.

So, there are two approaches they can follow. One is foundation approach that means the bank can produce to one probability models on the basis of the own ratings. But you just prescribed estimates of the loss given default based on the ratings given by the different entities. If you go for the advanced approach, the bank uses own last probability model and as well as, this loss given default models.

So, here the bank goes for own loan, over loss probability model. But use this loss given default based on the ratings, which is there already, but here the bank uses their own models for both to calculate this particular or to provide the weights for the credit risk for that particular kind of assets, whatever they are holding.

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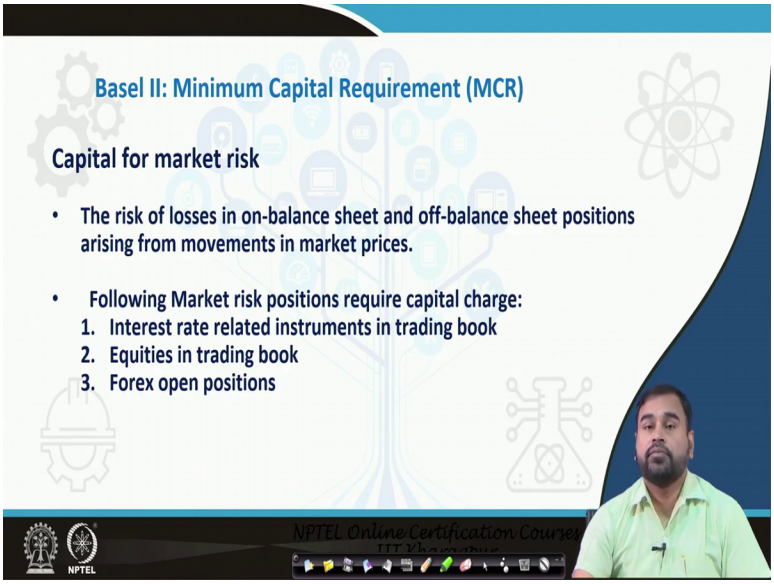

Then, we have the market risk, already all of you know that what is the source of the market risk, the market risk is basically nothing but, which is basically always arise due to the fluctuations of the market factors like interest rate, equity pricing and all these things. So, the risk basically always can arise both on balance and off-balance sheet items from the movements of the market prices.

The market prices means we are referring either it can be the interest rate or it can be the equity pricing or it can be anything. So, following the market risk positions require capital charge for the interest rate related instrument in the trading book of that particular commercial bank, because due to the fluctuations of the interest rate, the price of those particular assets are going to be changed.

So, because of that, we are exposed to more risk accordingly and the equity prices also get changes, whenever there is a fluctuations in the market, there is a policy changes in the market. So, that is why we have also consider that part. Then the foreign exchange positions, whatever the exposure of the foreign exchange market for that particular commercial bank. Because due to the accelerate moments, then again, we are also exposed to certain kind of fluctuations in the assets value.

So, that also can increase or decrease the value of that particular asset. So, because of that some kind of capital charge has to be imposed against that particular exposure towards the market risk.

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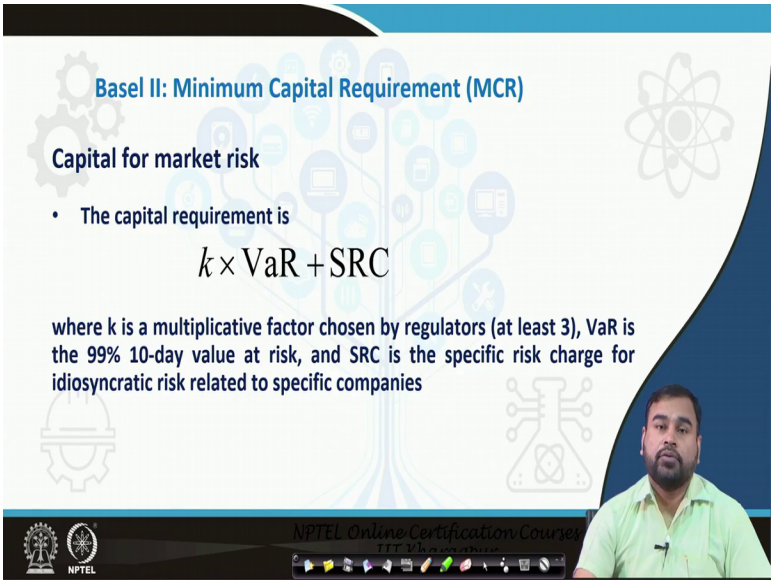

So, how we can calculate this how much capital requirement is there to accommodate this market risk, we have already you know that the market risk is basically calculated on the basis of the value at risk, which is, guideline which was given by the BIS or the by the Basel norms. So, if you consider the market risk for calculation of the risk weighted asset, then the capital requirement is basically k into value at risk into SRC.

So, your k is basically a multiplicative factor which is chosen by the regulator, but the minimum should be 3 which was given by the Basel and according to the different kind of reserve, central banks this particular multiplicative factor can be changed. VaR is the 99 percent 10 day value at risk that already we know, we explained value at risk in the, one of the previous sessions and your SRC is basically nothing but the specific risk charge for idiosyncratic or the unsystematic risk related to the specific companies.

So, you can combine this three components k into your VaR plus SRC that will give you the value of the capital requirement for that particular commercial bank, who is basically exposed to certain types of market risk in the market.

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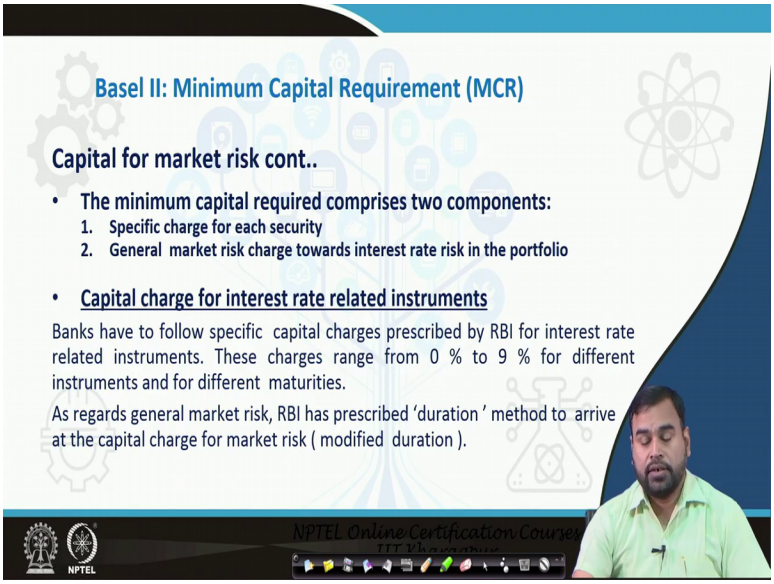

So, the minimum capital required basically comprised two components, one is specific charge for each security and the general market risk charge towards the interest rate risk or exchange rate risk or any of the risk of the portfolio. So, the banks have to follow specific capital charges prescribed by RBI or any other central bank for interest rate related instruments and this charges range from 0 to 9 percent for different instruments for the different maturities.

So, general market risk the RBI has basically prescribed the duration method already we discuss that method also. To arrive at the capital charge for the market risk or you can also go for the modified duration to calculate that. So, duration if you adjust it with respect to your interest rate and all that you can calculate the modified duration.

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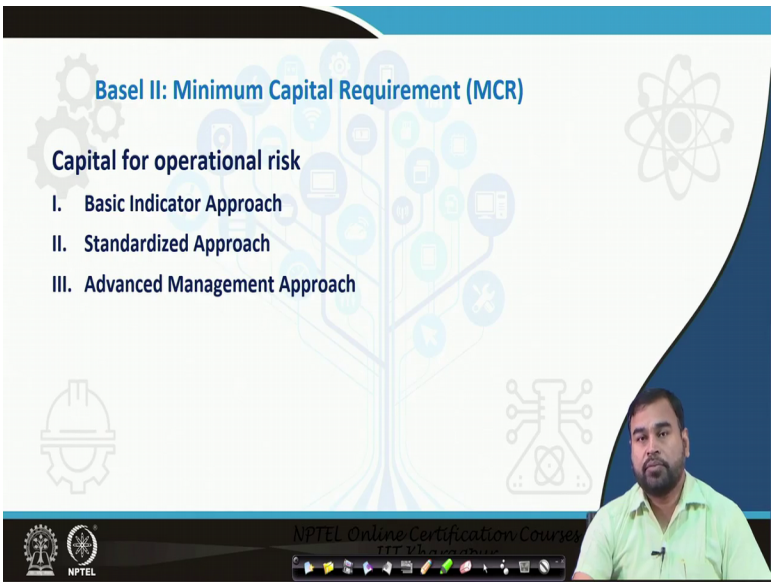

Then we have operational risk. So, the Basel II also has recommended that how to calculate the operational risk, then accordingly the weights can be given to the different assets to calculate the risk weighted asset. So, there are three approaches the bank has, our Basel has recommended. The one is your basic indicator approach, then we have this standardized approach, then you have the advanced management approach, these are the three different approaches which were recommended by the Basel committees, which can be used to measure the operational risk for the calculation of the risk weighted asset for measuring the capital adequacy ratio.

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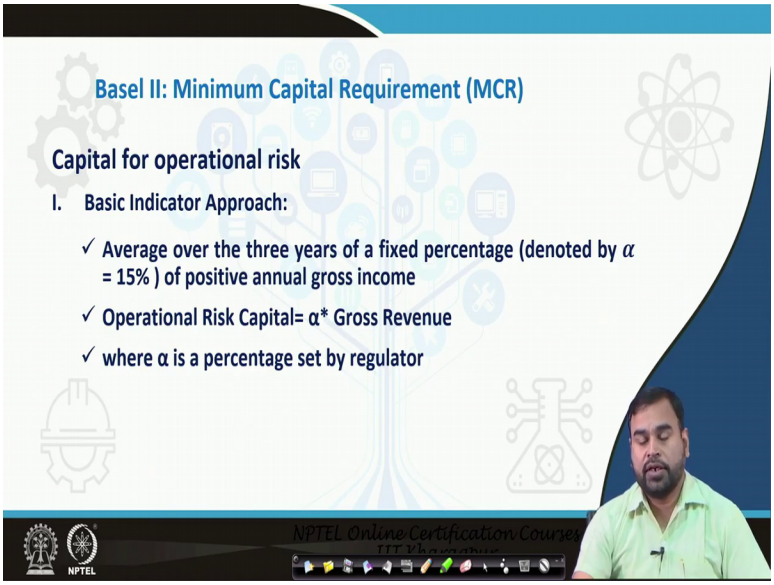

So, one by one if you see that what do you mean by the basic indicator approach, the basic indicator approach is nothing but, it is basically the average always we consider over the three years of a fixed percentage, which is denoted by alpha of positive annual gross income, that means the operational risk capital will be alpha into the gross revenue of that particular bank. So, the alpha first we have to calculate, then after getting the alpha we can multiply with the gross revenue, that we can tell you that how much capital charge should be there for the operational risk what the bank is going to face.

So, here the alpha is basically considered, assumed at 15 percent of the total gross, 15 percent of that. So, alpha is basically a percentage set by the regulator, which was temporarily or maybe intuitively given by Basel is 15 percent. But this can be changed as per the different kind of regulatory bodies or where this particular bank is operating accordingly this alpha value can be changed.

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Then we have the standardized approach to measure operational risk that is, in this approach what the banks basically do, they divided their business into 8 different business lines, such as corporate finance activities, retail banking activities, asset management activities, all kinds of thing. So, once the different lines are defined or different lines are categorized by the commercial bank for each business line, they try to find out a factor, you can let us say beta.

Then which determines the capital requirement of that business line, because for each business line, they are exposed to certain amount of operational risk. So, instead of aggregating that operational risk as a whole. So, what they are doing, they are trying to calculate the operational risk with respect to the different business lines of the commercial bank. So, here, each business line basically we have and accordingly the particular beta value can be calculated and that beta value will be considered to calculate the capital for the operational risk.

So, average for 3 years gives capital for operational risk. To, operational risk capital basically nothing but, the beta into the gross revenue for, for business line. So, what is business line the amount of capital charge the bank has to calculate, once they calculate the factor like beta, the beta multiplied by the revenue generated from that particular business line. Once you get it then you can add up for the different business lines multiplied by the beta whatever value you have, then you can find out the capital for the operational risk in the market.

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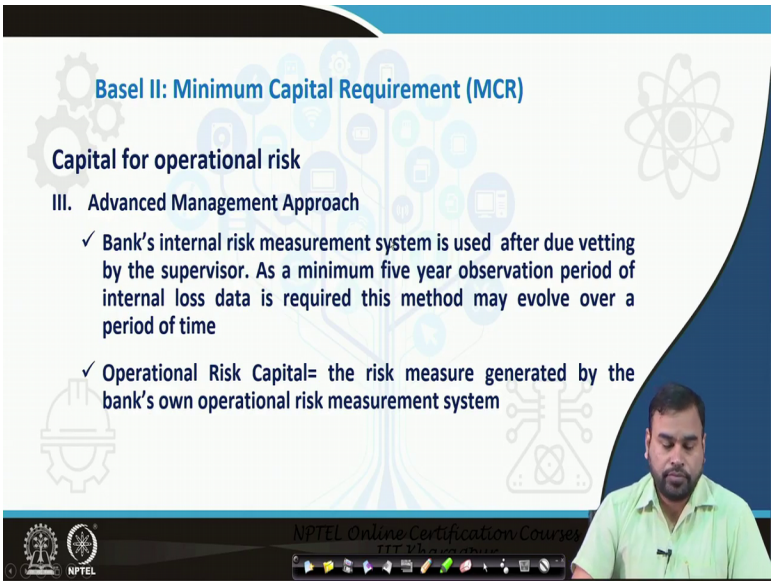

Then we have the advanced management approach that is another approach what basically we can also use to measure the operational risk or the capital charge for the operational risk in the bank. So, bank's internal risk measurement system is basically used for this after due vetting by the supervisor as a minimum 5 year observation period of internal loss data is required in this method and that loss data will be consider to find out, that how much risk basically the bank is exposed because of the operational problems with the bank.

So, then finally, what we can do, the operation risk can be calculated accordingly. In accordance with this the operational risk capital will be, the risk basically generated by the bank's own operational risk measurement system, which is based upon the last 5 years internal loss data, whatever they have due to different kind of operational difficulties. So, then we can find out the, how much capital should be assign to that.

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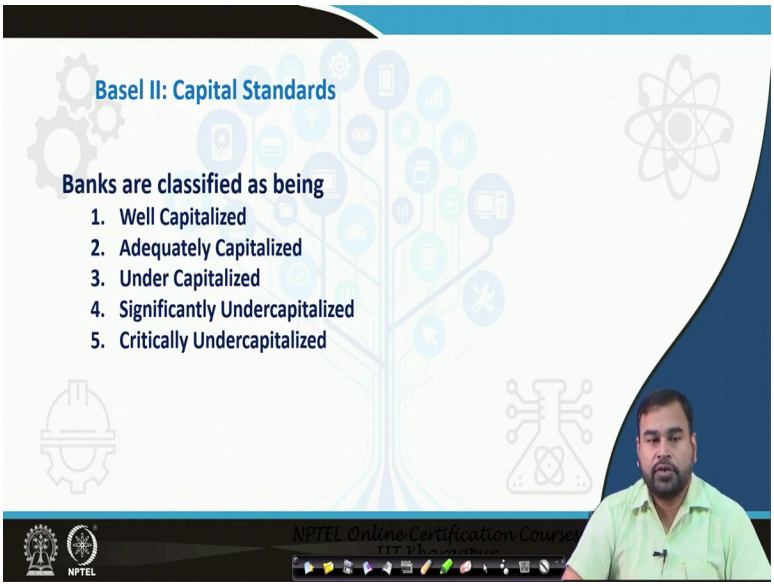

So, in this context what basically we have seen that, over the period the particular banks are defined, banks are categorized into various weights on the basis of their capital adequacy ratio, some of the banks are well capitalized, some of the banks are adequately capitalized, some of the banks are under-capitalized, some are significantly under-capitalized, and some are critically under-capitalized and, you know, the regulatory bodies have given a lot of kind of penalty, if they do not maintain that particular regulatory norm.

So again, the banks will be going to lose a lot, they are going to incur a huge amount of regulatory cost, if they are not going to maintain that particular capital adequacy ratio. So, in this context, what we can see that it is very much important to understand that how those kind of definitions are basically used in the market.

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So, well capitalized means, if the total capital to risk weighted assets risk adjusted asset should be more than 10 percent, because the regulatory norm is 8 percent. But if any bank is maintaining a capital adequacy ratio of 10 percent, we can say that it is a well-capitalized banks. In your tier 1 capital to total assets should be 6 percent. Tier 1 capital to risk weighted assets should be 6 percent and tier 1 capital to total asset is basically should be 5 percent.

The tier 1 capital already you know, that is basically your equity. So, banks leverage ratio is basically nothing but equity upon the total assets. So, equity upon the total assets that should be greater than or equal to 5 percent. To the leverage ratio should be 5 percent and your risk weighted asset, if you adjust with respect to the tier 1 capital that should be 6 percent. Then you have adequately capitalized banks.

So, they are, already you know regulation is already done, it should be greater than or equal to 8 percent. Then tier 1 capital to risk adjusted assets should be greater than or equal to 4 percent and tier 1 capital to total assets should be greater than or equal to 4 percent that is again a leverage ratio for this. So, this is about your well capitalized and adequately capitalized banks definitions.

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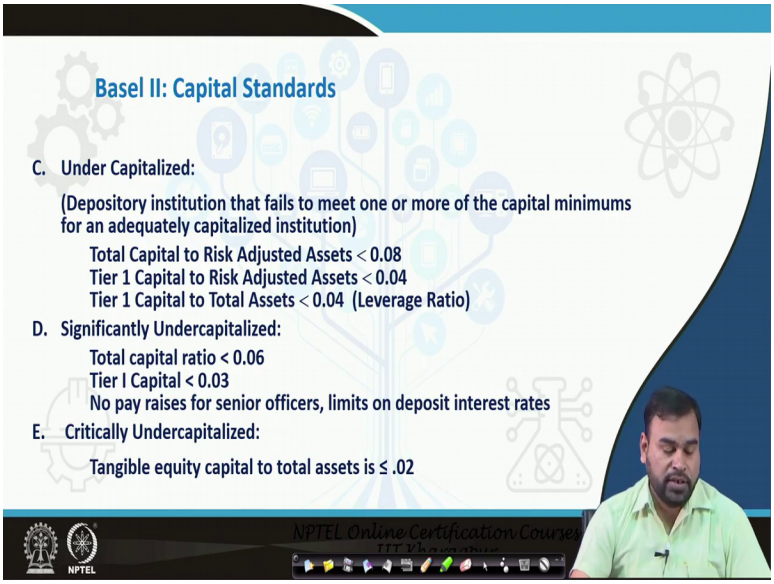

Then we have under-capitalized. So, here your total capital to risk adjusted assets will be 4 percent, less than 4 percent. Tier 1 capital to total asset also will be less than 4 percent that means the leverage ratio is less than 4 percent and as well as the risk, capital adequacy ratio will be less than 8 percent.

In that case, we call them the under-capitalized banks and it is significantly under-capitalized than your total capital ratio will be less than 6 percent, tier 1 capital ratio will be less than 3 percent and in that case no pay raises for the senior officers and there are limits on deposit interest rates for that particular bank, as per the regulatory norms or the guidelines.

So, there are some banks which capital ratio is less than 2 percent. So, they are basically we call it that this is under capitalized banks and these are highly prone to the failure in the near future or the stability of that particular bank is very less in this consideration those banks are called the under-capitalized banks and their ratio the tangible equity capital to total asset is less than 2 percent.

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So, there are various strategies the bank can adopt to increase the capital base of that particular bank. First of all, the one of the major factors is return earnings which is a part of the tier 1 capital. So, in this context, if they want to maintain this tier 1 capital in a particular level, then they have to also control the dividend policy or the dividend payments to the shareholders. So, the higher dividend payments in the bad time may not be a wise decision for the banks, because that will have a lot of impact on the tier 1 capital base of the particular bank, then accordingly your capital adequacy ratio will be changed.

So, because of the dividend policies, one of the factors then the internal capital growth rate, then how automatically the growth of the capital is happening in terms of equity and in terms of the borrowings of the commercial banks, in the form of subordinated debt and all these things, that is also another factor.

So, if the bank wants to increase this capital base externally, from the equity market and other markets, then they have to issue the common stocks, which are basically the expensive way of raising the capital what we consider because of high risk involved with respect to that. But that is consider as a tier 1 capital or the core capital of the commercial bank.

To, because of that they can think of this, they can issue the preferred stock and also issue the subordinate notes and debentures, note relatively short term in nature and debentures are basically the long term in nature. They can sell the assets and leasing facilities, which creates the

substantial inflow of the cash and through that the capital base also can be improved. They can swap, use the swap, the stocks for the debt securities.

That is also another way of regulating the all capital weights or capital needs of the commercial banks and whatever other kind of assets the commercial bank has, considering the regulatory norm, they can choose the best alternative which can really help to increase the capital base and in the end, the capital adequacy ratio can be changed and some of the strategy also they can adopt instead of only increasing the capital base, they can also try to reduce the risk in terms of all the types of risk what they are facing.

Although the market risk is not in the control of the commercial bank, but to some extent, the credit risk and the operational risk can be controlled by that the total capital adequacy ratio will be intact, if the capital base is not going to be changed. So, if the numerator denominator both can be used to control that or only numerator like epically base can be, can be used or to, strategy can be adopted to increase that or the strategy also can be adopted to reduce the risk of that different type of assets, the what the bank is holding, by that the minimum capital adequacy ratio of the bank and maintained.

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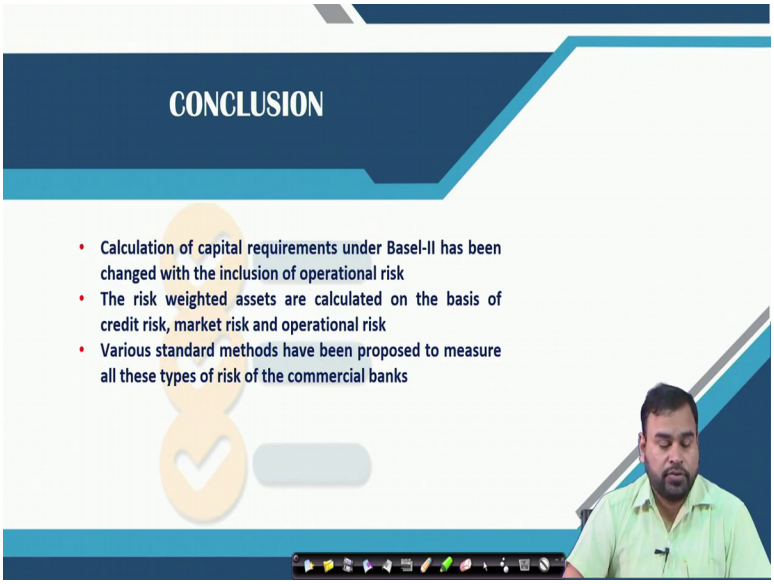

So, what we have discussed in this session, that the calculation of capital requirements on Basel 2 has been changed with the inclusion of operational risk and the risk weighted assets are calculated on the basis of credit risk, market risk and operational risk according to the Basel 2

and various standard methods like your IRB method IRB approach, then standardized approach then you have the other three approaches which are used for the operational risk.

All these things are proposed to measure all these types of risk of the commercial banks and accordingly the capital requirements against those kind of risk based capital can be calculated. How much capital is required to overcome or to compensate that amount of risk and by that a better realistic picture of risk weighted assets can be calculated for the commercial bank and that will give you a better picture in terms of stability of the banks.

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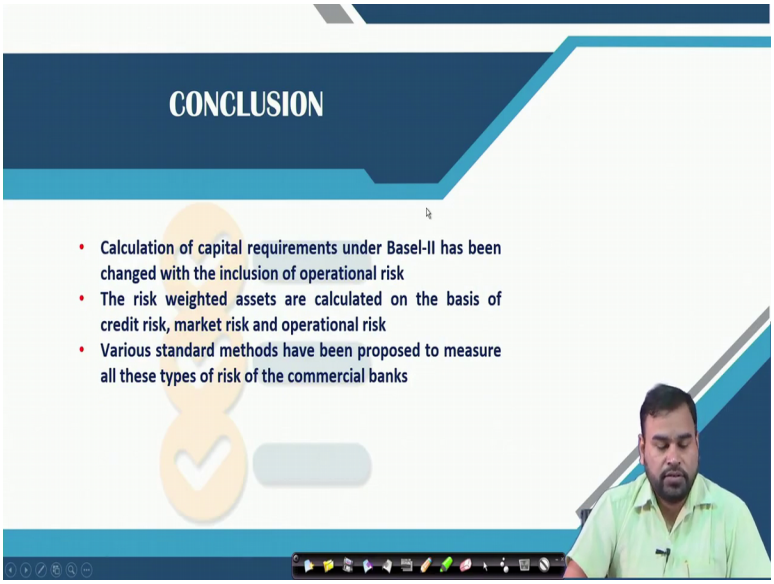

So, these are the references what you can go through, for these discussions. Thank you.