Management of Commercial Banking
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Lecture 58
Management of Bank Capital 2

Good morning. So, in the previous class we started the discussion on the capital ratio or we can say that how the bank capital is important for the economic growth process and as well as the stability for the bank and considering that importance, we can argue that the bank capital should be regulated.

What kind of capital adequacy ratio the bank should maintain that should be basically determined by the regulatory bodies. So, in this context over the period we have seen that, various regulatory bodies have provided certain kind of guidelines, certain kind of rules, on which the particular capital ratio or capital adequacy ratio is always based upon.

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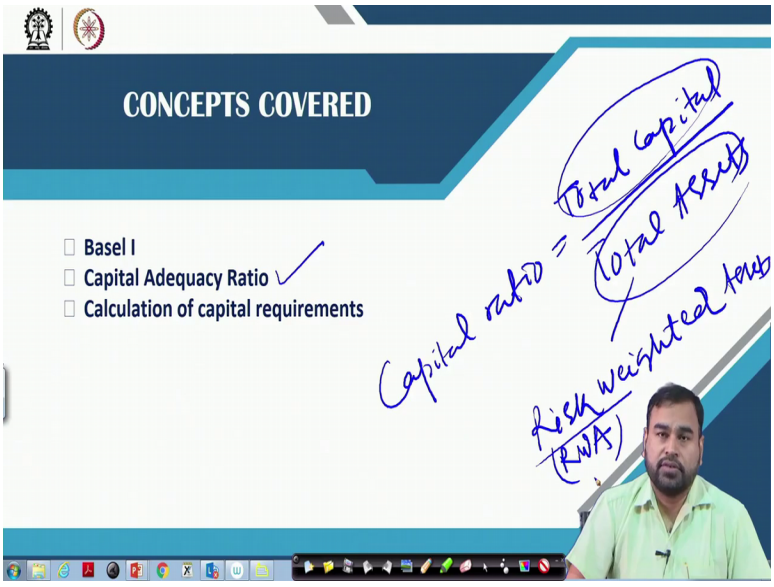

In today's class, we will be discussing about that regulatory capital ratio or regulatory capital adequacy ratio. A regulatory capital requirements, what the banks should always hold. In this context we can say that it is particularly started with the Basel 1 which was kind of regulatory norms was established by the BIS, Bank for International Settlement and in this context, they have tried to provide certain kind of uniform guidelines that how much capital ratio the bank should always maintain or the minimum capital adequacy ratio what the banks should maintain.

So, in this context they have added the concept of capital adequacy ratio, which was not that way used before, whenever we are talking about the bank capital. If you see that previously we are talking about the capital ratio. The capital ratio is nothing but your total capital, which comprised of both debt and equity divided by the total assets. But according to the Basel norms, they are giving the importance with respect to the capital adequacy ratio and the capital adequacy ratio is basically what it is instead of total assets we are talking about the risk weighted assets. We basically always talk about the risk weighted assets.

So, here the question is that there are two things. One is your numerator, which is total capital and you have the denominator, which is your risk weighted asset or in short we can call it RWA. So, then how the risk weights are given, on the basis of what type of risk the weight should be given and what are those typical components of the capital? These are basically the questions always come or always we face whenever we discuss about the regulatory capital adequacy ratio what the banks should always maintain.

So, therefore will be discussing about what exactly the capital adequacy ratio is and how the capital adequacy or the calculation of Capital is always made by the commercial banks as per the Basel norms. So, this is the discussion, what we can start with this Basel 1. Then we can move towards Basel 2 and Basel 3 in the subsequent sessions.

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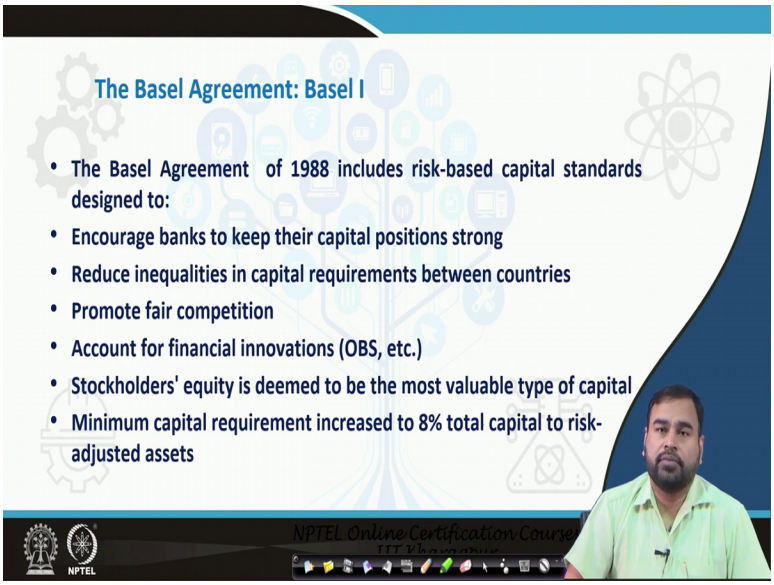

So, then here if you talk about this, already we said that whenever the Basel norms were started or maybe we can say that the BIS has thought of having certain kind of uniform guidelines for maintaining the Capital. It is started in 1988. Here, the basic objective of the Basel 1 was to encourage the banks to give their capital positioning strong, by that they can absorb the losses or the stocks at any point of time if they are going to face and as well as it is also reduce the inequalities in capital requirements between the different countries, a kind of uniform policy can be adopted across the countries.

It will also help to promote the fair competition among the different banks and as well as previously we are only considering about the on balanced sheet items. But as per the emergence of Basel norm the importance of the off-balance sheet items also has increased.

So, according to Basel norm the off-balance sheet items also should be considered whenever we are talking about the asset and as well as the risk weighted assets and according to this norm the equity, common equity or the owners own Capital whatever, they have invested in that particular company or particular bank, it is the most valuable type of capital what we can consider and according to Bessel 1, the minimum capital requirement should be 8 percent. That means the capital adequacy ratios should be 8 percent or more than that.

So, these are kind of agreement or the basic objective behind this Basel 1 which is basically always trying to make certain kind of uniform policy across the countries and to maintain the stability of the commercial banks.

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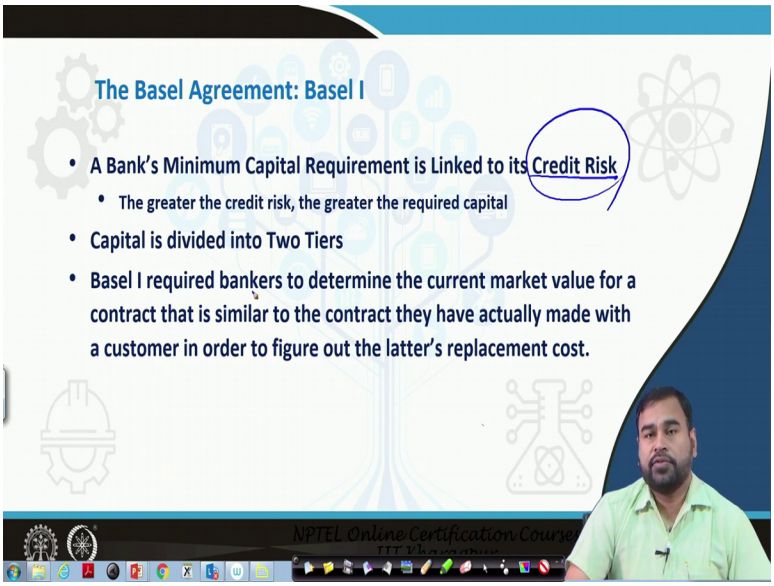

Here then, what kind of risk should we consider whenever the risk weighted assets are calculated. So, the Basel has given the importance to credit risk, which is the most important risk what the commercial banks face because loan is their major business. So, there is always a probability of default of payment or repayment of that particular loan.

So, because of that, they have started giving importance to the credit risk. So, greater the risk the greater should be the capital. So, if the particular bank is exposed to more credit risk than the capital requirements of that particular bank also should be more. So, in this case, they have divided the capital into two types. One is your tier one capital and tier two capital.

That is why there are two tiers of capital should be considered by the commercial banks and Basel. One also required to always determine the current market value for a contract that is similar to the contract they have actually made with a customer in order to figure out the letters replacement cost. So, the replacement cost is playing a role whenever we talk about mostly the off-balance sheet items and the other items what the banks are holding.

So, these are the considerations. The basic agreements of the Basel 1. It is mostly relied upon the capital adequacy ratio. So, we will see over this particular discussion that how the capital adequacy ratio is measured and over the years, what kind of changes have taken place with respect to the regulatory norms.

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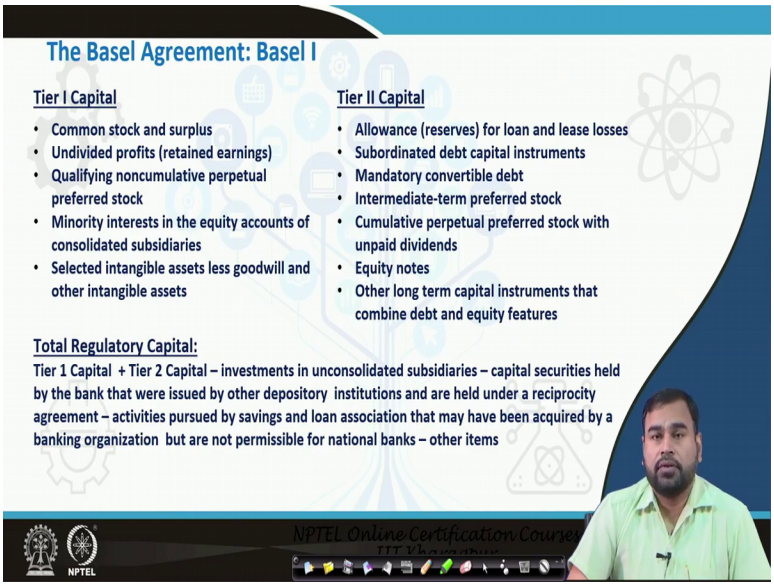

So, in this case, if you see that there are two types of capital Basel has considered one is tier 1 and tier 2 and there are various items which comes under tier 1 and various items which comes under tier 2. So, according to Basel 1 the total capital of the banks should be tier 1 capital plus tier 2 capital and minus some kind of investments and some kind of deductions, whatever the banks should always consider.

So, already we said that in the context of tier 1 capital. We have the common stock, we have the retained earnings. We have the non-cumulative perpetual preference shares or preference stocks and the minority interest in the equity accounts of consolidated subsidiaries. If a bank has any kind of subsidiary and the selected intangible assets which will be a minus the goodwill and the other intangible assets what the bank is holding.

So, these are coming under the tier 1 category and whenever you come to tired 2, we have the allowances for the loans and leases, what the bank has carried out. Subordinated debt, particularly the long term debt, what the bank is holding and the mandatory convertible debt, which is can be converted equity after a certain period of time. Then intermediate term preferred debt because non-cumulative stocks are part of tier 1. But the preferred stock, which are we can say that intermediate in nature, they can be a part of tier 2.

Then cumulative perpetual preferred stock with unpaid dividends, if there is any. Equity notes. Then the other long term capital instruments which has either debt feature or the equity feature. So, these are, so mostly if you summarize this thing, we can say that the return earnings and the equity, these are basically comes under the tier 1 capital and the debts components are mostly comes under the tier 2 capital. So, these are the basic differences between the tier 1 capital and the tier 2 capital of the commercial bank as per the Basel 1.

So, therefore in final if you want to calculate the total regulatory capital that should be tier 1 capital plus tier 2 capital minus the investments in unconsolidated subsidiaries, minus the capital securities held by the bank that were issued by the other depository institutions in the system and they are also held under the reciprocity agreement minus the activities pursued by savings and loan association that may have been acquired by the banking organization, but they are not permissible to, for the national banks and minus there is any other items.

So, those items are basically negligible in nature. So, mostly this total capital includes the tier 1 capital and the tier 2 capital and tier 1 consist of equity, owner's equity and tier 2 capital basically consist of the debt.

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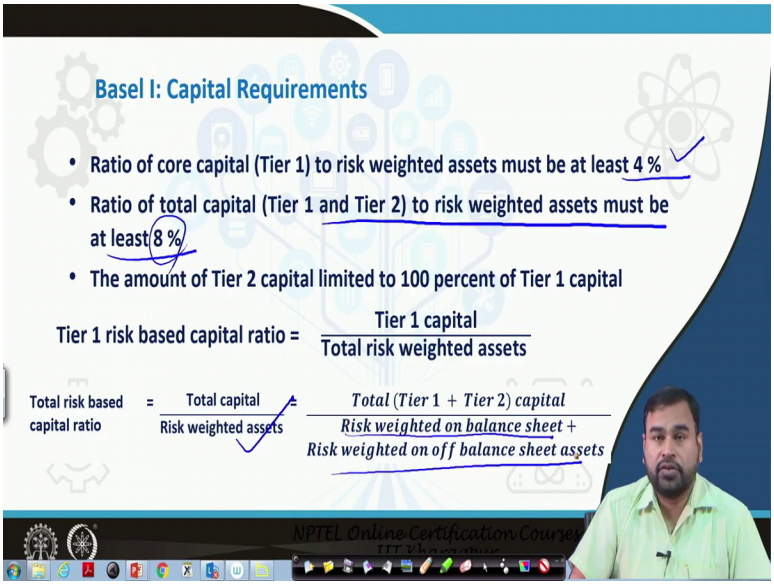

So, now there are certain kind of guidelines what the Basel 1 has given, already what we have seen according to Basel, that first of all that the total capital divided by the risk weighted assets

the total capital divided by risk weighted assets must should be at least 8 percent greater than or equal to 8 percent and again they said out of this total, the 50 percent capital should be equity.

That means the tier 1 capital divided by the risk weighted asset that should be 4 percent. If your capital 1 is 8 percent. Then that 4 percent should be tier 1 capital that also they have to keep in the mind and the tier 2 capital, whatever the bank is holding that should not exceed the 100 percent of the tier 1 capital.

That means the debt component should not exceed the 100 percent of the equity component of the commercial bank. So, then in general, if you want to write it in a formula, then your capital adequacy ratio or the total risk weight capital ratio what we can call them. That is basically your total capital divided by the risk weighted asset that is the tier 1 capital plus tier 2 capital minus whatever the reductions are required divided by the risk weighted on the balance sheet items and the risk weighted on off-balance sheet items, or off-balance sheet assets.

So, both on balance sheet and off-balance sheet items should be considered. Whenever we are trying to calculate the risk weighted assets of that particular commercial bank and the capital adequacy ratio will be measured accordingly.

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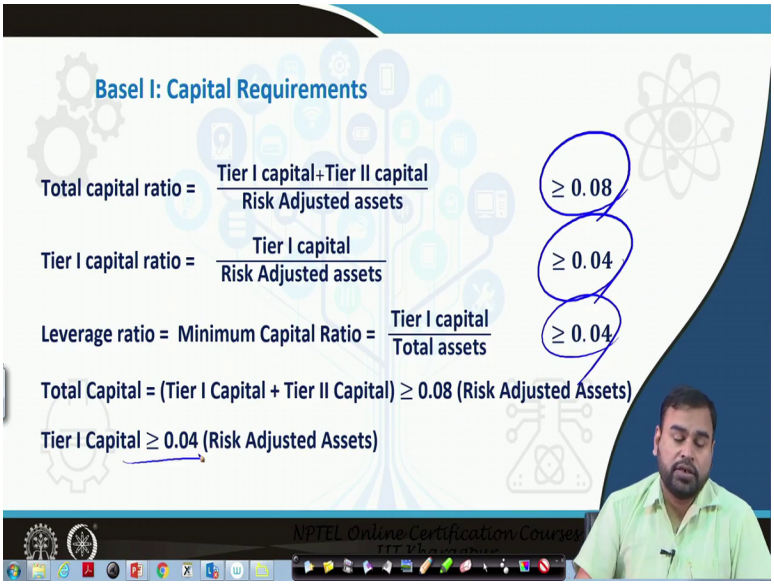

Then we can see that, basically, if you summarize it, then total capital ratio capital adequacy ratio should be greater than or equal to 8 percent. Tier 1 capital to risk weighted assets should be

greater than or equal to 4 percent and the banks should have the minimum leverage ratio that should be again greater than equal to 4 percent and the risk adjusted asset already whatever we have that will be at least 4 percent. So, this is what the capital requirements the Basel has defined.

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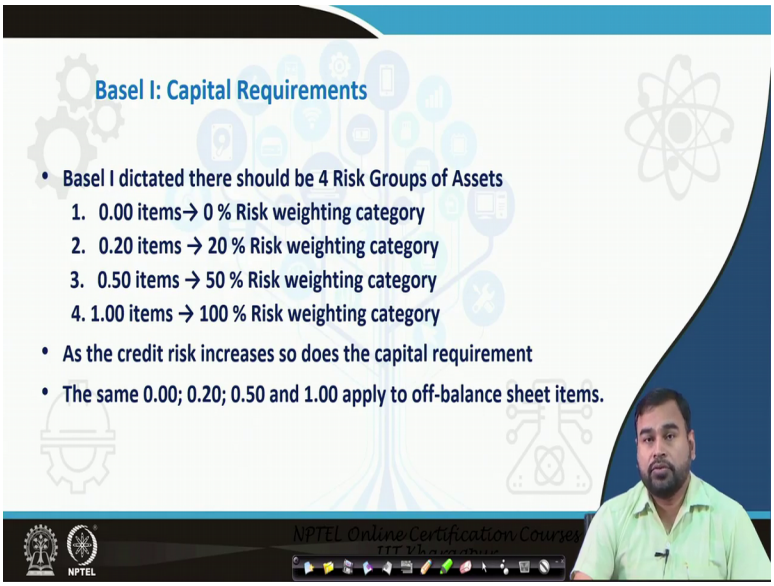

So, then how the risk basically, because already we have discuss that whatever risk weights will be given, those weights will be given on the basis of the credit risk. The credit risk is the major risk what the bank always faces and considering that importance, the Basel also has given the importance towards the credit risk.

So, then Basel has basically defined those assets there are some asset, there is a 0 percent risk. That is why there is, we do not have to provide any weight for that. There are some asset, there are 20 percent risk weight. These are the standard process, what the Basel has recommended and the bank has to consider that particular standard kind of rules. What is the Basel has recommended to calculate the risk weighted asset as per the Basel 1 and there are some asset which are 50 percent category and there are some assets, they have the 100 percent risk.

So, accordingly the total risk weighted assets can be calculated. So, if the credit risk is increasing, your capital requirements also should increase. Because they have to maintain a

particular level of ratio and to maintain that particular ratio if the risk is increasing. The capital also has to increase to maintain that particular ratio in a particular level.

So, the same thing also can be applied for the off-balance sheet items. But only thing is there is a conversion factor for off-balance sheet items has to be converted into the on balance sheet items using certain kind of conversion factors that also we have to, we have to see that what kind of off-balance sheet items, how they are converted into the on balance sheet items and accordingly the risk weights can be provided.

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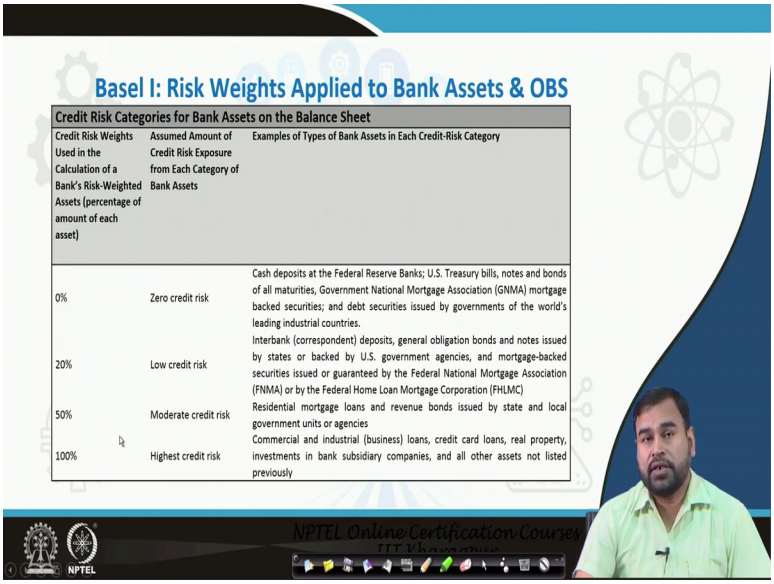

So, if you see this table that it is about the on balance sheet items that whenever the on balance sheet assets that whenever the weights are given to risk weights are given to the different type of assets, then which are those assets which comes under the zero credit risk and there are some assets comes under the low credit risk, then moderate credit risk and the highest credit risk.

So, for the zero credit risk, we can say the cash deposit with the Reserve Bank, whether it is Federal Reserve Bank or any other Reserve Bank of any other countries or central bank of any other countries. Treasury bills, notes and bonds of all maturities, government, national mortgage association, mortgage backed securities, debt securities issued by the government and world's leading industrial of the leading, world's leading industrial countries.

Because the Basel 1 or Basel recommendations were given for only the developed countries, mostly the 12 countries were considered and all those countries are mostly the developed countries, although any other country or most of the countries are following this Basel norm with some certain modifications, what the Basel was particularly designed for the banking operations of the developed countries.

Under 20 percent bracket, we have interbank deposits like money market deposits. General obligation bonds and note issued by the states. Backed by U.S government agencies or any other government agencies, mortgage backed securities issued by or guaranteed by Federal National Mortgage Association or by the Federal Home Loan Mortgage Corporation. There are various sources from where the particular money is coming or different investment opportunities or alternatives are available. Accordingly, the weights are given to that particular asset and these are coming under the 20-percent weight category, because they have the low credit risk.

In the 50 percent category, we have the residential mortgage loans what the commercial banks are given and revenue bonds issued by the state and local government units or the agencies and 100 percent category if you see, these are mostly the commercial and industrial loans for the bank has provided, the loans given against the credit card.

The investments made on the real property basically. In bank subsidiary companies and all other assets not listed previously. So, apart from this whatever remaining assets are there, that also comes under the highest credit risk category. So, because of that the 100 percent category credit risk weight will be, should be given to calculate the risk weighted asset.

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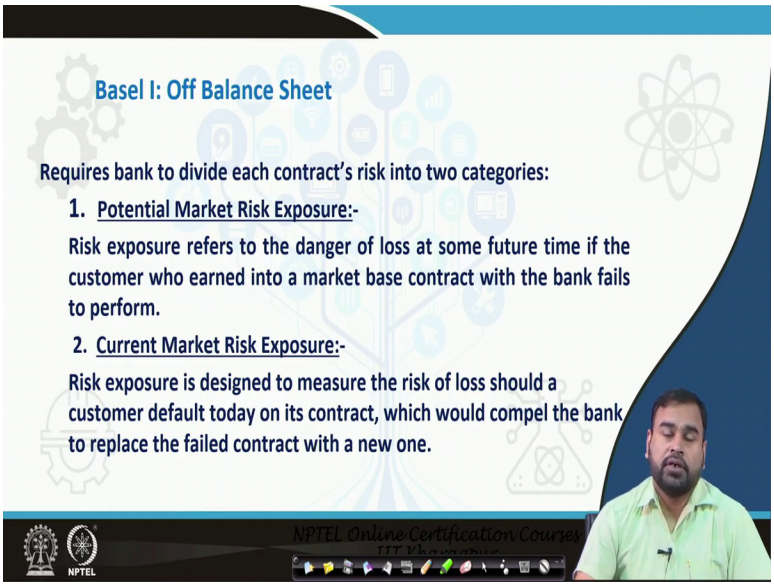

Then we have the off-balance sheet items in the off-balance sheet items. We have two things, one is whenever the bank has gone for any kind of commitments or any kind of guarantees or any kind of letter of credit. There are many ways the bank is holding the off-balance sheet items. So, whenever these kind of off-balance sheet items the bank hold, they are also exposed to certain amount of credit risk.

In that context, what basically the banks do, there are, they divide this contract risk into two categories. One is potential market risk exposure. Another one is the current market risk exposure, expected and current. So, the risk exposure refers to the danger of loss at some future time, if the customer who earned into a market based contract with the bank fails to perform and whenever it is a current market risk exposure, it is basically designed to measure the risk of loss should a customer default today on its contract, which would compel the bank to replace the failed contract with a new one.

So, there are certain kind of risk which can be expected in the future and there are certain risk which is already bank is exposed to that. So, the off-balance sheet items has like two components of the credit risk exposure and accordingly, the weight should be provided to that.

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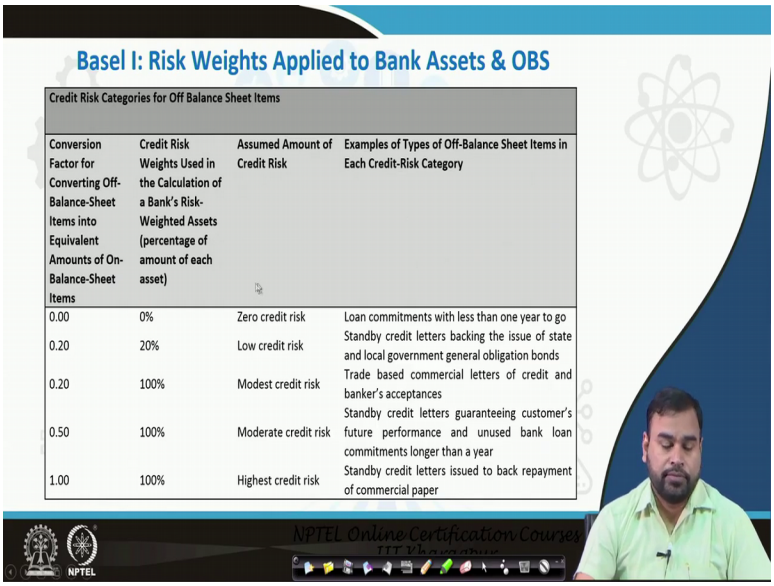

So, if you see this table, we have seen that the loan commitments with less than one year to go, the standby credit letters one year to go. These are basically zero credit risk off-balance sheet items and in the 20 percent category. We have the standby credit letters backing the issue of state and local governments, general obligation of the bonds, these comes under 20 percent category. Trade based commercial letters of credit that we have discussed before and the banker's acceptances.

These comes under the 100 percent category and the conversion factor for them is 0.2 and we have the standby credit letters guaranteeing customers future performance and unused bank loan commitments longer than a year that basically, the 100 percent risk category and we have given a conversion factor of 4.5 and the standby letter of credit ratio to the bank, the payment of the commercial paper that comes under the highest risk category.

We are giving a conversion factor of 1. So, this is the way the conversion factors are considered and accordingly, they can be converted into the on balance sheet items category and then the weights can be given to the different amount of money exposed to that particular kind of instruments.

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Then the bank also is holding some other off-balance sheet items like derivatives. So, according to Basel 1, if you see the Basel 1 basically adjusted to account for risk from derivatives like futures, options, swaps and all these things are too hedge against the changing currency prices, interest rates and the positioning of the commodities.

So, many of the derivatives instruments are exposed a bank to counterparty risk also, the risk of many of these instruments limited because they are traded in the organized exchanges. But still there are some risk involved in that and the credit conversion factor for interest rate derivatives are always set lower than the credit conversion factor of the contracts tied to the value of the foreign currencies. So, because of the nature of the derivatives contract, the conversion factor also change.

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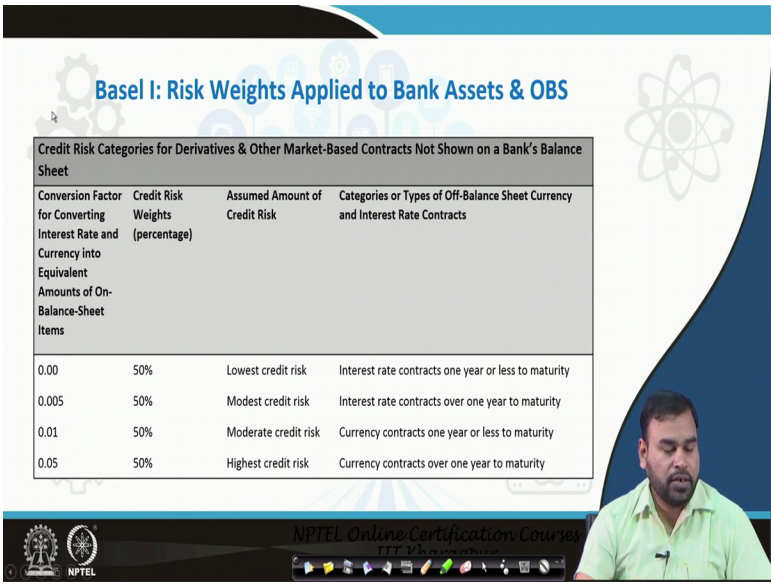

So, in this case, if you see the conversion factors like this. The conversion factor for converting interest rate and the currency into equivalent amounts of on balance sheet items. If you see this one, we have zero conversion factor whenever we. The interest rate contract one year or less to maturity. It is 0.5 percent, if you talk about, then it is interest rate contracts over one year to maturity.

That means 0.005 and conversion factor of 1 percent, we are telling about the currency contracts one year or less to maturity and it is 5 percent of the conversation, if the currency contracts over one year to a maturity that means the currency contracts are more riskier than the interest rate contracts what the banks are holding. So, this is the way the conversion factor can we considered to convert those particular assets as a part of the amount of on balance sheet items what the banks are holding.

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So, now if you see that there is a process or there is a steps, what we have to follow to calculate the risk weighted asset. So, first we have to compute the risk equivalent amount of each off-balance sheet item. Find the appropriate risk weight for each balance sheet of the off-balance sheet items, whatever the bank has and multiply each balance sheet credit equivalent of off-balance sheet items by the correct risk weight as per the guidelines. Then add all these things to find out the risk weighted assets.

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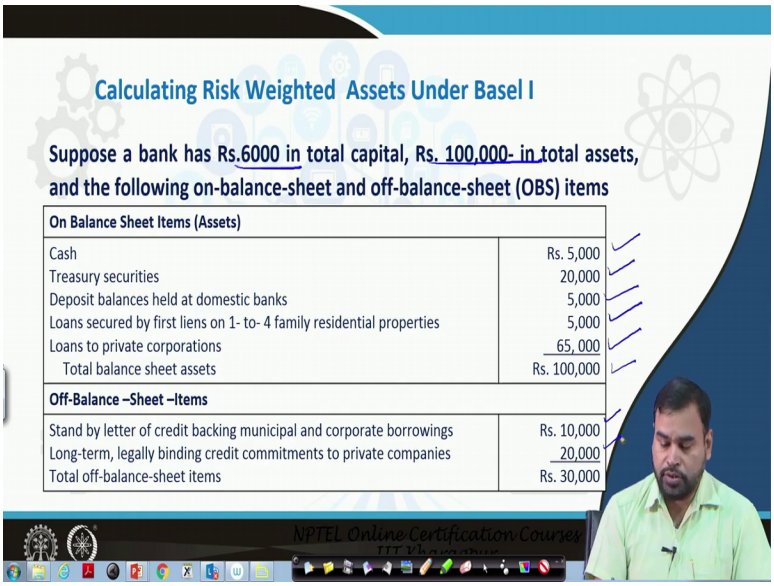

So, in this context considering those conversion factor and the different balance sheet, on balance sheet and off-balance sheet items, if you see this example it will be more clear for you that if you see that let, there is a hypothetical bank whose capital is a 6000 and total asset values 1 lakh.

Then we have the cash 5000, treasury security is 20000, deposit balance 5000, loan secured by the 1 to 4 primary residential properties 5000. Then your private corporation loan is 65000. Then we have total 1 lakh here and we have two off-balance sheet items here, your 10000 and 20000 total is 30000. Then we see that using this conversion factor and all those kind of guidelines given by Basel 1.

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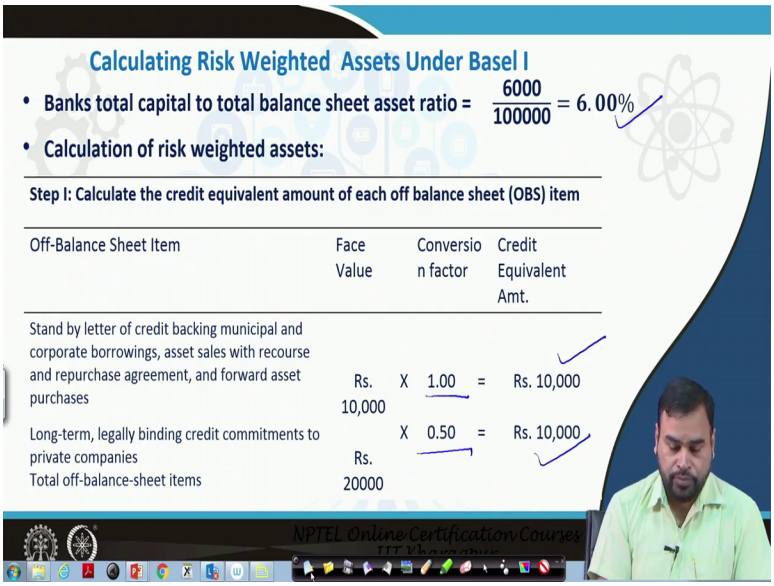

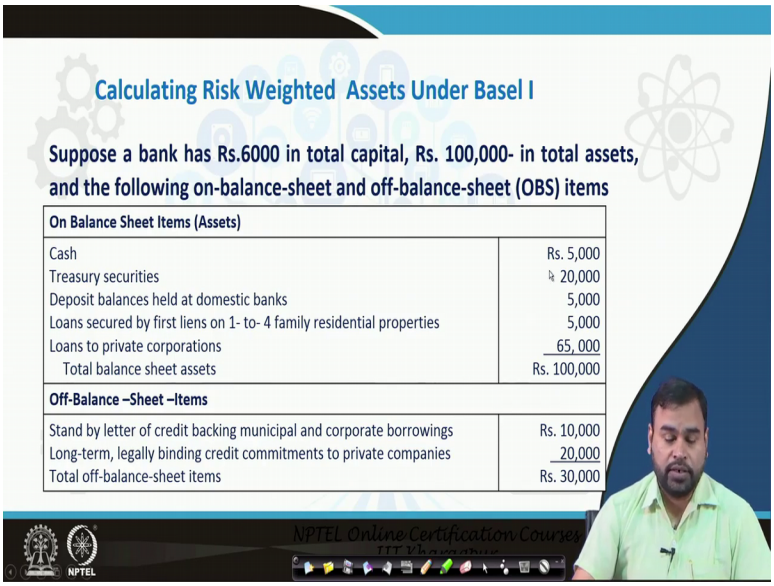

We can see that how the risk weighted assets can be calculated and the capital adequacy ratio can be calculated. Your total capital ratio has become 6 percent. In this case, because we have only the total capital divided by the total assets that already we know. But now we have seen while concluding the risk weighted asset, we have two off-balance sheet items, for one we have a conversion factor 1. For others it is 5.5. Then here it is 10000 into 1. It is 10000. 20000 into 0.5 that is 10000.

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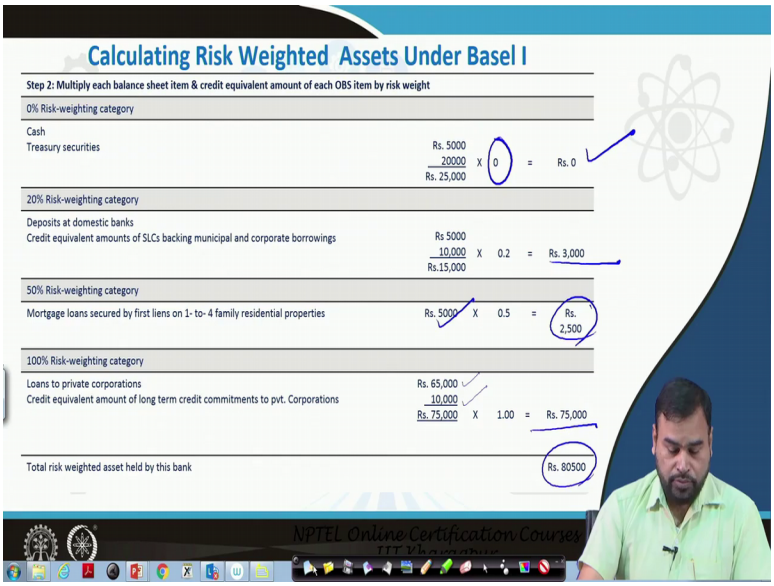

Now we can come to the final calculations. So, we have the on-balance sheet items like cash, treasury securities. We do not have any risk with respect to that, that is why you are putting zero here, the zero value 20 percent risk weighing category, that is you have 5000 and 10000 and we have value this 3000 here.

The 50 percent risk weighing category, we have 5000 only that is coming 2500. Then the 100 percent category we have, this is your on-balance sheet, this is your off-balance sheet. Then we have 75000. Then we have total is 80500, to your RWA has become 80500 hundred and now if you want to see that your final calculation.

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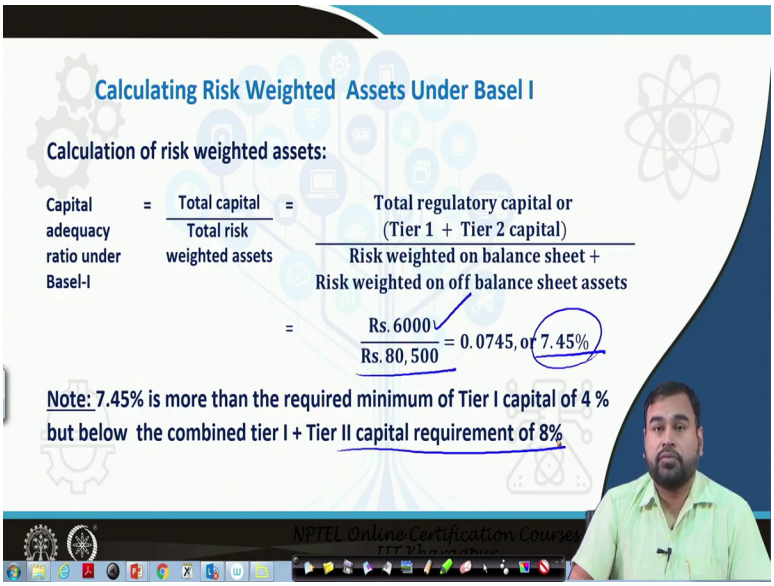

That your total capital was 6000, which was given your total capital was 5 000, which was 6000 which was given and risk weighted asset is 80500 hundred. Then your ratio has become 7.45 percent. So, the 7.55 percent, if you, whatever 7.4 we have calculated. That is less than the minimum requirement. That is 8 percent.

That means the particular bank is maintaining a capital adequacy ratio which is below the regulatory limit or the minimum regulatory limit of 8 percent. That means it is a worry some matter for the bank and the bank has to do certain things for this.

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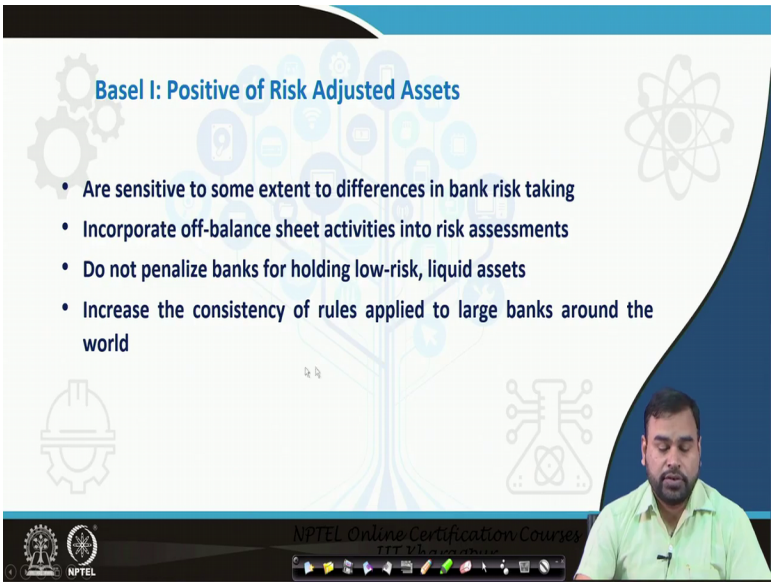

So, there are, these are sensitive to, there are some positive things with respect to use of the risk weighted asset, because there is sensitive to the some extent to difference in bank risk taking, in corporate off-balance activities in the risk assessments, do not analyse banks for holding low risk liquid assets, increase the consistency of rules applied to large banks around the world.

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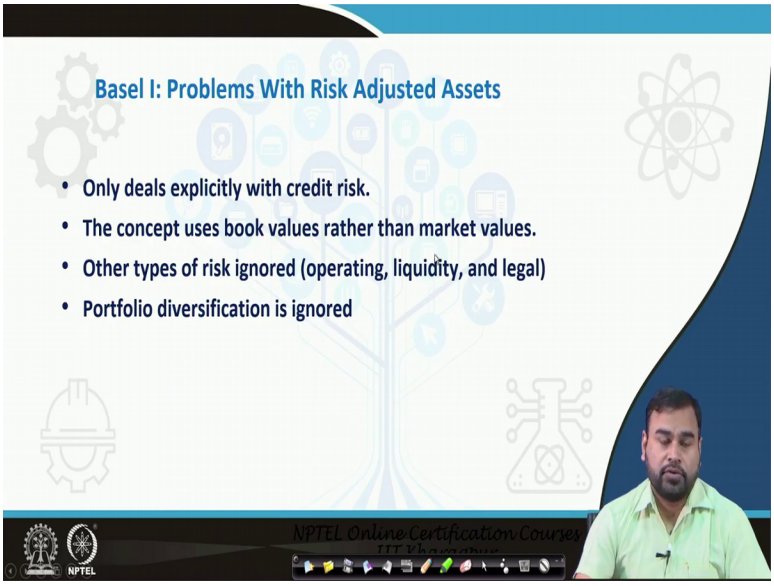

But there are some problems because it deals with only the credit risk and the concept uses book value rather than the market value of assets. Other type of risks are ignored for calculating this and portfolio diversification concept is also ignored here.

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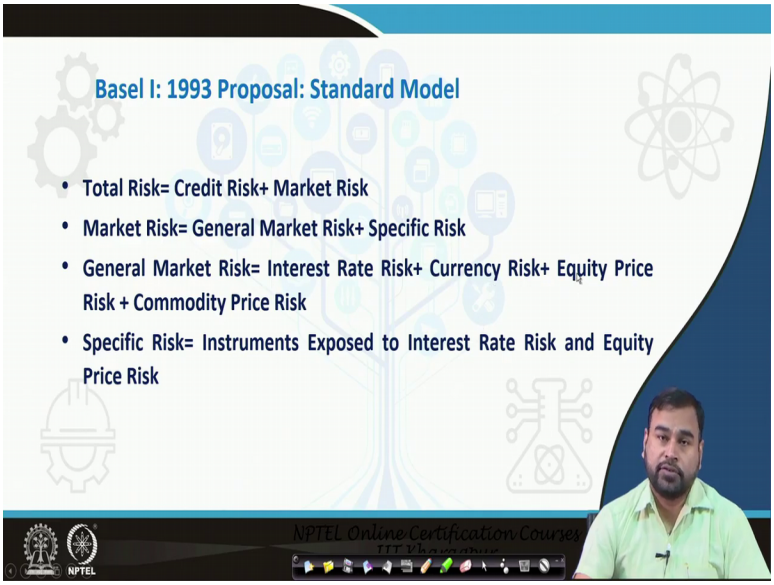

Then after that, considering the importance of the other risk, they have added the market risk into the consideration and the source of market risk is basically fluctuations of the interest rate and currency risk and the price of the equity.

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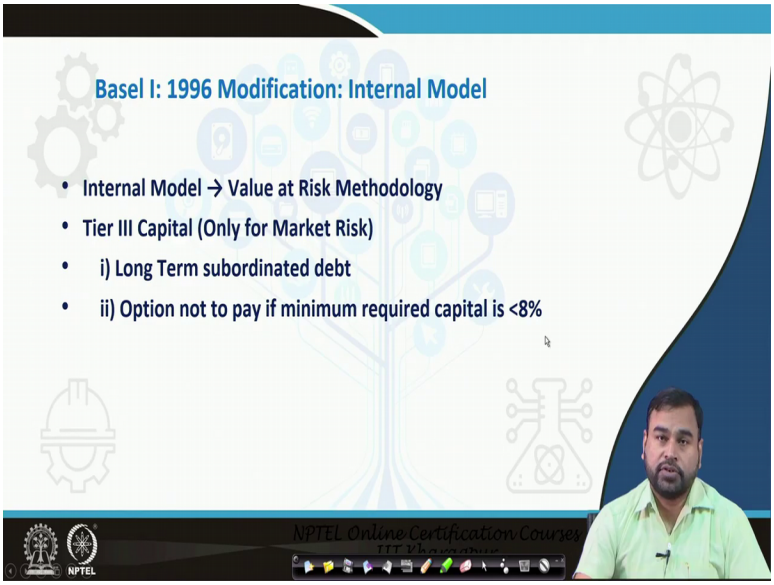

So, in this context they have developed a model, which is basically the value at risk model to calculate that. So, now they have added another kind of component of the capital that is tier 3. Which only for the adjusting the market risk. Where we have the long term subordinated debt is considered as the part of the tier 3 capital and options not to pay, minimum required capital is 8 percent. That is the rule basically they have provided.

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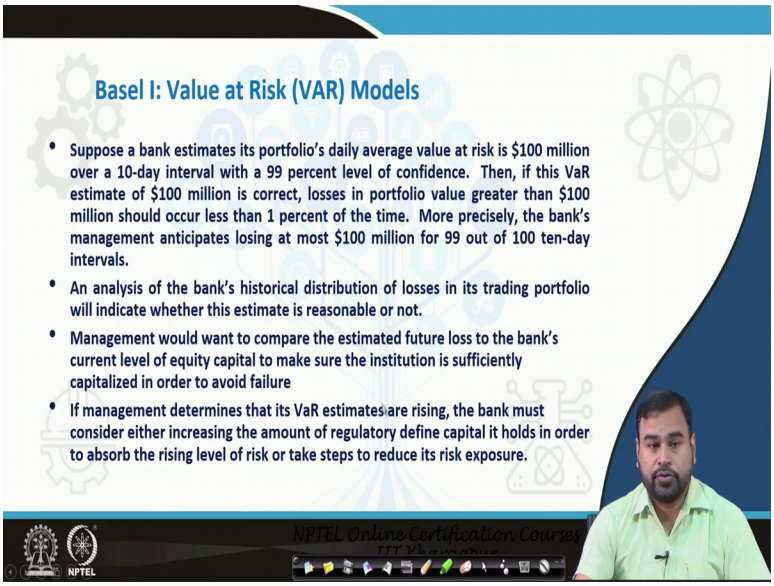

And according to this the value at risk methods already we have discussed in the previous session. But one example is suppose a bank estimates its portfolio daily average value is 100 million dollar, over a 10 day interval with a 99 percent level of confidence and if this VaR estimates 100 million dollar is correct, then losses in the portfolio value greater than 100 million dollar should occur less than 1 percent of the time, more precisely the bank's management anticipates losing of 100 million for 99 out of 100, 10 day intervals.

So, this is an analysis of the bank's historical distribution of losses of the trading portfolio. That is why the management should always want to compare the estimated future value, future loss to the current level of equity capital to make sure that the institutions is sufficiently capitalized in order to avoid failure. If management determines that it VaR estimates arising the bank must consider either increasing the amount of regulatory defined capital it holds in order to observe the rising level of risk to take the steps to reduce the risk exposure.

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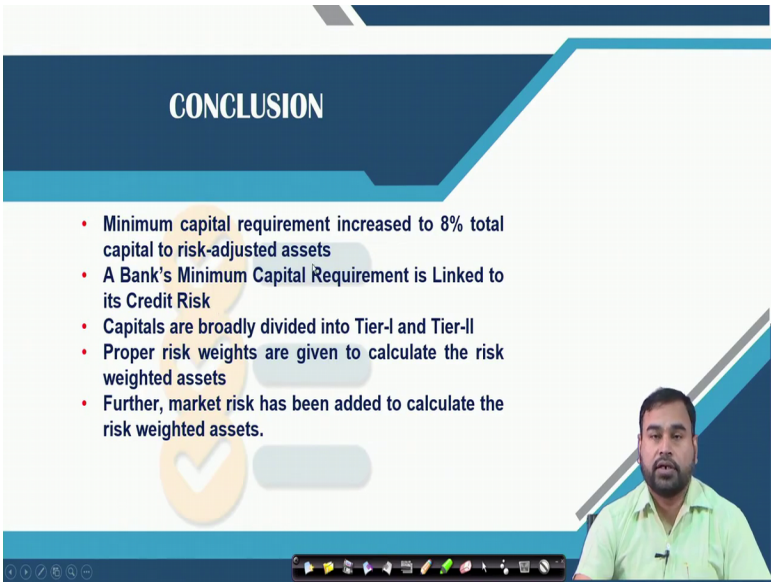

So, what basically we discussed here, the minimum capital requirement has increased from 8 percent to total capital, to risk adjusted asset. Bank's minimum capital requirement is linked to its credit risk. Capitals are broadly divided into tier 1 and tier 2. Proper risks weights are given to calculate the risk weighted assets, particularly the risk weighted assets are calculated on the basis of the credit risk and market risk has been added to calculate the risk weighted assets further in 1996.

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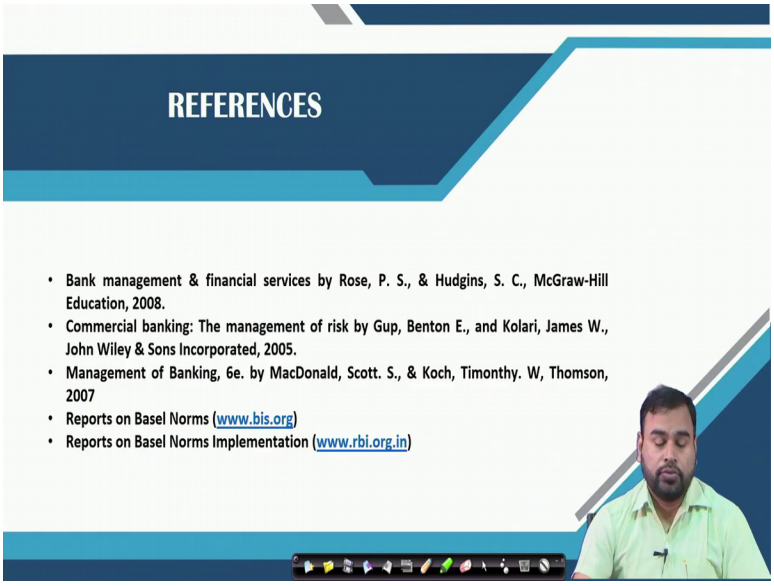

So, these are the references what you can go through. Thank you.