Management of Commercial Banking
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Lecture 48
Managing Liquidity of Commercial Banks - III

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Good morning. So, in the previous class we started the discussion on the, how to estimate the liquidity needs of the commercial banks and there are 4 approaches. One is your sources and uses of the funds approach. Then you have the liquidity indicator approach. Then we have the structure of the fund approach. Then we have the signals from the market approach. So, in the previous class we discussed about the sources and uses of the funds approach and the liquidity indicator approach.

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And in today's session we will be discussing about the structure of the funds approach and the signals from the market place. So, the structure of the fund means we are talking about the different liquid funds which are available with the commercial banks. How that particular structure, we have to always looking at the structure, we have to always ensure that how much liquidity the commercial banks need or how much basically cash they should keep with them or the liquid assets they should keep with them by that they can fulfil the requirements of the different stakeholders.

Then as well as we have also certain kind of indicators which is existing in the marketplace, which also gives certain kind of idea that, what is the liquidity condition or liquidity position of this particular commercial banks at that particular point of time. So, in today's session we will be discussing about these two issues are two different approaches which are used to measure the liquidity needs of the banking sector.

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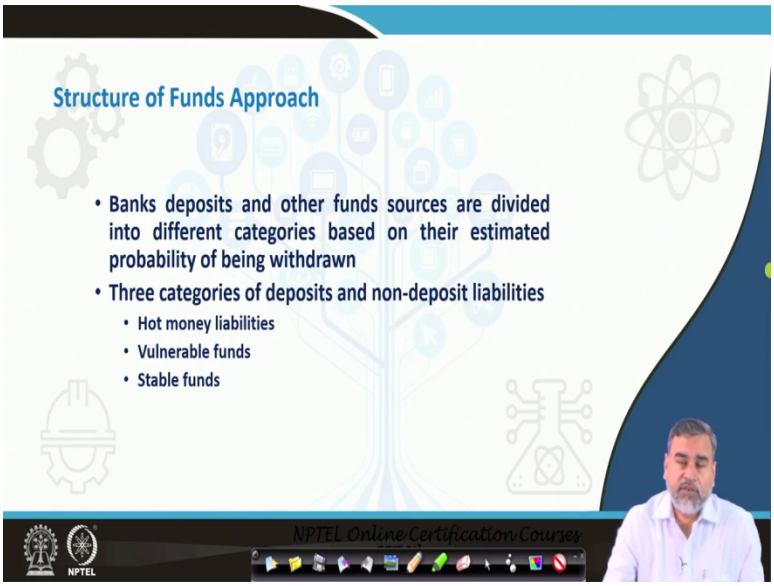

So, coming back to the structure of the fund approach, as just now we are discussing about this particular issue, whenever the banks look at this different liquid assets and liabilities, particularly the deposits and the other funds, these are basically divided into different categories. So, the banks basically divide those types of deposits and the other funds, which are the liquid funds into the different categories based on the probability of being withdrawn.

What is the probability that money will be withdrawn, at when the money will be withdrawn, then a particular period of time and what is the probability that within that particular time span the money will be withdrawn from the commercial bank and which will not be available or existing with the balance sheet that actually firstly the commercial banks basically try to calculate, try to decide.

Then whenever they decide that, on the basis of the probability of a withdrawn or the probability of the money withdrawn from that particular account, there are three types of deposits and the non-deposit liabilities or the banks categorize these assets and these particular deposits or the other liabilities on the basis of the probability of withdrawn of that particular money from that particular account.

So, we have hot money liability. Then another kind of category, we have the vulnerable funds, then we have this stable funds. So, these are the three types of deposits or other term deposit

liabilities which exist with the commercial banks and those categorizations basically are made on the basis of the probability of withdrawal. So, once this is done then after that accordingly they calculate their liquidity requirements in that particular period.

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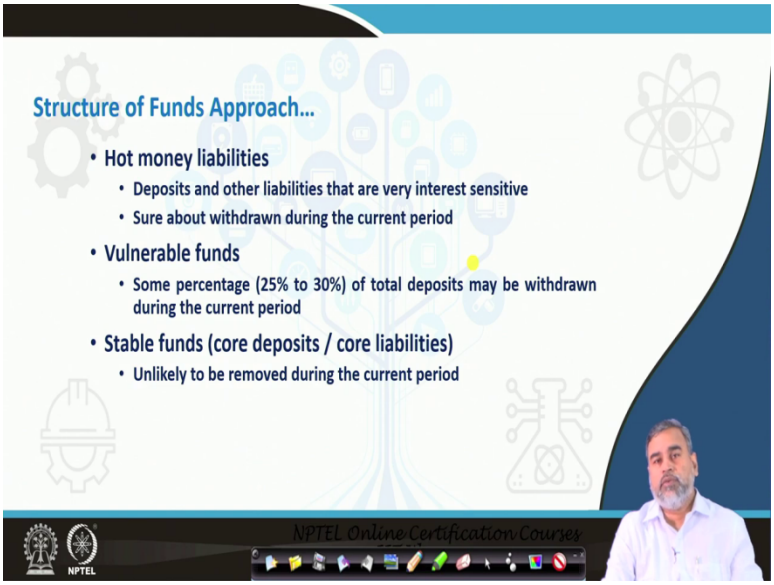

Let us see, what do we mean by this different type of liabilities. If you talk about this, then first one is your hot money liabilities. So, then what do we mean by this hot money liabilities? So, here a hot money in the sense these particular liabilities are highly volatile. Highly volatile in the sense this particular money can be withdrawn at any point of time and that depends upon the interest rate fluctuations in the market.

That means those liabilities are highly sensitive towards the interest rate changes. So, if there is any change in the interest rate, then probability of withdrawn is increasing or decreasing accordingly. So, because of that, we say that, that money available with respect to that particular fund is highly volatile in nature or it is basically highly fluctuating in nature.

So, here the bank is very much sure that, that money is going to be withdrawn. This particular type of deposits is going to be withdrawn at a particular point of time because of the nature of that particular liability. So, the deposits and other liabilities these are very interest sensitive and the bank who is aware of the particular money is deposited that is basically always the banker is always sure that the money will be withdrawn in that particular current period.

And whenever I talk about the vulnerable funds, that here in this case, what basically we have seen that, that is not a 100 percent chance the money will be withdrawn, but their basically there is a probability that certain percentage of the total deposits can be withdrawn in the current period. So, generally it is 25 to 30 percent that 25 to 30 percent of the total deposits in a particular period can be withdrawn or during the current period can be withdrawn.

So, in the previous case there is a 100 percent chance or close to 100 percent chance the money is going to be withdrawn in that particular current period. But in the second category or second class we can say the money will be withdrawn, but the percentage of the total deposit is basically not 100 percent that is basically around 25 to 30 percent. So, that basically is considered as the vulnerable funds.

Then we have another type of fund that is called the stable fund. And the other name of this stable fund is basically the core deposits. So, these are basically the core deposits or core liabilities of the commercial banks. So, here this money is very most unlikely to be removed during the current period.

So, on the basis of the historical experience or past experience or on the basis of the nature of this particular fund or nature of the particular liabilities, the bank is very much sure that this particular money is not going to be removed or not going to be withdrawn from the account in that particular current period.

So, here we have the 3 types of liabilities, 3 types of deposits, which are on the basis of the probability of withdrawn, in that particular current period, the bank basically tries to classify. Already we know that there are different types of deposits, like your saving deposits, current deposits, we have time deposits and all these things.

But here what we are trying to basically classify, we are trying to classify those deposits on the basis of the probability of withdrawn and there we have seen there are 3 broad categories and the stable funds are very much we can say that it will not be withdrawn in that particular period and that will remain for the reasonable period of time with this particular bank.

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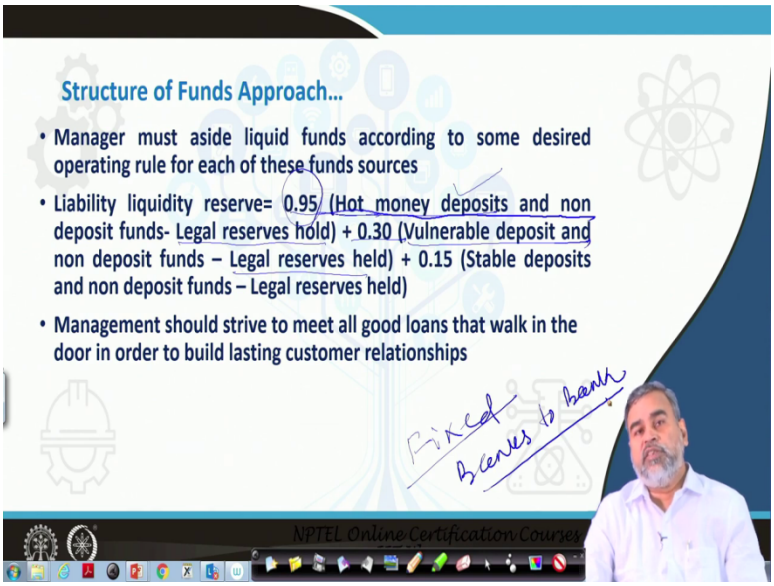

So, now whenever we talk about this then what are the managers of the particular banks do? The banks basically, the manager basically, must aside the liquid funds according to some desired operating rule for each of these fund sources. That means against that particular, because the money is going to be withdrawn that is basically we are sure, that is related to the hot money. Then we have some kind of vulnerable funds where there is less probability that the percentage of the money which will be withdrawn that is relatively less.

So, in the beginning the manager basically tries to classify them and after the classification how much liquidity they should keep, liquidity reserves, they should keep against that particular deposits that actually they try to estimate. So, in this estimation process, what basically they do? They do that basically always they keep in the mind that on the basis of the probability of withdrawn, they try to certain kind of weights.

So, generally if it is a hot money then they basically multiply with 0.95. So, already every bank has a legal reserves, what do they have to maintain with them and apart from the legal reserves because banking sector has a fractional reserves system some of the reserves basically is mandatory or the regulatory reserves they want to keep and there are certain reserves they always keep with them to maintain their or maybe to satisfy their liquidity needs.

So, whenever I talk about the liquidity liability reserves, so if it is a hot money then how basically we can calculate it. So, in this context we calculate that 0.95 into the hot money deposits what is the amount of money which comes under the hot money and the non deposit funds, if they have, minus the legal reserves hold, how much legal reserves they should hold against that, that has to be deducted from this and they can multiply 0.95 which is basically the weights they were giving it because there is a close to a 100 percent chance that the money is going to withdrawn in that particular current period.

And if it is a vulnerable fund, then their they multiplies 0.30. So, that is why 0.30 into this deposit comes under that category minus the legal reserves and if it is a stable fund, generally we give 0.15, the weights basically is giving as 0.15. But here what basically we try to see that we try to see that but this is 0.95, 0.30, 0.15 these are not basically fixed. So, these are not fixed in nature. So, this is basically varies from banks to bank.

So, across the bank, these particular weights can vary and that particular weights or that particular percentage can be always consider on the basis of the past experience, what the commercial banks have. So, the management should always strive to meet all good loans that a walk in the door in order to build the lasting the customer relationship, what does it mean?

To maintain the liquidity one thing you remember that whenever the banks want to mention the liquidity, they have to sacrifice their loans. So if, but the banks are not inclined to sacrifice the loans if they have a good loans. So, if the criteria or the credit appraisal process is strictly followed, so any kind of loan seeker will satisfy that particular conditions what the bank specifically provides against that particular loan.

So, then bank is not always inclined to forgo that loan to maintain the liquidity. So that is why the bank always go for the good loans or they try to disperse that good loans. And against that, what they have to do? They are always in the dilemma that whether the liquidity can be maintained or liquidity can be always, reserves can be maintain against that particular kind of probability of the withdrawn of the deposits.

But still the bank will never forgo this different type of loans what they want to provide, if this particular loan is considered as a good loan. So, that also has to be considered while calculating

the liability liquidity reserves. The liability liquidity reserves, in the previous case whenever we have seen this, we have considered only the deposits but whenever, we consider that the loans are also part of the liquidity system and the bank is not inclined to forgo all kind of loans which are considered to be a good loan. Then what happens that bank also goes for the consideration of the loans while calculating the liquidity reserves.

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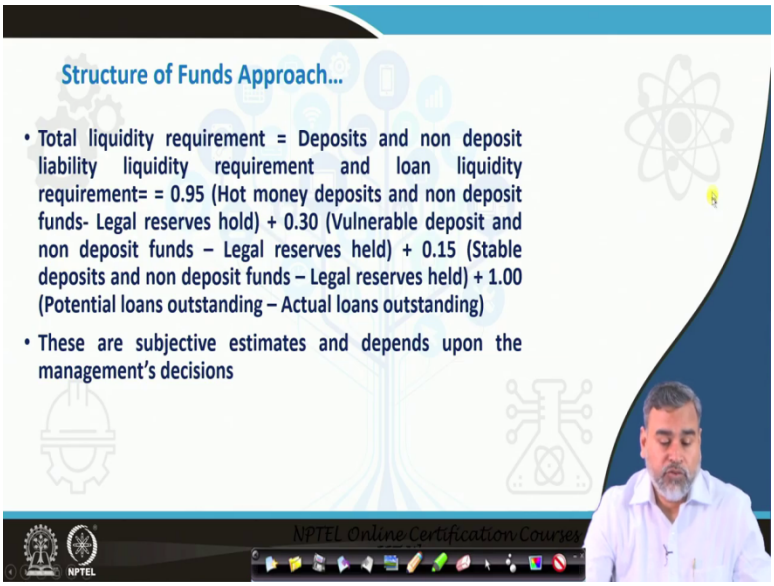

So, in this case, what basically we do? We can make the modifications in this particular case. So, here the deposits and non-deposits liability, liquidity requirements and the loan liquidity requirements, these are the two things has to be considered. So, whenever we are considering both the things then the as usual, whatever thing we have done, 0.95 into hot money deposits and non-deposit funds minus legal reserves plus 0.3 into a vulnerable deposit and non deposit funds minus legal reserves plus 0.15 into stable deposits and non-deposit funds minus legal reserves plus the 1.0 that means we are assuming there is a 100 percent chance the loan will be disbursed, if it is a good loan.

Then the potential loans outstanding minus the actual loans outstanding. How much potential loan the bank will have depending upon the expectations, what the bank always considered and already existing how much actual loan is there, that we are considering it is 100 percent but it may not be a 100 percent it may be less than that.

It depends upon already we said that this subject, these are the subjective estimates and depend upon the management decisions. So, that varies from one bank to another bank that how much basically weight they want to provide whenever they want to calculate the total liability requirements in terms of the maintaining the liquidity.

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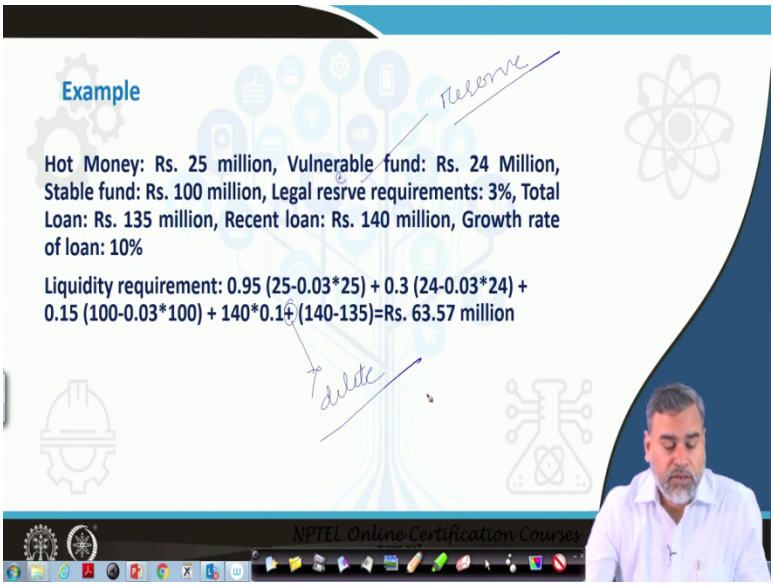

So, here if you see this particular example, then you can come to known that what basically we are trying to do. Let the hot money amount is 25 million rupees, in that particular balance sheet of the commercial bank. Then the vernacular fund is 20 million rupees and this stable fund is a 100 million and the legal reserve requirement is 3 percent. So here we have to, there is a e, this is the reserve.

So, the legal reserve requirements is 3 percent and the total loan is let 135 million, which is outstanding and you are expecting a loan of, expectations about this particular loan is recent loan is 140 million. Then the growth rate of the loan, you assume that 10 percent. So, in that case, if you want to calculate the liquidity requirement, that is 0.95 into 25 minus 0.03, 3 percent is the your what the legal reserve requirement into 25 plus 0.3 into 24 minus 0.03 into 24 plus 0.15 into 100 minus 0.03 into 100 plus 140, 140 is the expected loan, the potential loan what the bank wants to provide in this particular period into 0.1 plus 140 minus 135.

Here, there is a small mistake that it is basically here if you see the formula, this is your 140 into 0.1 into 140 minus 135. This plus is not basically there. So, you will find that 63.57 million. So, considering both the loan requirements and as well as the deposit requirements of this, we can find out that.

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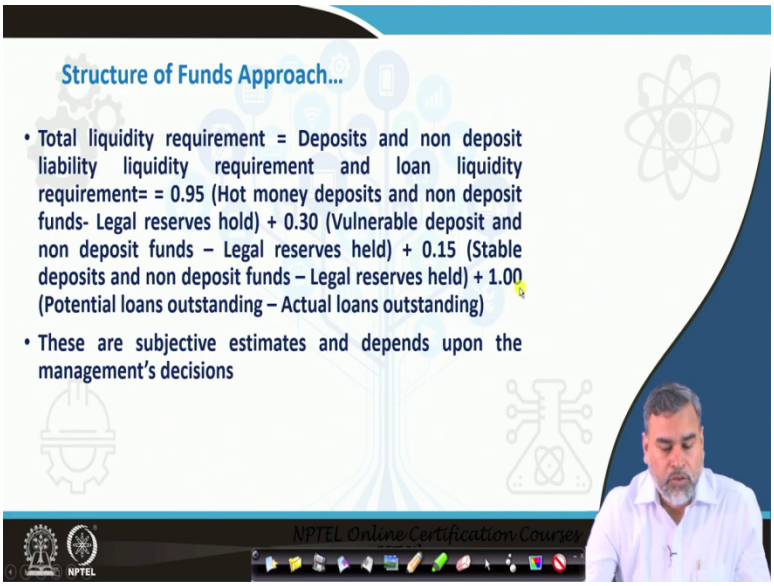

Because, if you see this is basically your potential outstanding loan plus 1.00 into potential loans outstanding minus actual loans outstanding.

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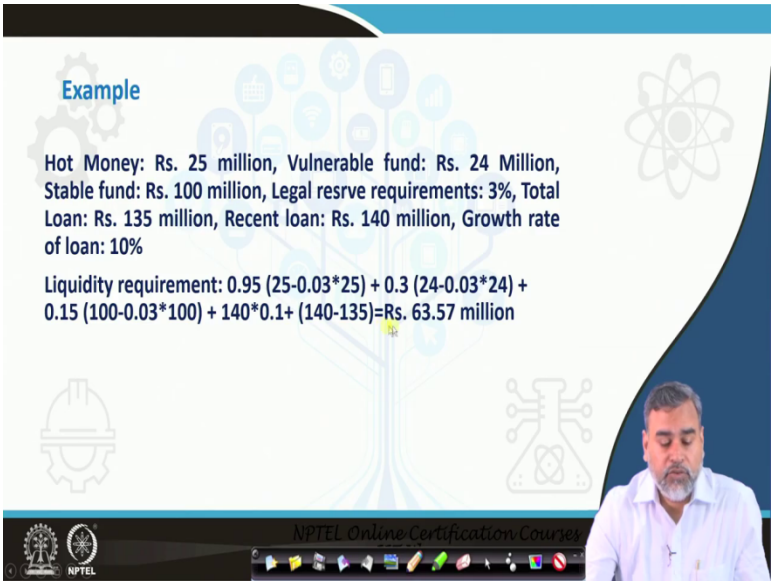

So, in this case it will be coming 63.57 million. So, the legal requirements of that particular bank is, in terms of for the loan, the liquidity requirements of the bank is 63.57.

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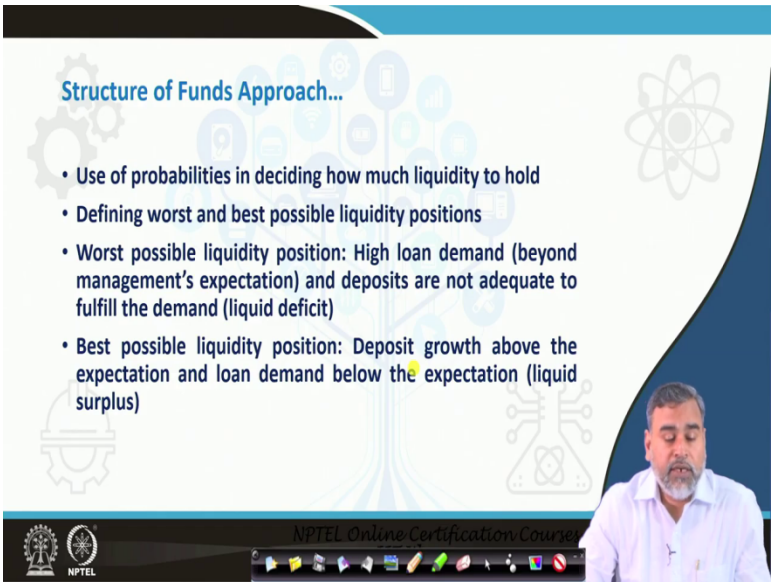

Then another type of way, what basically here we are trying to see, we are considering the total amount of money which is kept in the different category. But here we can also go for the use of probabilities that use of the probabilities in deciding how much liquidity to hold. So, whenever we are going for this, we have, we can decide that, on the basis of the expectations of the, on the basis of the different category that how much deposits should be there, how much loans should be there, how much the demand for loans should be there, and how much expected withdrawn should be there.

So, accordingly we can give the certain kind of weight to the different probabilistic functions, by that we can use the probability that how much liquidity should hold in the different conditions. So, in this case, what basically we can do, we can have a kind of scenario building. So, we have the best possible liquid positions and the worst possible liquid positions and in the normal liquidity positions.

So, we can categorize. Let there are 3 different conditions we can define. So, in the basis of the 3 conditions, we can try to find out that what is the liquidity available in that particular segment.

So, whenever you talk about the worst possible liquidity position that is a, that means that is when that particular thing can arise, whenever that is a high demand for the loans which is beyond this management expectations but the deposits are not adequate enough to fulfil the demand.

So, enough deposits are not available or they expected deposits what basically will come to the bank that is also not known or beyond the expectations of the manager. Let that amount is less and but there is a high loan demand which is not expected by the management beforehand. So, in that particular point of time, what happens that we can define that particular condition as the worst possible liquidity position.

Then if you have a worst possible liquidity position, then we have also a best possible liquid positions where the reverse thing can happen. The deposit growth is above the expectations and the loan demand is below the expectations. So, in the previous case, whenever the loan demand is beyond the expectation in terms of the high demand for the loans and the deposits basically is also beyond the expectation which is relatively low.

We can say that there is a deficit in terms of liquidity with respect to that commercial bank. But whenever the reverse thing happens, we can say that there is a liquid surplus. So, accordingly the bank can decide that how much liquidity this would maintain to manage this particular position, liquidity position of that particular bank.

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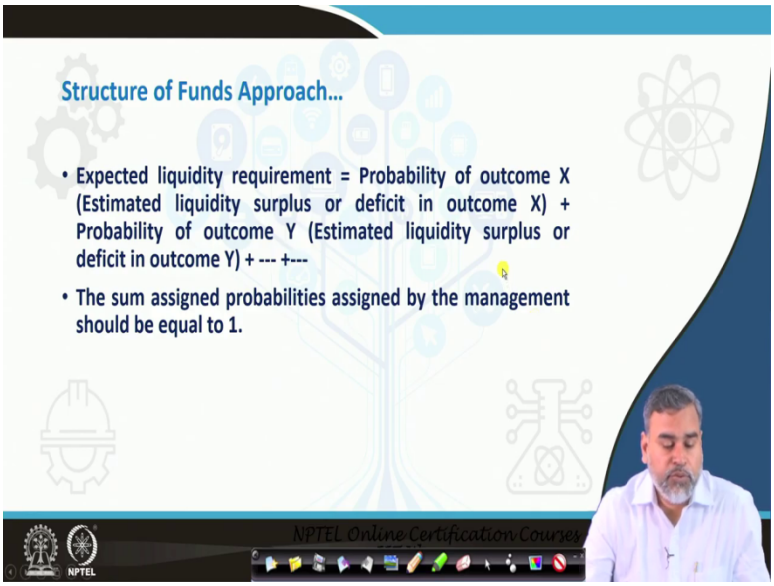

So, here what happens, for example, if you want to calculate the expected liquidity requirement of a commercial bank, this can be calculated in this way. The probability of outcome multiplied by the estimated liquidity surplus or the deficit in outcome X let the probability of outcome X into the estimated liquidity surplus or deficit in outcome X plus the probability of outcome Y into the estimated liquidity surplus or the deficit of outcome Y and so on.

Then whatever probabilities are there, then you can multiply with respect to the expected liquidity surplus or the deficit. Then finally, the expected liquidity requirement of the bank can be calculated. But one thing you keep in the mind, the sum which are assigned to the different probabilities by the management should be equal to one. So it should not exceed a 100 percent. So, all those probabilities which we are assigning that should be equal to one.

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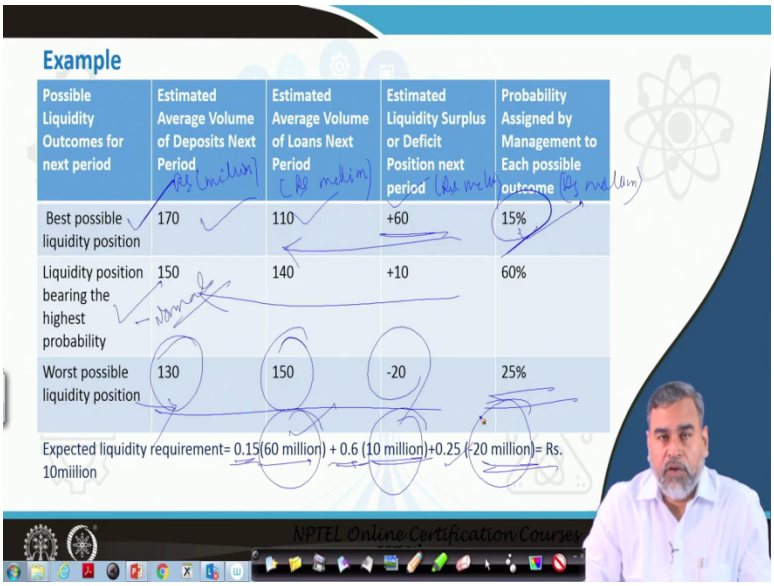

So, in this contest, if you see that, we can see that let this is the example. There is a best possible liquid position that is a liquid position bearing the highest probability that means it is the normal conditions and this is the worst possible liquid position. So, the bank has made there are three different expected positions which is going to be prevailed in this particular commercial bank in the next period.

Then accordingly, they have using the historical data, they have calculated the estimated average volume of the deposits in the next period. Estimated average volume of the loans in the next period, then estimated liquidity surplus or the deficit position in the next period, then the probability which are assigned by the management to the each possible outcome. So, in the best possible combination is let all these things are in the million rupees. So, the best possible all are basically in terms of the million and the unit is the rupees.

So, here for example, we have seen in the best possible liquid positions is the 170 million, which is the average volume of the deposits in the next period which is going to be prevailed and the estimated average volume of the loans in the next period, which is estimated to 110. Then finally we have a surplus in terms of the liquidity that is basically let 60 million.

Now, in the normal condition on an average we are maintaining the total average deposit amount that is 150. Then the average estimated loan we are maintaining 140. Then your liquidity surplus

on an average we are mentioning 10 and there is a 60 percent chance this situation can arise and here in the first case the best condition can, there is a 15 percent chance that this figure will arrive for this particular bank.

And other case in the worst possible case if you see that is your deposit will be 130, your loan will be 150 then you have a deficit of minus 20 then these chances are 25 percent. This situation can prevent. There is a 25 percent chance, this situation will arise and there is a 60 percent chance, this situation will arise and there is a 15 percent chance, this situation will arise.

So, this is the way, if the management can make a matrix that how this particular loans or probability of the different kinds of deposits and loans can be considered for that particular bank, then what will happen that, the expected utility requirement they can calculate. The expected liquidity will become 0.15 which is 15 percent into 60 million. So, this is your probability of outcome, let the X. This is your probability of outcome Y. This is your probability of outcome Z.

So, the probability of outcome there is 0.15 for A that is 60 million, 0.6 is the probability for the normal condition that is the 10 million which is again a surplus and 20 million which is a deficit and there is a probability of 25 percent. Then your 0.15 into 60 million plus 0.6 into 10 million plus 0.25 minus 20 million that will give you the 10 million.

So, in this context, what basically here we trying to say, we are trying to say that the expected liquidity of that particular banks would be 10 million if this kind of scenario can arise. So, all the commercial banks basically can go for it kind of scenario buildings. They go for a simulated analysis to consider this different scenario, how the worst and best possible outcomes can be extracted from this.

And accordingly the different type of weights will be given and that weights if you multiply with respect to that deficit or the surplus liquidity surplus, then what basically you can do the expected utility requirement for the next period can be calculated by the commercial banks and all of you know that this particular liquidity is a very shorten concept.

So, generally the prediction period is for one week to one month. It does not go beyond that. So, in this context what we are trying to see, if lower the frequency, it will be better for the banks to be prepared to maintain the liquidity. So, in this context, what we are trying to say that this is

more realistic approach, that what is the probabilistic distribution of the different outcomes and those outcomes, if you consider then the expected outcomes can be calculated from this. This is the same way basically the expected liquidity requirement of the commercial bank can be calculated.

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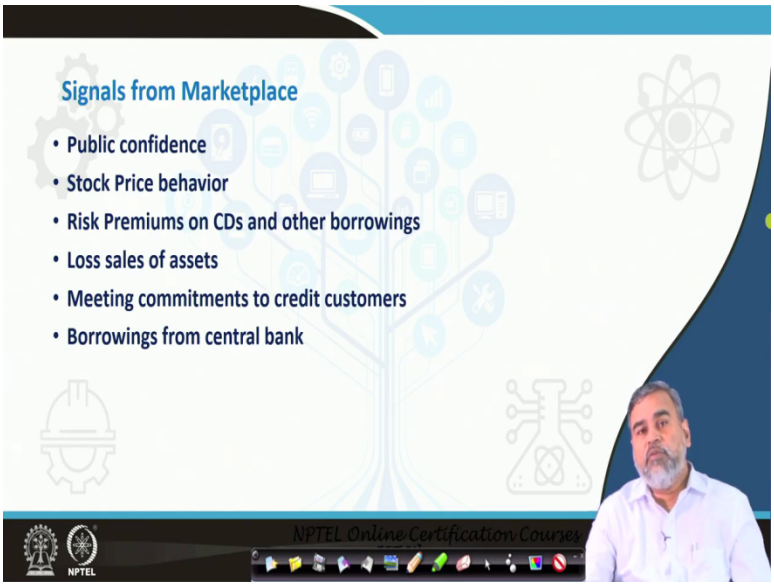

Then we have another approach that is called the signals from the marketplace. What do we mean by the signals from the marketplace? That looking at the market perception about the commercial bank or the different indicators which are existing in the aggregate economy that are in the market, we can judge that whether this particular banks are liquid in out or the liquidity position of the bank is good or bad.

Although this is relatively more subjective or very much we can say that always in aggregate in nature, but still it has their own relevance because of the different kind of advantages in terms of investment point of view and as well as the people point of view to analyse that whether the bank is able to cater to their liquidity requirements in the future or not.

So, the first one is the public confidence. So, if the public confidence on the particular bank is higher then probability of loan deposits will be higher and the probability of loan demand also will be higher. But in this context, because of the availability of the deposits to that particular

commercial bank, the bank will be in a position to maintain the liquidity and as well as they can generate the reasonable amount of the profit to fulfil their objectives.

So, the public confidence, which is a more or less a behavioural factors, but still it is very much significant, which provides a signal that however the bank is able to maintain the liquidity or whether really they are able to cater the demand for the investors or not or the depositors or not. Then another thing is a stock price behaviour. So, if the price of the stock is doing well that means the market perceives that this particular stock market with respect to that particular bank stock is performing well.

So, that also attracts the investors and as well as the other stakeholders including the depositors to have the more money with respect to that, with respect to the deposits and the lending activities. So, in general, if you observe that, the stock price has an indirect impact on the liquidity position of the commercial banks.

Then the risk premiums on the different securities, like certificate of deposits and the other borrowings. The risk premium in this sense, how much premium basically this particular bank is giving whenever there is some kind of extra risk we are taking. So, in this context what basically you see that the premium will be higher whenever the market is not conducive or there is a recessionary trend which is going on in the market.

So in that context, what basically we can say that that time the investors are depositors also will be interested to go for more premiums. So then that basically hampers the liquidity position of the bank. So, by looking at the risk premium in the system, we can say that whether the commercial banks have liquid or not.

Then the loss sales of assets. Sometimes we sale the assets, even if we are in the loss, we are incurring the loss. But still we are selling the assets because we have to fulfil certain kind of liquidity requirements which are very much short term in nature. So, that gives a negative signal that the banks is not able to maintain that liquidity to cater the demand for the depositors and other stakeholders.

Then we have the commitments to the credit customers. Whatever commitments we have made to the different clients to whom we have given these kind of credit or we are going to provide the

credit. Then if we are really meeting all kinds of we can say that to commitments whatever we have already promised then what basically happens that also creates the liquidity within the particular system because of the higher confidence and as well as the perception about the particular bank, which is basically really helping the other depositors to deposit the money and as well as the lenders also will be attracted to borrow the money or the borrowers will be attracted to borrow the money from that particular system.

Then the borrowings from the central bank, how much borrowing specifically we the commercial bank is making from the central bank because you see that more the borrowings that also creates a signal that the liquidity position of the bank is not properly managed. That is why again and again the bank is borrowing the money from the central bank to fulfil that liquidity gap.

So, more the borrowings although it is cheaper for the commercial banks to raise the money and also it is a risk free instrument because the probability of defaulter or credit risk is almost nil against this borrowings whatever they are making from the commercial bank, but still we can say that because of there is some kind of issue, adverse issue which is happening with respect to the liquidity positions.

So, that is also another signal what we can get it from the marketplace that whether the liquidity of that particular bank is properly managed or whether they are maintaining the appropriate amount of liquidity to cater the demand of depositors and the other stakeholders of that particular bank. So, these are the major market signal factors like public confidence, stock price, risk premium, sale of the assets even if you are incurring the losses, but still we are selling the assets and the commitments whether the commitments are met.

If the commitments are not met, then again it is a recent matter for the bank specifically whether they are mentoring these things properly or not. Then also the trends and borrowing from the central bank. So, these are the major kind of factors always we consider from the market point of view that whether really the bank is able to maintain the liquidity to cater the demands of the depositors.

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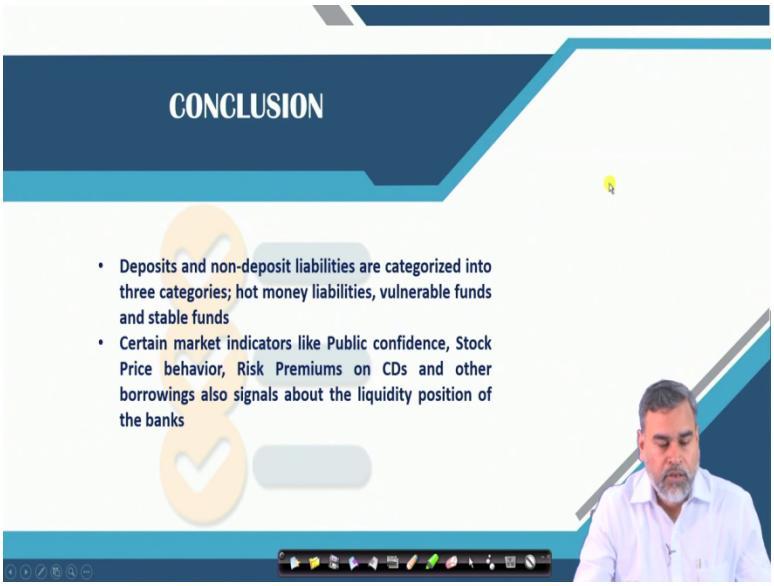

So, what basically we have discussed, we have discussed the, there are different type of we can say that liability the commercial banks holds and those liabilities are basically classified on the basis of the probability of withdrawn. And here what we have seen the deposits and non-deposits liabilities are categorized into three categories like hot money liability, vulnerable funds then stable funds and all categories are made on the basis of the probability of withdrawn with respect to that particular account in the current period.

Then there are certain market indicators just now we have discussed like public confidence, stock price, risk premium, then the other borrowings, borrowings from central bank. These are the major signals provide the major signal of the liquidity position of the commercial banks in a particular point of time.

So, these are the different approaches what in out sell what basically we can say, there are four approaches which are used to understand the liquidity needs of the particular bank. One is sources and uses of the funds approach, liquid indicators approach. Then we have structure of the fund approach. Then we have these signals from the market place approach.

So, in using this approach, first the commercial banks try to measure that, how much liquidity they need. Then after that they will go for certain kind of strategy to manage the liquidity in such

a way by that the optimum liquidity can be maintained and the profitability will not be getting disturbed by those type of banks.

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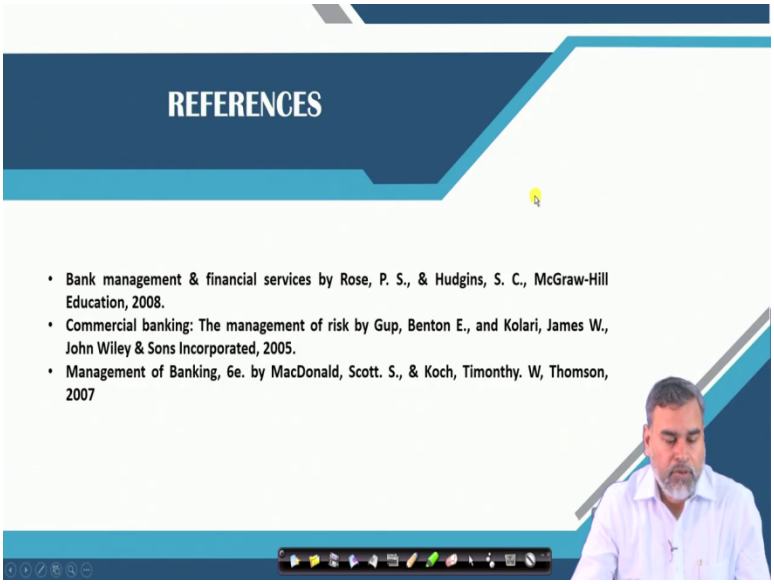

So, these are the references, what you can go through for the detailed discussion on this particular issue. Thank you.