Management of Commercial Banking
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Lecture - 43
Management Investment Portfolios – III

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So, after the discussion on the different type of long-term and short-term securities which are generally consider by the commercial banks for their portfolio formation or portfolio construction, in today's session we will be discussing about the what are those factors which affect the choice of investment securities.

And in this particular context we have to always keep that focus on the expected return what they want to realize from that particular investment and what are those different type of risk but probable risk what the commercial banks may face whenever they construct a portfolio to maximize their return. Then what kind of pledging requirements they should have whenever the portfolio constructions are made.

So, these are the different issues which are very much important from the portfolio management perspective, so or the investment management perspective that whenever we talk about the investment management perspective that we have to think that what kind of risk we are going to face and what is the expected return what we are going to realize and accordingly we have to design our portfolio in such a way, by that this particular thing should be considered in a systematic way to maximize the return.

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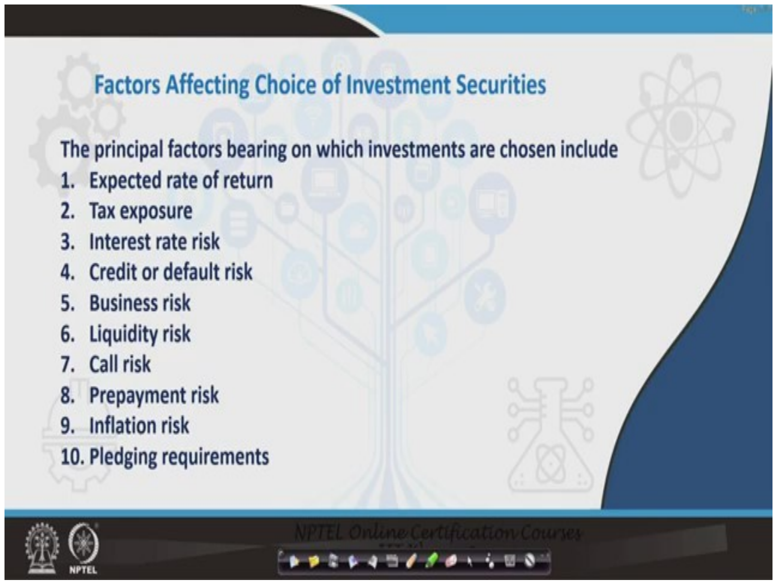

So, if you consider that different type of inputs or different kind of factors which are affecting the choice of investment securities that basically include the expected rate of return, the tax exposure and the different type of risk which includes the interest rate risk, credit of the default risk, the business risk, the liquidity risk, call risk, prepayment risk, inflation risk and finally the pledging requirements.

So, these are the different type of concepts or different kind of factors always the commercial banks consider whenever they construct the portfolio. So, let us see that what exactly those particular type of risks are there and what do mean by the tax exposure in this particular context and how to define the expected rate of return in this particular context whenever the commercial banks wanted to make the investments in the market.

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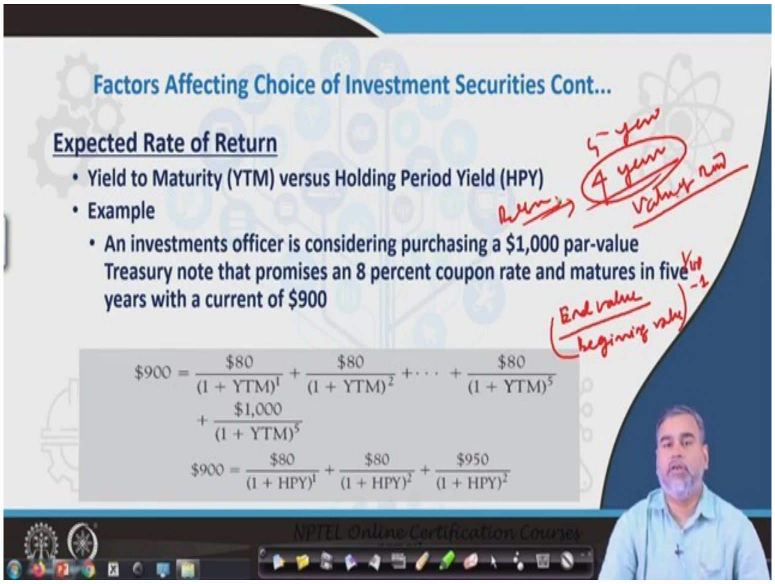

So, whenever we talk about the expected return, it is nothing but the yield to maturity versus the holding period yield. Whenever we talk about the yield to maturity, it is nothing but a particular kind of return or a particular kind of yield which basically makes the present value of cash flow equal to the price of that particular security.

So, the commercial banks always try to extract that much type of yield which can equalize the expected cash flow what we are going to receive in terms of the coupons and as well as the face value of that particular bond. And finally that present value of those cash flows will be equalized to the market value of that particular security. So, that is called the yield to maturity.

But the holding period yield means that is nothing but the return what you are extracting after a particular holding period or the ending value of that particular investment and what price you have paid to buy that particular security. So, that is a holding period, yield is nothing but the return what basically or the particular value what you got it in the end of this particular redemption of the particular bond and what price you have paid whenever you have started investing in that particular bond. Then the ending value divided by the beginning value to the power 1 by n minus 1. That will basically give you the holding period yield.

So, the holding period yield is different from the yield to maturity in the sense yield maturity is related to the concept of the present value but the holding period yield is related to the how much exact yield you are going to realize if you are investing in that particular bond. And instead of holding it up to the maturity you are get rid of or you are trying to invest in that particular bond again in the market and what point of return you got in that particular point of time, that is basically called the holding period yield.

So, that is why the holding period yield whenever we talk about, this is basically written as this, your end value at the time of the redemption of the bond divided by the beginning value to the power 1 by HP minus 1. The HP is basically your holding period. So, here if you see that somebody is holding a bond with maturity period is 5 years if he has hold that particular bond up to 4 years, then after 4 years how much basically the value of the bond?

Or how much total value he got by investing that 4 years holding, then what price he has paid whenever he has started investing in that bond in the beginning? Then that value divided by the beginning value to the power 1 by 4 minus 1 that will give you the holding period yield. But whenever we talk about the yield to maturity, yield to maturity is nothing but that we are holding that particular bond up to maturity and we are trying to equalize that particular value with respect to the market price of that particular bond.

So, that is the interest rate which is basically making this present value of the cash flow is equal to the market value of that particular bond. So, the commercial banks whenever they construct the portfolio they have to consider that how much return they were expecting from this? Either it is in terms of holding period return or the yield to maturity that what, really what they are expecting from this. So, this is the first factor basically we have to consider whenever we started constructing the portfolio for the investments.

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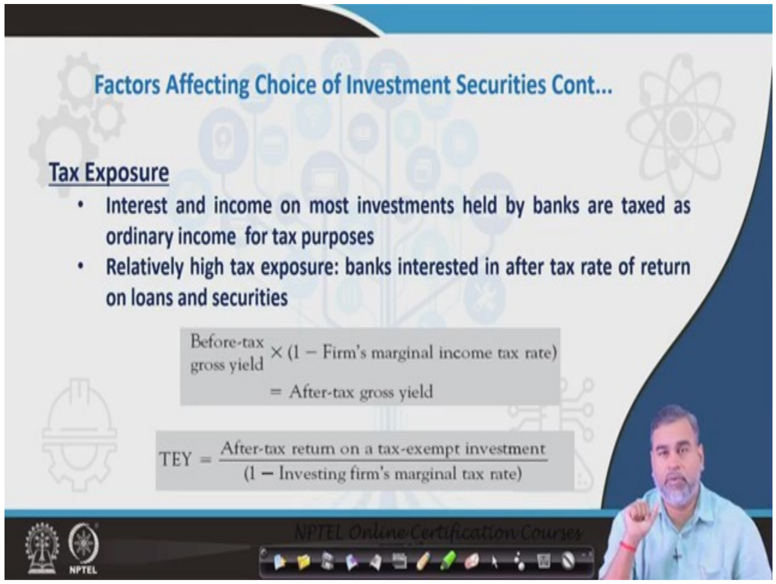

Then the next factor basically which is important from the portfolio that is the tax exposure, so the interest or income on most investments held by the banks are taxed as ordinary income or of the tax, for the tax purposes. So, relatively high tax exposure, if it is there then the banks interested in after tax of return on the loans and securities.

So, if you want to calculate this, before tax gross yield into 1 minus firm's marginal income tax rate that will give you the after-tax gross yield. Then if you divide that after-tax return on tax exemption investment divided by 1 minus investing firm's marginal tax rate, that will give you the particular TEY from this, that particular context.

So, to tax that means overall what if you want to see, that whenever the commercial banks invest in that particular securities, they should consider those securities which are basically helping them to get some relaxation in terms of the tax payments. So, the tax is basically another factor which is affecting the construction of the portfolio by the commercial banks.

So, what kind of securities should be chosen, by that the commercial banks can maximize their tax benefits from that type of investments? So, that is basically the basic objective of the commercial banks investment policy that to consider those kind of assets which gives them the tax benefits.

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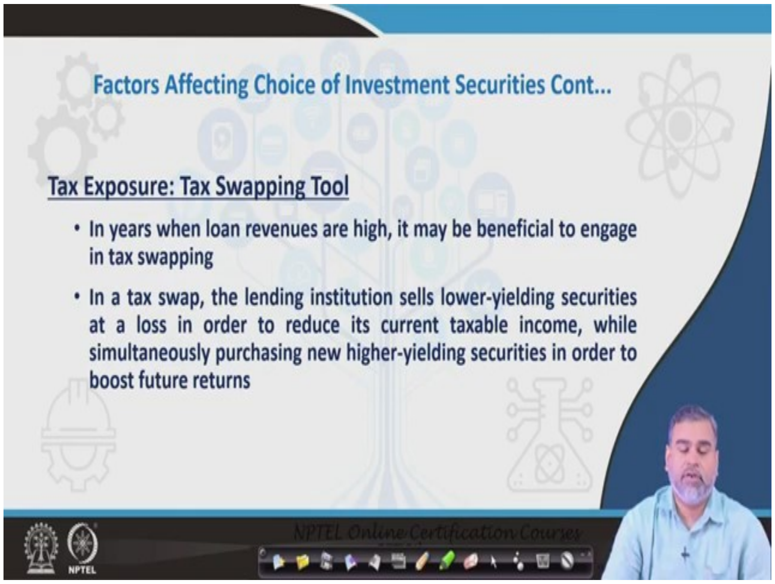

So, there are many ways this particular strategy can work, so one is your tax swapping tool. So, if you observe that when the loan revenues are high, it maybe beneficial to engage in the tax swapping. So, in a tax swap, generally there are many types of swaps that we will discuss further but generally in the tax swap the lending institution sails the lower yielding securities at a loss in order to reduce its current taxable income.

While simultaneously purchase the new higher yielding securities in order to boost the future returns. So, if they want to get rid of taxation for certain reasons, then what they do? They sell this lower yielding securities at a loss, because of that they can save some taxes and simultaneously at that particular point of time, they hold on particular securities which maturity period is relatively long-term in nature, but they are providing high yield but they can expect more returns or they can expect that high return in the long run.

So, that is why there is a swap between the high yielding securities to the low yielding securities and as well as between the, we can say that, in terms of their maturity period. So, this is the swap basically the banks can make whenever the tax is a consideration for the investments in that particular portfolio.

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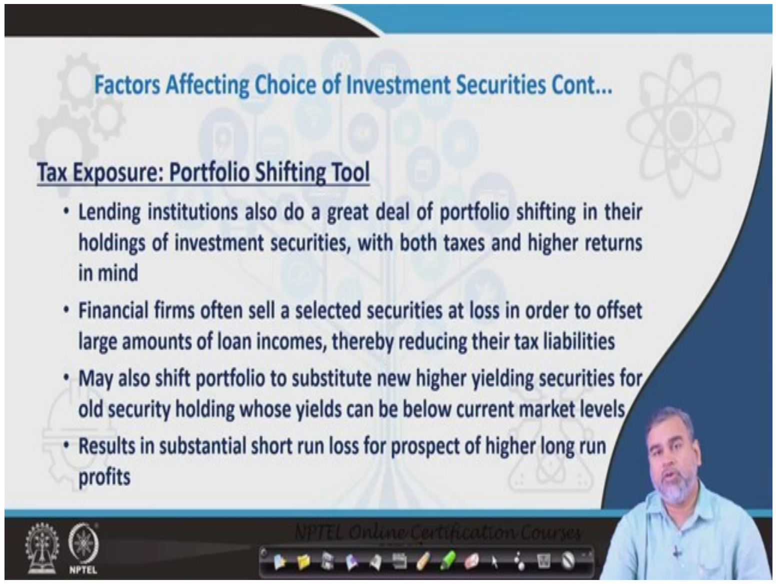

So, another one is a portfolio shifting tool, the lending institutions also do a great deal of portfolio shifting in their holding of investment securities with both taxes and higher returns in the mind. So, in that context, what they do? The firms often sell the selected securities at loss in order to offset the large amount of loan incomes, thereby reducing their tax liabilities.

So, if their income is relatively quite high, they are expecting a high income from that particular loan activities, so in that particular point of time they sell this even if the market interest rate is higher, they sell the securities at a loss. And if they will sell the securities, there is a loss, then the overall tax rebate they can get it from that particular point of time.

And because of that, they shift the portfolio to substitute new higher yielding securities for old security holding whose yields can be below the current market levels. So, in that particular point of time, they substitute the new holding securities for the securities having this yields which is below the market levels.

And the results in substantial short run losses they can incur, obviously in the short run they will incur the losses from this but the probability of higher long-term returns or long-term profits will be there. So, to gain more in that particular long-term in nature, they can or to get some relaxation in terms of the tax what basically they do, they basically go for this kind of substitution between the different line of securities which are existing in the market. So, this is another factor. Tax consideration is another factor always the commercial banks look at whenever they try to invest in the market.

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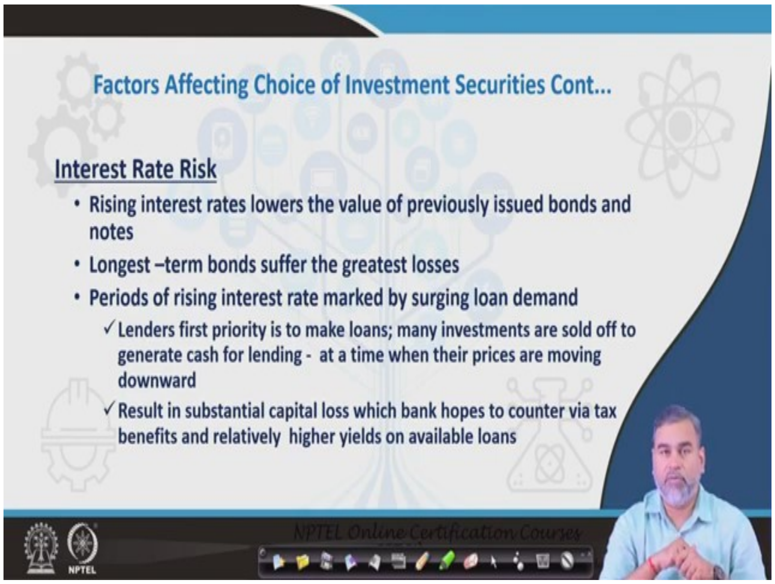

This is the most important type of risk always the commercial banks face that is basically is the interest rate risk. And the interest rate risk is basically why it is a matter? Because mostly whenever the commercial banks invest in the bonds and if there is a fluctuation in the interest rate, then the price of the bonds gets affected.

And obviously the long-term bonds suffer the more losses than the short-term bonds. So, in this case what basically we have to see that the interest rate also has impact on the loan demands. So, both ways this particular banks are getting affected, one with the securities what they are going to use. Their price gets changed because of the change in interest rate and because of the change in interest rate the demand for loan also changes.

At the time of high interest rate scenario, the demand for loans decline and at the time of low interest rate scenario the demand for loans increases. So, in that particular context if you see, they have to make this particular adjustment in such a way, by that there is no such kind of misbalances in terms of their balance sheet or the adjustment has to be made in such a way, by that they can immunize themselves to different type of problems or the risk what they are going to face due to the fluctuations in the market interest rate.

So, whenever we talk about this, for example if you take a price period of rising interest rate, then the lenders first priority is to make the loans. Many investments are sold off to generate high cash for the lending, at a time when their prices are moving downward. If the interest rate is going up, then what will happen, that banks will be ready to provide more loans because they can extract more return out of this.

But at the same point of time the price of that particular bond where these commercial banks have invested, that price goes down. So, the return what basically they get it from these credit activities, that maybe compensated with respect to the loss what they are going to incur in terms of the investments made in the different bonds because the bond price declines.

So, the results basically in substantial capital loss which banks basically always hopes to counter via tax benefits and relatively higher yields on the available loans. So, that may happen when it happen but banks basically try to do that at the time of high interest scenario, whenever the bond price is going to be down they want to disburse more loans, by that whatever losses they are going to make in the bond investments that losses can be compensated by the gains what they are going to extract from the loans what they have disbursed at that particular point of time.

Because they can charge high interest rate because the interest rates are quite high in that particular point, although the demand of the loans are very less but from the banking perspective they can go for the high interest rate where they can generate certain kind of extra revenue.

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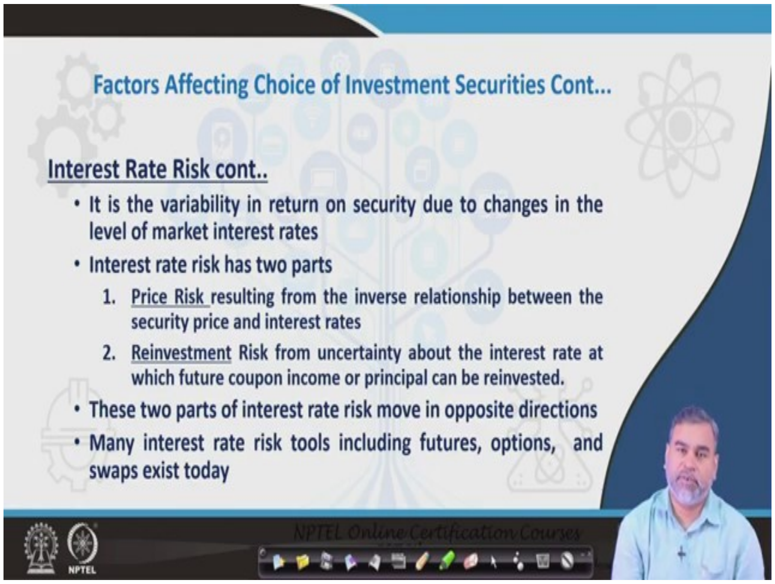

But another thing is also we can see that whenever there is a change in interest rate the interest rate has two components, one is price risk another one is a reinvestment risk. So, the price risk means already we have discussed that whenever there is an increase in interest rate, the price of the bond goes down.

So, because of that the commercial banks or any investor who was exposed to more price risk in that particular point of time. But the coupons what they are getting at that particular periodical interval, that coupon can be reinvested in market. So, if the market interest rate is going up, then if the coupons are reinvested in the market then the return from that particular coupon payments or the reinvestments are relatively higher.

So, that is why the price risk and reinvestment risk basically move in the opposite direction. So the price risk is resulted from the inverse relationship between the security prices and their interest rates particularly bond prices and the reinvestment risk basically is uncertainty about the interest rate at which the future coupon or income can be reinvested in the market.

So, if the reinvestment risk is totally compensated by the price risk or vice versa, then there is no problem in terms of the total return generated from the particular investments.

But if one particular risk is dominating the other one then the commercial bank is going to expose or going to be expose a certain kind of risk at that particular point of time.

So, if the price risk is more than the reinvestment risk, then obviously the value of the bond goes down or if the reinvestment risk is more than the price risk, then also it goes down but whenever the price risk and reinvestment risk is compensate to each other or they are equal, in that particular point of time the bond investor or the particular banks which are relying on the bond investment they are totally immunized from the interest rate risk in the market.

So, we have to look at those kind of thing, how, what kind of strategy the commercial banks should adopt, by that the price risk and reinvestment risk can be opposite to each other, by that the total return what they are extracting from the market that can be realized in a particular point of time.

So, many interest rate risk tools like our futures, options, and swaps also can be used. The future market positions already we have discussed those things that there are different instrument which are also used to hedge their risk in the market, the future risk what the commercial banks are going to face in the market.

So, this is what basically about the interest rate risk, what the commercial banks always face and always try to minimize this risk while taking different type of investment strategy.

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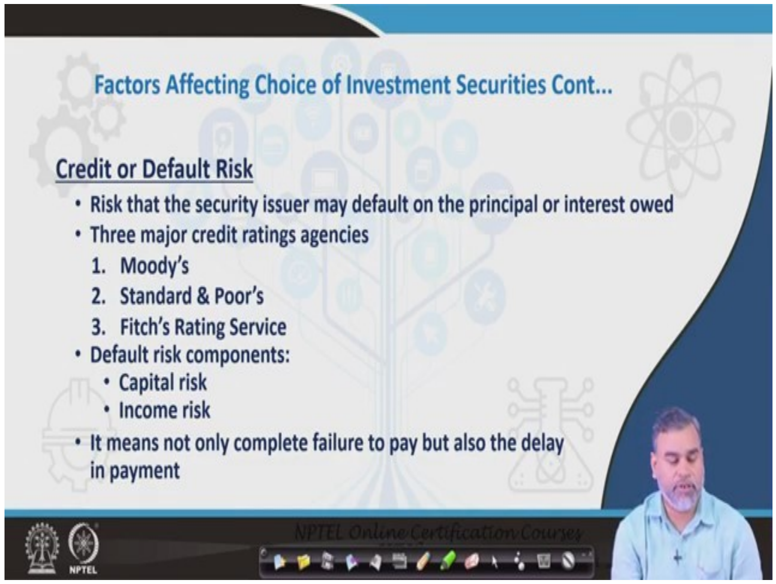

Then the credit risk or the default risk that already you know that this is the risk that security issuer may default on the principal or the interest what they have owed and there are three major credit rating agencies who provide the idea about the credit risk of the different type of bonds or different type of companies.

Internationally they are basically known credit rating agencies like Moody's, Standard & Poor's, and then Fitch's Rating Services, and from these ratings we can conclude or we can get the idea that what kind of credit worthiness of that particular organization is and what kind of default risk we can expected if the investments are made in this kind of securities.

So, these default risk basically are two components, one if their capital risk, another one is the income risk. So, what basically it means, it not only complete failure to pay but also delay in payment. So, if the complete failure is there then we can say that it is a complete loss from the investment perspective, but there is another risk also can arise if there is a default in terms of the delay in payment.

The delay in payment is also there considering the time value factor, we can also say that the banks are basically incurring certain kind of losses in that particular context. So, because of that the credit and default risk is quite important which measures that probability of default or the probability of repayment or the particular cash flows what they should have expected, whenever the cash flows will be realized in the market in a particular manner or not.

So, because of that, that is another type of risk should be consider while considering the portfolio management or portfolio analysis for the commercial banks.

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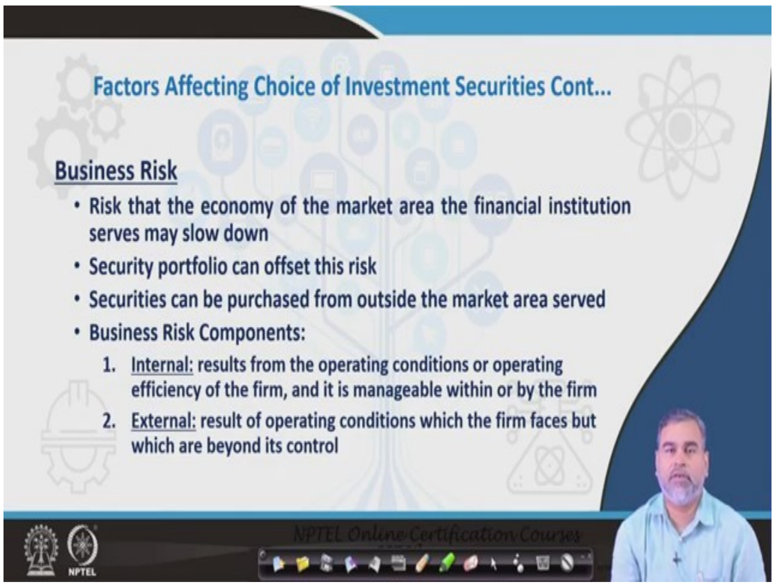

Then we have the business risk. This is quite important from different perspectives because this is a very important risk for any type of business, whether it is a financial company's business or non-financial company's business. So, the business risk is quite important for any kind of operational activities of the particular organization. So, this is the risk that economy of the market area in the financial institution services may slow down.

Security portfolio can offset this risk. So, the investment should be made in such a way, the business risk can be reduced through this. So, the securities can be purchased from outside the market area served. So, there are business risks, there are two components, one is internal component another one the external component.

The internal component basically comes from the operating conditions or the operating efficiency of the firm and the external component is coming from the result of operating conditions which the firm faces but which is beyond control. Mostly the business risk is measured through fluctuations of the income, sales income of that particular company or a particular organization and the sales of that particular company or the sales income can be fluctuated due to the operational inefficiency of the organization or it can be due to also any kind of external factors like business cycle and other things.

So, if the market is in the loom, there is such kind of a depression situation is existing in the market then obviously that will have the impact on the sales of that particular company. And if the company is not operating efficiently or the efficiency level of the company is low and there are other kind of internal factors which are adversely affecting the total sales income, then the company also can be exposed towards the more business risk.

So, the commercial banks was, wants to analyze that how basically their investment portfolio is going to be affected by the business risk which is the source of that particular risk from the both internal and external sources. If it is for the external sources, that is beyond their control then this all depends on the policy and the government and the other kind of norms what the external agencies has to formulate to overcome that kind of risk.

But if it is related to the internal factors, the commercial banks can take some precautionary measures, some kind of steps has to be taken, by that this kind of risk can be reduced and finally the investment portfolio can give them the better return. So, this is about your business risk.

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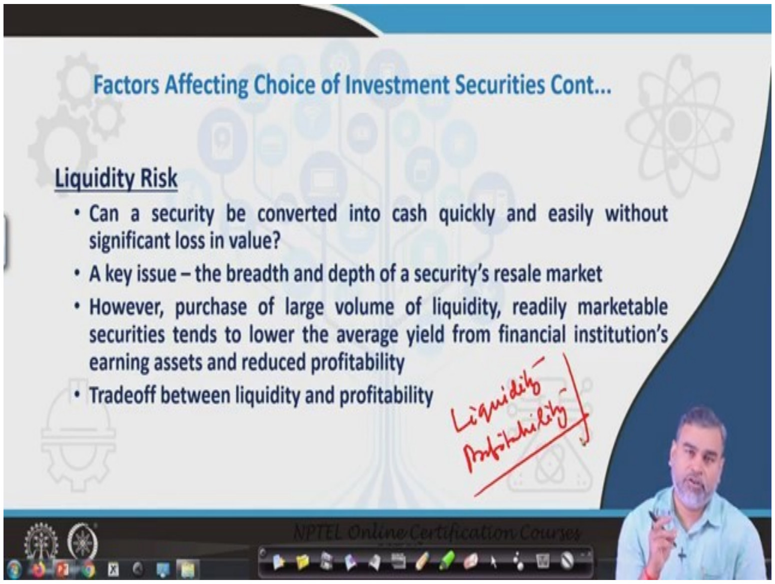

Then we have the liquidity risk. Liquidity risk is quite important from the commercial banking perspective. If you remember we have discussed that in terms of objective the bank has two multiple objective one, the major objective is to maintain the liquidity and another objective is to maintain the profitability.

But already we know that liquidity and profitability do not go together. So, if you want to make your system more liquid then the particular instruments are not utilized and cash is idle and because of that the profitability cannot be enhanced. But if you are going to utilize all the money to enhance your profitability then you cannot fulfill your liquidity requirements which have some kind of adverse impacts on the performance of this particular organization or particular bank.

So, in this context we have to always look at that whatever way we have to manage our things or manage the balance sheet, by that the liquidity and profitability both will be maintained in an adequate manner, by that the commercial banks' business or the exposure will be relatively less.

So, in a true sense how the liquidity can be defined? The liquidity is nothing but that how fast the particular security can be converted into cash, so without any kind of loss in their value. So, if the cash, it can be converted in the cash without incurring any kind of loss or the value and this is happening in a faster way then what we can say, that the liquidity risk of that particular system is less. So, if it is not happening then we are exposed to, that organization is exposed to more liquidity risk.

So, it is a key issue which is basically such that how efficiently the market is performing and what is the credit, what is the transaction cost the market is bearing or market is facing to deal with this particular business. So, that is why that is, the breadth and the depth of the securities recent market always we have to see.

So that is why the people consider bid ask spread is a measure of liquidity when we talk about the market liquidity. But from the banking perspective we have to see that enough cash the bank should have to fulfill the, or to satisfy the consumer requirements or the deposited requirements whenever they need.

The purchase of larger volume of, large volume of liquidity readily marketable securities tends to be lower the average yield from the financial institutions earning assets and reduce profitability that is what already we have discussed. If you are maintaining high liquidity in the different ways then your profitability gets affected, so that is a clear trade off between the liquidity and profitability.

So, the bank has to take a very cautious move to manage both the kind of risk in such a way, by that the imbalances among the different kind of objectives will not be there in that particular time period for that particular system.

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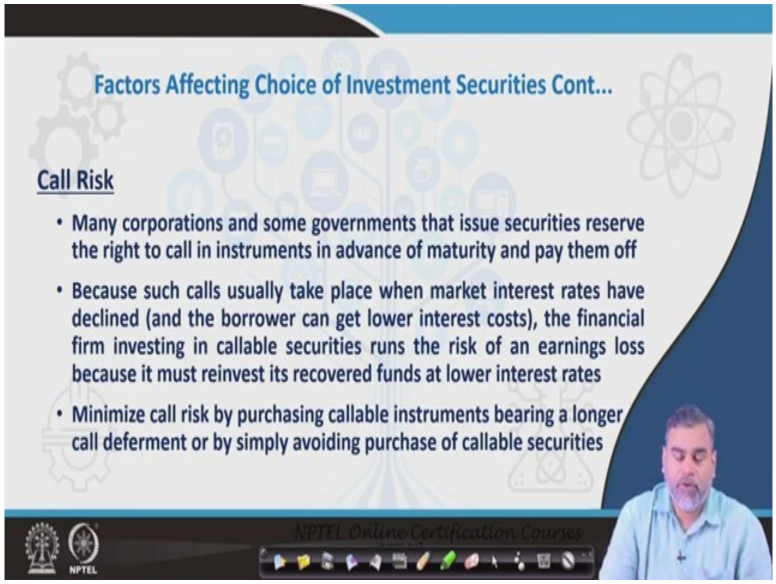

Then we have another risk that is the call risk that already I have explained you that call risk is nothing but that the particular corporations or particular organizations, particular government who has issued this particular bond or particular security, they reserve the right to call in instruments in advance of maturity and pay them off.

So, because such calls usually take place when the market interest rates are declined, because if the market interest rate have declined then the price of the bond goes up but at that particular point of time if there is a call feature, then maybe the call price of that particular time will be lower than the market price of that particular bond, because if the interest rate is lower then the market price will be higher.

But if there is a call feature, this particular bond can be called back and particular issue can be called back and this particular price is already mentioned that at what price the particular bond will be called back. In that, because of that in that particular point of time the institution who has issued that particular security, they maybe in the gainer side but the investor is basically going to lose in that particular point of time in the market.

So, the financial firm investing in the callable securities runs the risk of an increasing loss because it must reinvest its recovered funds at the lower interest rates because interest rate is already low. One way they got less money, other way the interest rate is already low if they are going to reinvest these things in the market and the proceedings in the market, there they may not get the return as much what they were getting previously from the investment whatever they have made.

So, the call risk minimize the call risk, how it can be minimized? They minimize the call risk by purchasing the callable instruments bearing longer call deferment or by simply avoiding the purchase of the callable securities. So, if you want to avoid the call risk, do not buy this or if you want to buy this, then go for a longer call deferment.

By that to some extent this particular risk can be reduced or maybe this you may will not be interested to go and exercise that call option in that particular security or particular market.

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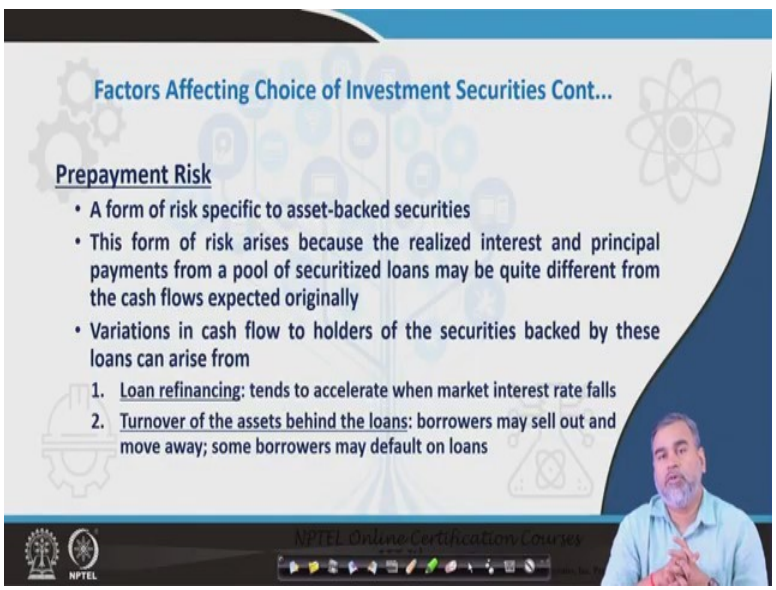

Then we have the prepayment risk. The prepayment risk is nothing but it is a form of risk which is specific to the asset-backed securities and this form of risk basically arises because the realized interest and principal payments from a pool of securitized loans may be quite different from the cash flow which is expected originally.

Because it a mortgage-backed securities or asset-backed securities, so here the price of the cash flow what you are expecting originally that may not happen because there is a pool of securitized loans and the cash flow depends upon the other different exogenous or the other factors. And that particular factors may not be in the control of this particular bank that how this particular factor is going to play the role whenever the pricing of this particular securities are going to be made.

So, that is why this is a risky kind of investments what we can say, but still the banks can go for this kind of securities because the probability of return from this kind of investment are relatively higher. The variations and cash flow to the holder of securities generally backed by these loans which can arise from loan refinancing tends to accelerate when market interest rate fall because instead of going for that loan maybe the refinancing of the loan can be taken place with a lower rate.

And the turnover of the assets behind the loans, that means the borrower may sell out and move away and some borrowers may default on the loans. In that particular point of time if there is a default, obviously there is a problem in terms of the prepayment and if the borrower will sell out that particular loan and goes for another loan, that also creates the problem in terms of the repayment risk.

And that exposure the commercial banks always have, because they cannot get rid of this kind of thing because of certain market dynamics. So, that is basically another risk which we have to consider whenever the portfolio constructions are made.

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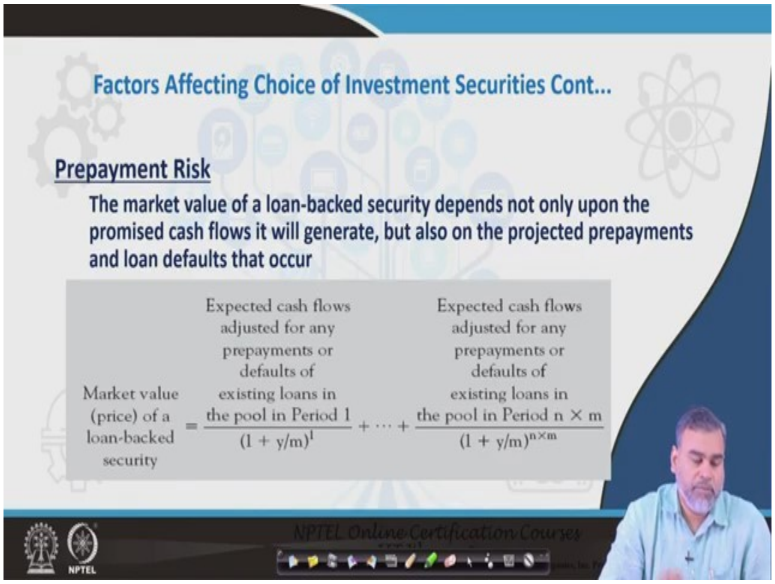

If you want to measure this prepayment risk, there is a market value of a loan-backed security depends not only the promised cash flow it will generate, but also on the projected prepayment in the loan default that occur. So, the market value of a loan-backed security is the expected cash flow adjusted for any prepayment or defaults of the existing loans in the pool of the period 1 plus in the period of the pool 2, period 2 and so on.

And the expect cash flow adjusted for any payment in the period $(n \times m)/ (1 + y /m)$, m is basically the frequency and n is equal to the period. So, that is the way basically the market value of the loan-backed securities can be determine by the commercial banks.

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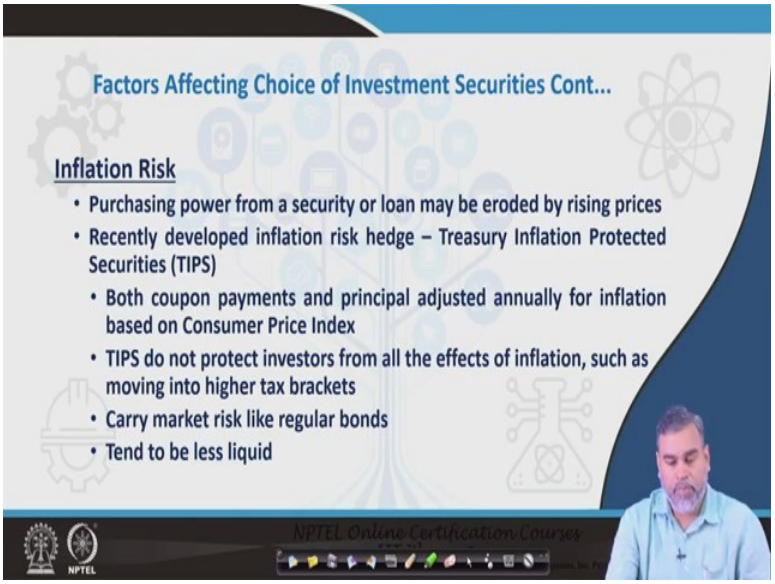

Then inflation risk that is obvious because that is going to affect the value of all type of security. The purchasing power of the security goes down, then the both coupon payments and principal adjusted annually for inflation based consumer price index, that basically the value of the coupon payments or the cash flow is going down.

And do not protect the investors from all effects of inflation, like moving into higher tax brackets. That is why they have developed an inflation risk hedge that is a instrument, the treasury inflation protected securities, inflation index bonds, but that particular bonds may not be helpful because there are certain other features which are involved in this particular case. It carry market risk like regular bonds, tends to be less liquid. Conversion of that particular bonds into the cash is relatively less or it takes more time.

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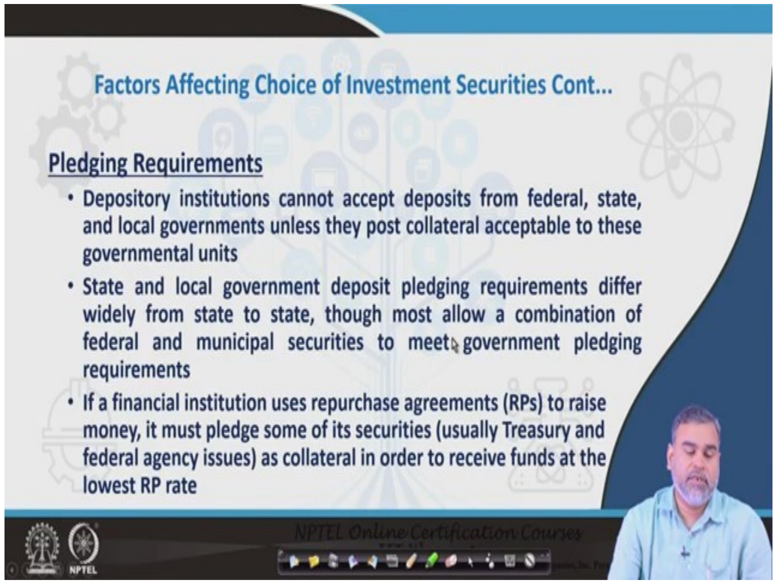

Then we have the pledging requirements and the pledging requirements we have to consider whenever we go for constructing the portfolio, because the depository institutions cannot accept deposit from the government, state or the local government unless they post collateral acceptable to this government units.

State and local government deposits pledging requirements differ widely from state to state. Though most allow the combination of federal and municipal securities to make the government pledging requirements. If a financial institution uses the repurchase agreements to raise the money, it must pledge some of its securities like government securities as collateral in order to receive the funds at the lowest repurchase rate. If it is backed by any kind of security, then relatively the lower rates can be expected from that particular investments.

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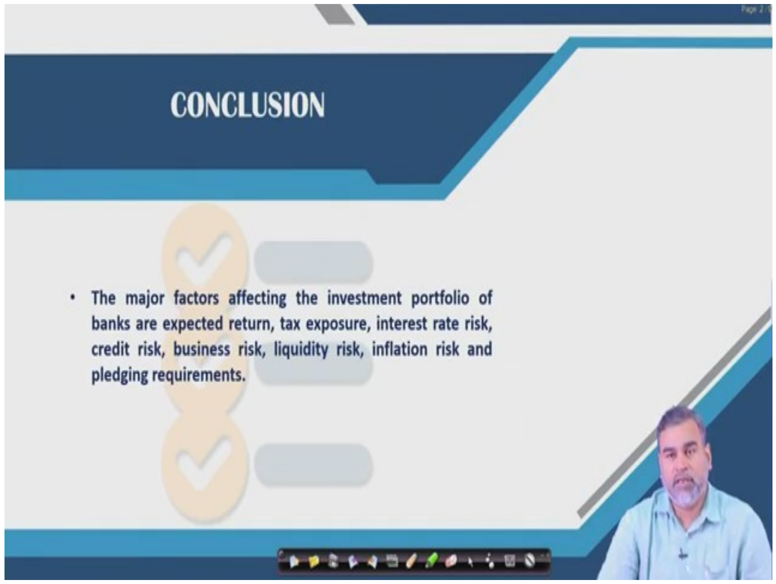

So, after analyzing this what we have seen that the major factors which affect the investment portfolio of the banks are basically the expected return, tax exposure, interest rate risk, credit risk, business risk, liquidity risk, inflation risk and the pledging requirements. So, all those factors have to be considered while formulating or while constructing this particular portfolio, by that the total risk of that particular commercial bank can be minimized or the total return of the commercial bank can be maximized.

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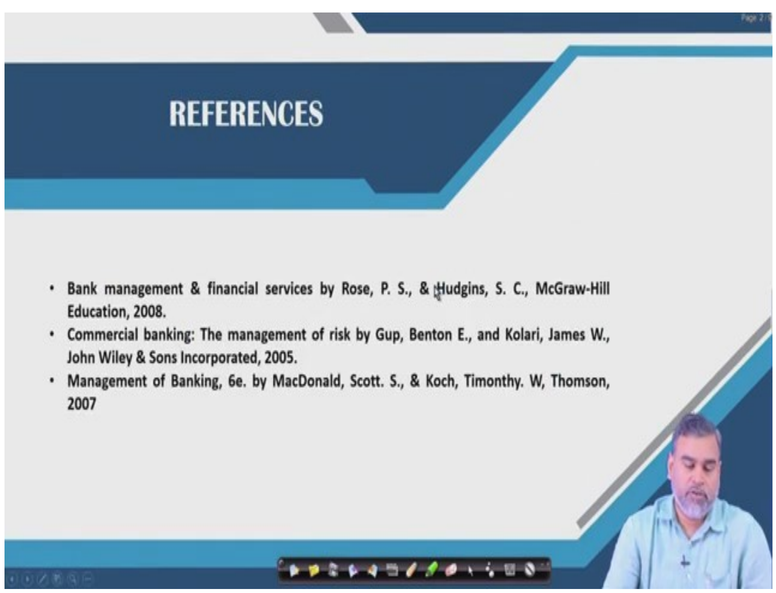

So these are the references, can go through. Thank you.