Mergers, Acquisitions and Corporate Restructuring
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Lecture - 12
Valuation in M and A: Cash Flow Based Approach - 1

Hello friends, welcome to another session of mergers, acquisition, corporate restructuring. We will be continuing with the valuation sessions. In the previous session we talked about different approaches of evaluation we also talked about valuation ending how evaluation in the context of mergers, acquisition little different from normal valuation process. So, in this session we will be talking about cash flow-based valuation method, basic concepts.

And we will try to solve simple exercises and then we show that it becomes a primer for the subsequent sessions.

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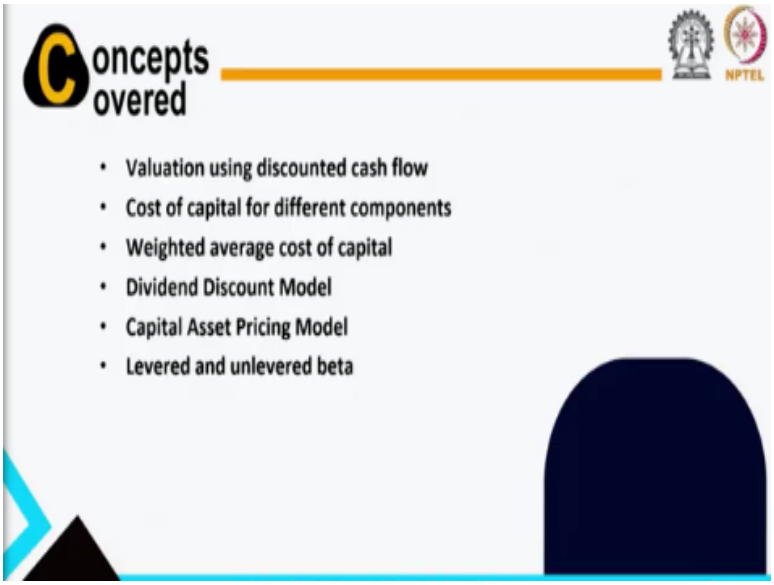

So, coming to the concepts we will be talking about how to value using discounted cash flow approach that means you are estimating cash flow is counting to today and we will be also because in the context of valuation for the using DCF because you are bringing to today so you need a discounting factor that discounting factor is also known as cost of capital in the context of valuation.

So, how do you find the cost of capital? What to then we will talk about at an average cost of capital then dividend discount model as a valuation of equity. We will also talk about use of capital asset pricing model for the purpose of cost of equity capital and in the capital asset pricing model we use a concept called beta. So, in that case we will also see whether you have the concepts of levered and unlevered beta also we will talk about.

In fact, several of this but this thing that we are discussing in this session might have been covered in some other subjects like corporate finance or financial management, financial analysis, valuation per se. So, this could be some for some people it could be repetition also. So, let us go to further happy learning for them.

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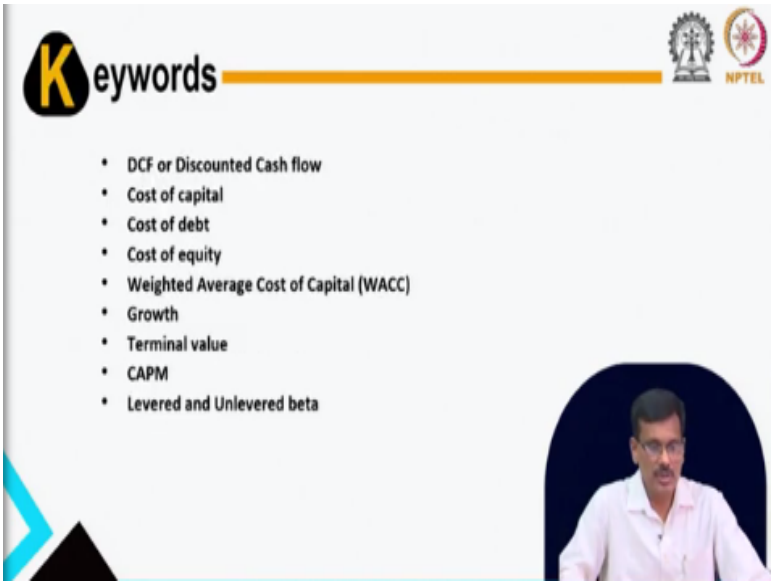

So, coming to the keywords we are going to talk about this DCF discounted cash flow, cost of capital, cost of debt, cost of equity but weighted average cost of capital. We will talk about growth, terminal value, CAPM, levered and unlevered beta. We will talk about in this session and subsequent sessions on DCF evaluation method.

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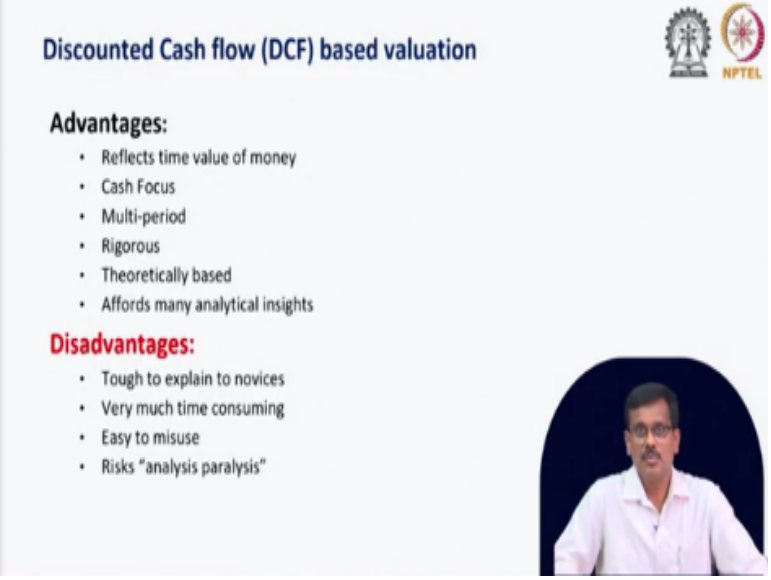

So, coming to the what is the beauty of DCF valuation method is that it takes care of time value of money. Because initially we discussed in the previous session that valuation is a function of future. So, you are paying a price today for something in anticipation of something in the future some benefits are going to come. So, for example I may be spending x rupees today in anticipation I will be getting y 1, y 2, y 3 rupees in several years to come.

So, today's time and tomorrow time is different so I have to bring them together and we are going to use the time value money also. So, that is what the valuation DCF focus and DCF method valuation talks about the cash. So, we are looking at the discount in the cash flow for the investor or for the company for that matter. In fact, cash flow is supposed to be little superior compared to other metrics like profit etcetera which one might have discussed in final certificate analysis.

And this method of evaluation looks at multi period is not that just estimate only for one year into that. You have to estimate the cash flow for several periods and then discount them, apply different techniques and find the value assets. And this method is very rigorous because estimation of cash flow itself is a rigorous process, lot of assumptions, premises are applied, lot of techniques are applied say rigorous.

It is also based on theory because coming to the corporate finance theory value maximization, we talk about yes value is today is function of future and discount the future for example, for the value like we do in the case of project evaluation like net present value, DCF criteria, IRR. So, they are also look at the future cash flow compare the present cash flow feature cash flow in terms of present value and then decide a project to be taken up or not.

So, this is substantial theory behind it and lot of analysis can be done, lot analytical insights can be done. You can change the assumptions, change the growth rate for that matter, change the horizon all those things can be done. So, different scenarios can be built in this valuation method DCF method for that matter. At the same time this has got certain disadvantages little tough to explain to people who do not know much about that.

So, for novices were not very they are not learn lot of things but to explain going to be difficult. But still since its useful method one can always take time to explain. It takes a lot of time and one can also misuse because finally we are showing in the spreadsheet a value. To justify a value one can possibly change the assumptions, change the figure that is given which used for the valuation and justify value further and find a value which is actually suitable source the requirement.

So, that is what happens. So, it has got so and people do so many sensitive analyses, simulation using the spreadsheet model so they say we may lead it may lead to a lot of analysis called also in the popularity it is known as analysis paralysis. So, that is the disadvantage of cash flow based valuation approach.

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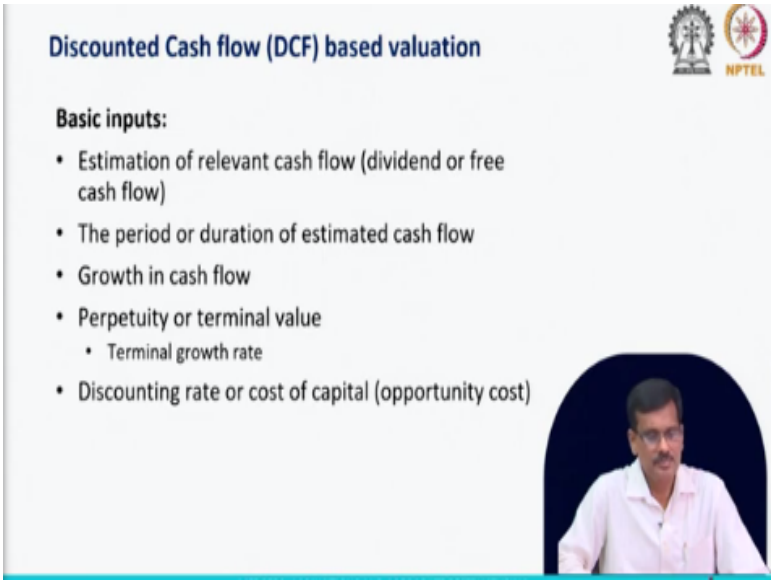

Then for any cash flow based valuation method that the certain inputs are required one is called estimating the relevant cash flow. So, it is a dividend estimated dividend, if the fake cash flow estimates the free cash flow. So, estimation of that free cash flow is not the purview of this particular session. Estimation free cash flow will be discussing in separately but anyway estimation is important.

Then we also look at for how many years you are going to estimate the time period that is one important factor, are you going to estimate for five-year, ten year, twenty year, six years to whatever that may be that is one the duration then we look at the cash flow or whatever. The financial parameter is not going to remain constant for all the years to come so they will be growing.

So, what will be the growth to be taken? It is going to grow at a high-rate initial years then it will stabilize then it will go further stabilize moderate and stabilize other multiple growth rates are going to there or the single growth is going to be there. So, the growth in the cash flow or the important pattern that is going to be another thing then after super normal growth has taken with normal growth then how to get that?

After the growth has taken that you know supernormal constant growth rates have started. What will be the value at that point? It is called the value of terminal value. So, that is one important

thing how are you going to estimate the terminal value. Then what will be the discounting rate? Because you are talking about future cash flow and your discount today to bring it to today and you need a discounting factor.

That discounting factor in the corporate finance is known as cost of capital also called expected rate of return is also known as opportunity cost. So, how to estimate that cost of capital? What is that figure access? How to know that? So, these are certain things basic input that you require in the valuation. Some of them will be discussing in this particular session. Rest of them like estimating what the concept terminal value, estimation of cash flow and finding out the growth horizon, finding the growth etcetera those things will be discussing in the separate session.

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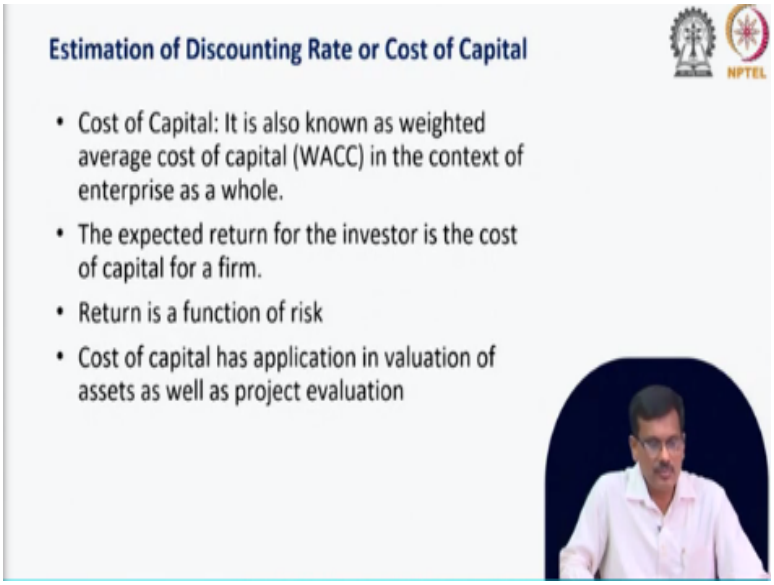

So, coming to the first thing that is called one of the important thing is the estimation of the discounting rate or the cost of capital. So, cost of capital also known as weighted average cost of capital. So, work and cost capital is somewhere used as synonyms and in the context enterprise it is called work. So, what the investor expect from the company is called expected rate of return that is the cost of capital from the company's point of view.

In fact, the companies have to strive to meet the expectation or beat the expectation of the investors return the expected return. So, in fact if the company is able to earn a return more than what the investors expect that is called cost to capital such companies are supposed to valued

high in the market because you are earning a return more than cost of capital. So, the cost of capital has an application in different context.

It has an application ending context of project evaluation like estimation finding out the net present value, we need the cost of capital. Similarly in the context of comparing the performance finding the measuring departments is the company beating the expectation or meeting the expectation or having a return lower than the expected return of the investor. So, their contest of the cost capital is used.

And the return which is also cost of capital return expected by the investor is also cost of capital from the company's point of view is also function of risk. If there is a high risk involved the expected rate of return is also going to be higher. Risk and return are actually positively related. So, these are the basic things in the context of cost of capital

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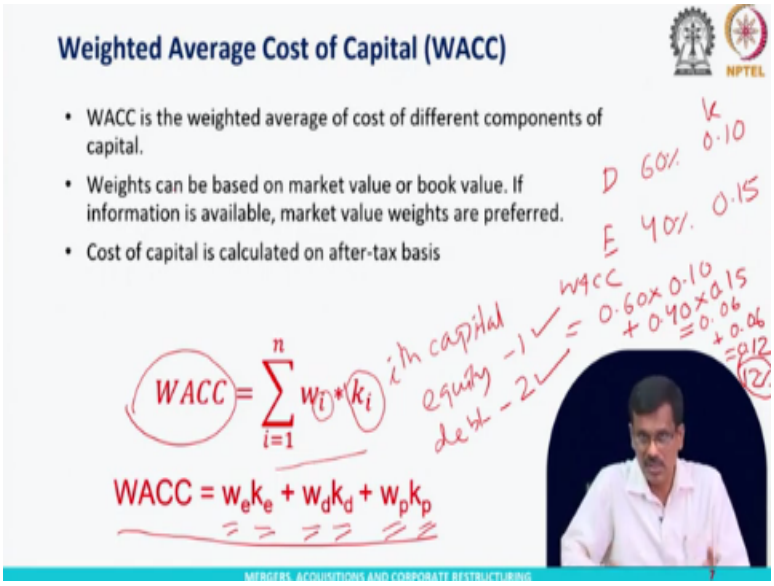

And when you look at the cost of capital that is weighted average cost of capital, we have to find out the cost of capital for different components. So, in this particular model we have when you talk about i it is called ith capital. That means if the company has equity company that is one capital type company in debt another capital two and so this is the individual cost of capital. So, we find the cost of equity, we find the cost of debt.

Then we have to see what the weights of equity and debt. So, then we multiple respective weight sum it up that gives the better average cost of capital. So, to make it more simpler so let us say we find the cost of equity. We find the weight of equity, we find the cost of debt, we find the weight of debt and multiply them regularly. Suppose the company has preference share capital we find the cost of preferential capital and we find the weight of preferential capital.

And multiply respectively and sum it of that gives you cost of weighted average cost of capital. So, to simply explain in this at this point so maybe a company is financed by two source of capital called debt and equity. There is no preference here let us say and debt is 60 percent and equity is 40 percent. So, suppose I using this appropriate cost of debt formula which you will discuss in the next slide some of the cost of debt is let us say 0.10 or a cost of equity let us say 0.15.

So, in that case the weighted average cost of capital for this particular company will be work will be weight of the debt 0.6 into cost of debt 0.10 plus weight of equity that is 0.40 into cost of equity 0.15. So, all together it comes to 0.06 also this is 0.06 so we get 0.12 or 12 percent is the weighted average cost of capital for this particular company in this particular example. So, if you know the individual cost of capital if you know the individual weight of the capital.

Then multiplying them respectively the weight and cost of capital we can find out the weighted average cost of capital. And weights can be based on the value of the debt and equity, value of debt and equity could be market based or book value based as per the balance sheet. So, if balance sheet market value is available then it is better that we use market value as the weight. If the market value is not available then we take book value as the weight for the capital.

We will have an existing problem on cost of capital in some other session we will discuss all the aspects for that matter. So, then we go to the individual cost of capital.

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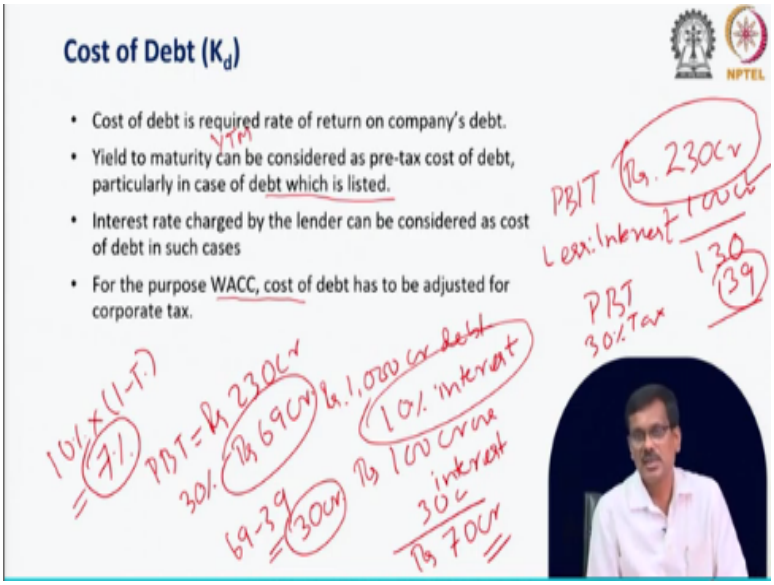

So, that is called the cost of debt. The cost of debt is actually required rate of return on the company's debt. So, what the debt holders expect from you from the company then that is called the cost of debt. And in the context of listed debt which also debt is listed, let the company is debenture or bond which is also listed in market yield to maturity YTM can be taken as the cost of debt that is called pre-tax cost of day if it is listed.

Similarly, if company has borrowed alone from a financier whatever interest they charge that is called the cost of debt for that particular loan that is cost of debt. And for the purpose of cost of capital in the company or weighted average cost of capital for that matter cost of debt has to be adjusted for the tax. Because if the company is let us say a company has got 1000 crore debt and this debt carries let us say 10 percent interest.

So, the company is going to pay 10 percent 100 crore as interest and the company claims the interest is a expense a tax deductible expense. So, let us say the company has a profit before interest and tax of rupees 230 crore. So, then you pay the interest less interest that is 100 crore, the company's profit before tax is 130 crore. And if the company is let us say subject to 30 percent tax the tax is going to be 39 crore.

That means if the company was not having the interest, it would have paid how much tax is interest was nil. In that case the PBT would have been rupees 230 crore. So, on that if you pay

30% tax it comes to rupees 69 crore. So, by claiming the interest as a expense you are saving a tax of how much 69 minus 39 that is 30 crore. So, you are paying 100 crore interest but you are getting a tax when you have 30 crore so effectively you are actually having 70 crore of post tax interest.

So, that way if 10% the interest is the cost of debt from a pre-tax point of view it actually becomes 10% into one minus tax that is 30 percent in this case comes to 7 percent easier actually post trash cost of debt. Since you are estimating the cost of debt from the company's point of view and company has a tax advantage by claiming interest as an expense so you have to look at the post tax cost of debt.

Pre-tax cost update whatever is there multiply one minus tax rate that gives us post tax cost of debt. That is one of the important aspect in cost of debt. The tax is implication is not there for capital or cost of equity. Those things we do not adjust for tax and only in the case of cost of date we adjust for the tax.

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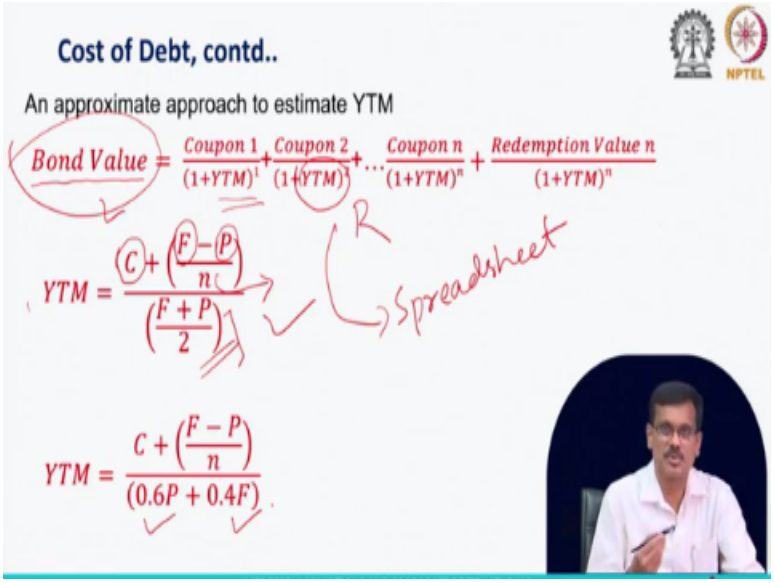

So, simple methods we have use YTM as the cost of capital a cost of debt if the date is listed this is a bond or debenture. So, the bond is traded today and you are paying a price today. In that what we are going to get in future? The coupon, coupon is also known as interest. So, we are going to coupon in year one, year two, year three to n number of years till the bond is there the

life. Then at the end of the nth year that matches the period you are going to get a value in return maybe the principal money is coming back to you.

So, you are going to get the coupon as well as principal a return of the principal redemption you are going to get. So, whatever discount at a particular rate of return so that the value is today what you are paying. So, that returns which makes these two sides left side and the right side equal that is called yield to maturity. One of the approaches is that one can use spreadsheet the inbuilt formulas to find yield to maturity.

One can also use other formulas in own formula in spreadsheet to find the YTM in spreadsheet. So, in the interest of time sometimes there are approximate methods are available. There is an approximate method here where you talk about YTM is you got you have the coupon, you have the redemption value at supplement of time, you have the today's price of the bond, n is the maturity period that number of yeast maturity.

Similarly, also A plus B divide or whatever you get that is in percentage you take that is called the YTM method. So, what you find by using a spreadsheet or any model for that matter some other formula? The value is going to approximately this value as per this. But there is another method suggested little more better approximation. In this case what we did? We gave the equal weightage to the maturity value as well as for the today's price.

But in this case what happens? We give 60 percent weightage today's price the bond is traded and 40 percent weightage to the redemption that are going to come. And then you do the numerator is the same in both the formula and denominator decision here you give equilibrators but here you give different weight is for redemption value and for the issue price. So, what will do will take an example for using this and finding out the YTM of a bond and that YTM can be used as the cost of capital assuming this company has used this particular debt or bond.

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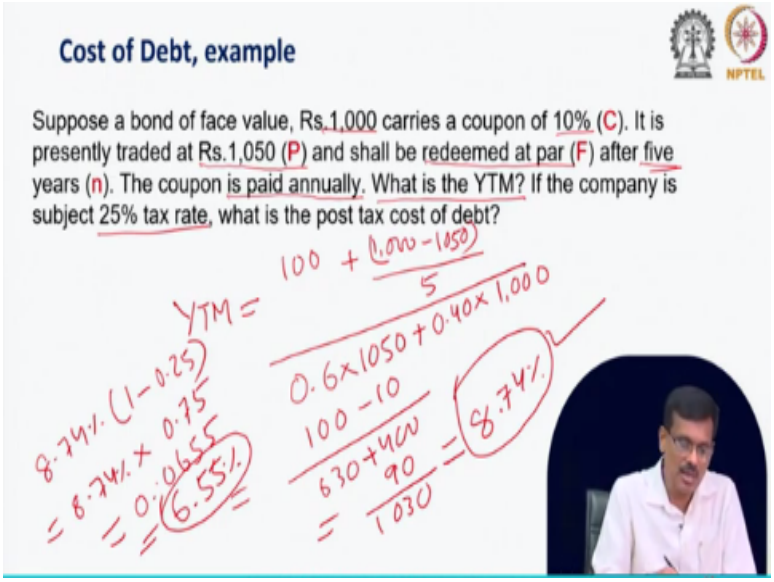

So, you have an example here. The bond has a phase value rupees 1000 it carries a coupon or interest at 10 percent that means you are going to get 10 percent on bond every year. It is traded at 1050 in the market it is going to redeemed at par that means at the face value only that means 1000 rupees you are going to get is going to get after five years. And coupon is paid every year annually because there are certain bonds where coupon may be paid semi-annual accordingly will change the model.

What is the YTM? So, if you go back our formula suppose we are going to use this particular formula which is a better approximation. So, here YTM will be the coupon that coupon in this case is 10 percent of 1000 that comes to 100 rupees and then we are going to redeem at redemption value is 1000. But you are actually you can buy one can buy this bond at 1050 that is in the bracket then you divide by the time to maturity that is your five years.

Then whole divided by you give 0.68 to today's price that is 1050 plus 0.40 into 1000. So, that gives us 100 this minus years 100 minus 50 by 5 comes to 100 minus 10 whole divided by this denominator comes to 630 plus 400. So, finally we have got 90 divided by 1030 so that gives us 8.74 percent YTM. So, that means investors earning a return of 8.74 percent in this investment that is our expected rate of return.

That is also called the cost of capital cost of debt companies point of view. But this since cost of debt is have a tax advantage the interest tax advantage so for the company's point of view the cost of debt will be whatever you got the cost of debt from the pre-tax basis that you multiply into one minus tax. If the company is paying for 25 percent tax so 0.25. So, 8.74 percent into one minus 0.25 means 0.75 so that gives us 0.0655.

So, that gives us 6.55% as the cost of debt from the company's point of view. So, this can be done in a calculator, in excel spreadsheet for that matter is simpler one. So, we did we found the YTM using the approximate formula then we use that for the cost of debt for post tax we did you we multiply and 1 - t and got 6.5 percent as the cost of debt for this particular bond.

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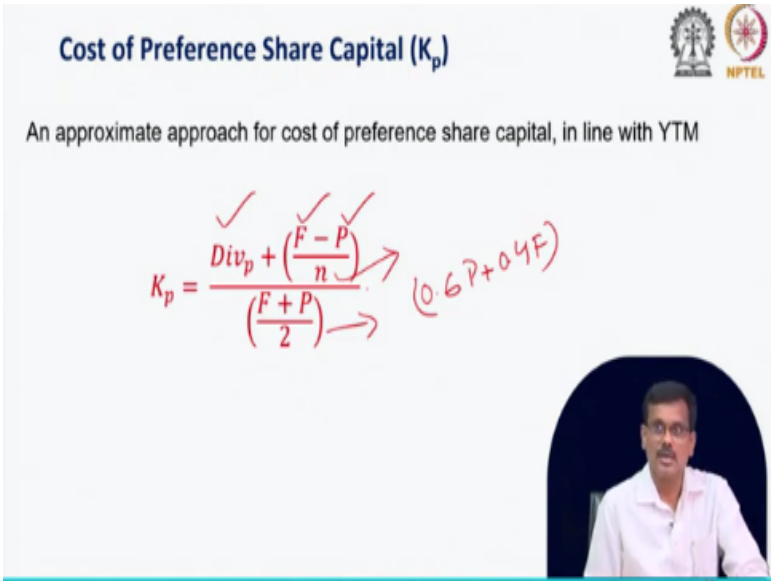

Similarly, we can also have preference share capital. In the preference share the investors get dividend, same formula that we use in case of YTM also can be applied here. We can also have instead of this we can also have this can be substituted as the more approximate file called 0.6 into P plus 0.4 into F that also can be done and we can do that. So, what we will do? We let us take another so here dividend.

If this is the redemption value this is the price today this is the nine time to maturity or time to read them the preference here and use that and then so let us take this example.

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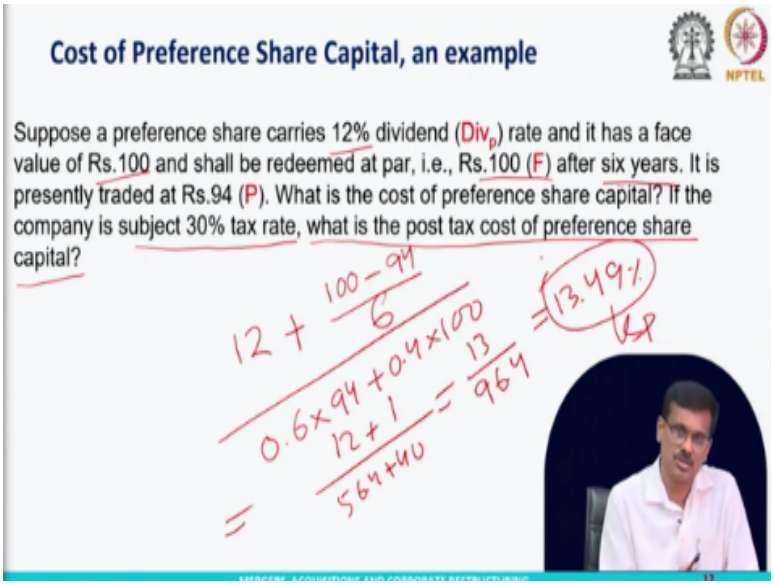

We have a preference here which is a phase value of 100 which gives a 12 percent dividend that means if I if you apply that particular formula so we have 12 rupees is the dividend plus your redemption value is going to be 100. Because you go redeem at 100 only, after six years today's price is 94 surrounded by 94, time to redeem is 6 years left over. So, 6 year divided by 6 whole divided by 0.6 into today's price plus 0.4 into redemption value 100.

So, that gives us 12 plus this is 6 by 6 1 13. So, this denominator is equal to 56.4 plus 40 so that gives us 13 by 96.4. So, that gives us 13.49 percent is the cost of preference share capital. Now the cost difference capital as well as the expected rate return of the investor was invested in this preference share. There is one question here what is the post as cost of preference share capital if the company subject 30 percent tax rate?

As you discussed in case of preference share capital cost capital we are not going to adjust for tax. There is no the thing called pre-tax or post tax this itself is also the post-tax preference share capital cost. So, this has to be ignored in case of equity as well as preference share capital. So, this particular information is actually a redundant information for us.

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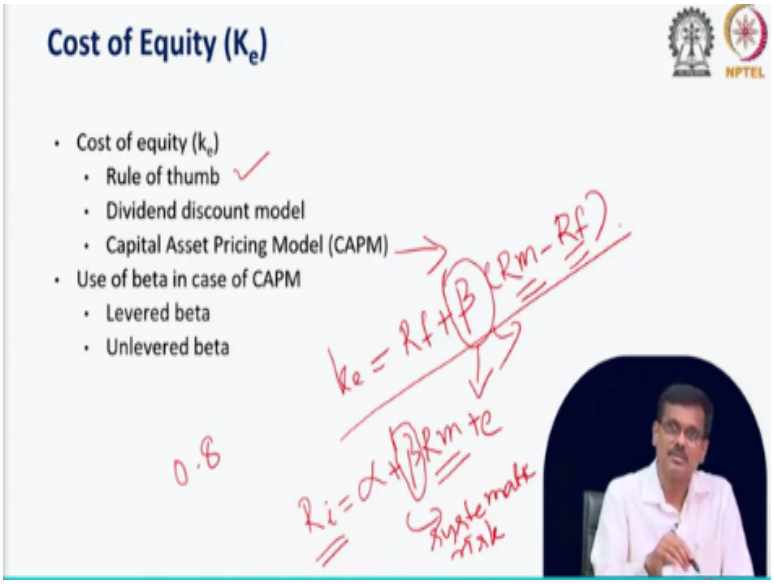

So, we got the cost of preference share capital then when you look at the cost of equity, what are the equity investors expect? There are different methods available. So, multiple methods are there. In fact, for valuation of equity of several methods are there. So, one of the method we have now I have listed three different methods here one method is called rule of thumb. So, the investor can simply tell that I expect 15 percent, 17 percent, 18 percent the rule of thumb this much is my return like an expert.

So, that can be taken as cost of equity, but that may be subjective it can vary from person to person. You have to make an objective estimate. In that case there are several methods. But we are for the in this particular course we will be talking about dividend discount model and capital asset pricing model as your cost of capital. So, in the subsequent side you have been disconnected model and the formulas are given.

When you are looking at the capital asset pricing model, we have like cost of equity we say that risk free rate of return plus beta of that particular stock into risk premium which is nothing but risk market rate of return less risk rate of return. So, we have to have a construct called betas. And then the context of beta we can get the beta for a listed company but unlisted company beta may not be is not available is not listed then beta is not.

What is the beta for that matter? It is nothing but the return on this stock is a function of return on the markets. So, when you regress the return on a stock on regression and return on the market the say linear regression the whatever regression coefficient you get is called the beta. Beta is also known as systematic risk. So, for simple meaning if the companies' stocks beta is 0.8 that means if the market is going to change by let us say 1 percent.

Market is actually a market portfolio which will can be in Indian context could be Nifty or Sensex for that matter. Say market return is going to be 1 percent then the stock return is going to be 0.8 percent. Market is going to go up by 1 percent this stock will go by 1 percent is 0.8 percent a market is going to fall by 1 percent is going to be fall by 0.8 percent, that is implication of beta. So, this can be used to find out the cost of equity this also application of CAPM given by sharp.

So, in the context of company which is not listed we have to get the beta. So, there we use the concept levered beta and unlevered beta. So, we will see that in the subsequent slide.

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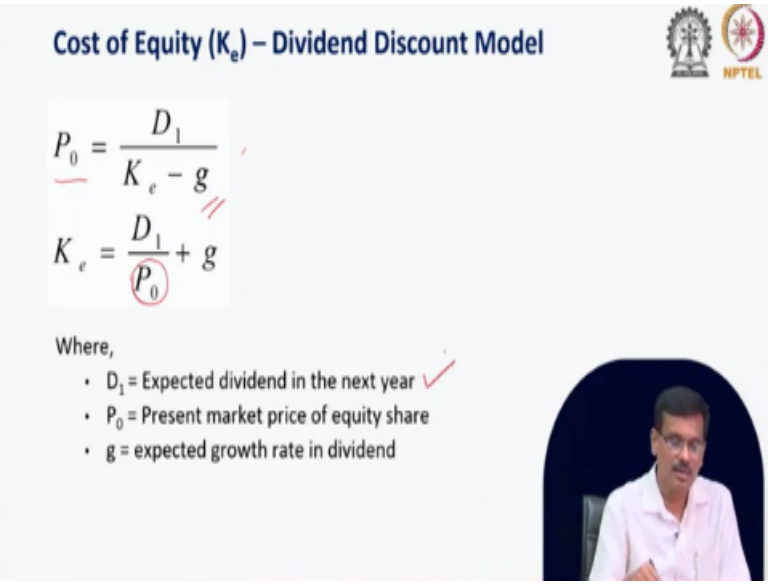

So, coming the cost of equity this is using dividend discount model very generic model. We talks about price is nothing but a function of dividend to be received in future with a particular growth. So, D 1 by K e - g is different discount model valuation from there we get the cost of equity by D 1 by P 0 this price today plus growth. So, dividend is nothing but dividend expect the next year,

price is today's price, growth is expected growth, individual three things are there we can find the cost of equity using different discount model.

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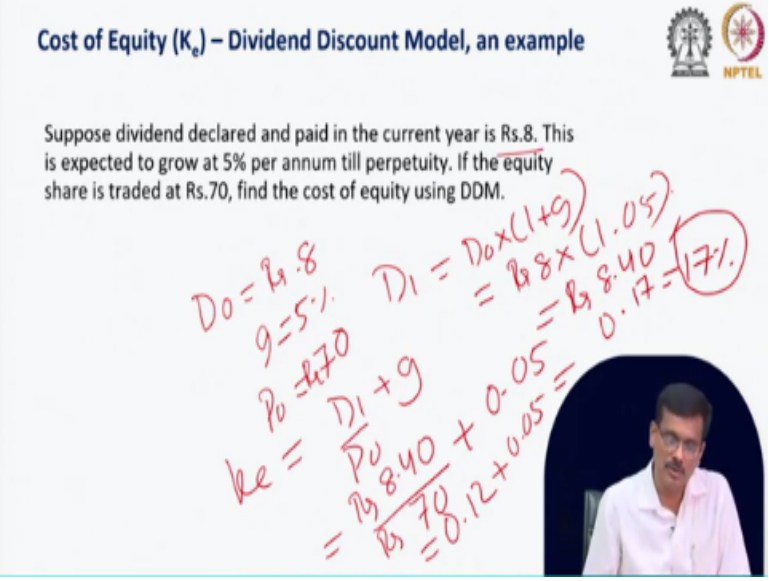

So, if you take an example here. Suppose dividend today declared in this year is dividend called dividend 0 is rupees 8 and if a growth is 5 percent, then you have traded today's share is rupees 70, what the cost of equity? So, nothing but it will be D 1 by P 0 + g. What is my D 1? because I have got D 0 so D 0 into 1 + g gives me D 1 that is rupees 8 into 1.05 that is because g is 5 percent that gives me rupees 8.40.

So, rupees my cost of capital is 8.40 divided by rupees price is 70 plus growth rate is 0.05 so this gives me 0.12 and this gives me 0.05. So, my cost of capital applying this dividend discount order is going to be 0.17 it is called 17 percent. So, this is an example where you can use different discount model to find the cost of equity. One catch here is that you have to use D 1, you may be given D 0, you are given this.

So, you have to find the D 1 and then apply that to find out the cost of equity using different discount model.

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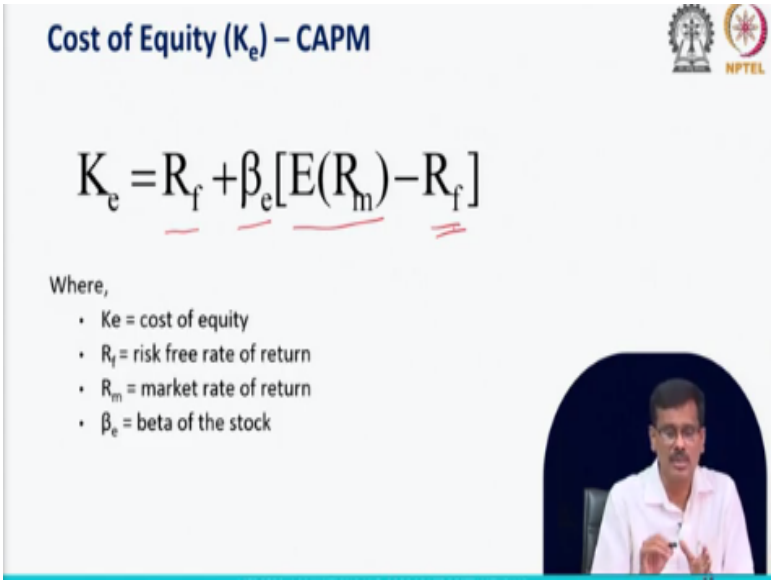

Then coming to the cost of equity using capital asset price we discussed in the previous slide we have to have R f. We have the beta of the stock; we have the risk of market that is called long term mark written in the context of overall market. So, we will take overall market as for the proxy's index could be like Sensex and Nifty then risk spread of return and accordingly, we will get the cost of equity.

So, respiratory could be like treasury bond in long term treasury yield, a long-term fixed deposit of a prominent bank that can be taken as a risk of rate. That means whatever come what may in this is going to get the return. So, that is there is no risk involved in the return access.

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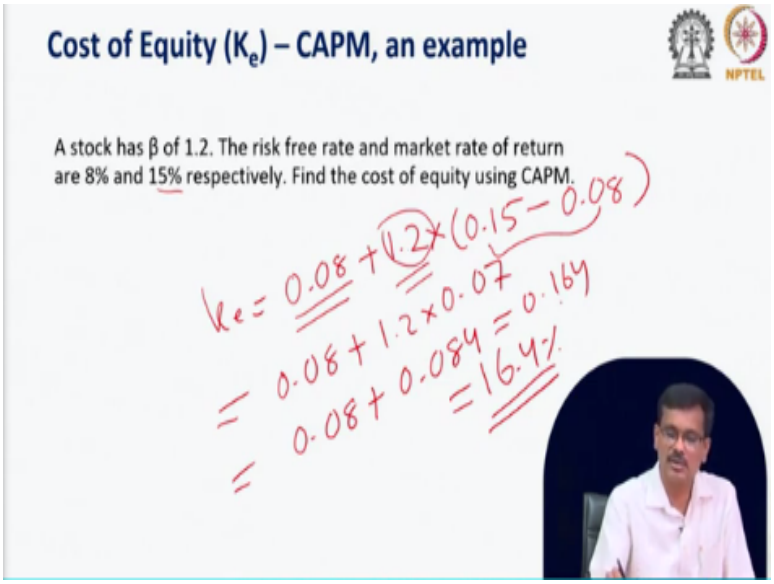

So, if the company has a beta 1.2 and risk-free rate is 8 percent, RM is 15 percent with the cost of equity. The cost of equity will be risk period of return 0.08, beta is 1.2, RM is 0.15, 15 percent - 0.08 is your risk-free rate term. So, it gives me 0.08 + 1.2 into 0.07 so that gives me 0.08 plus 0.084. So, that is nothing but your 0.164 or is called 16.4 percent is the cost of equity applying CAPM. So, that is the very simpler one was before on the estimate, it is very simple formula very convincing.

Because you are looking at investors point of equity where you should get a return as a risk free rate because you are bearing a result at least you must get this much. As since your risk is measured by beta so depending on the beta more you get more risk premium this is called risk premium which is multiplied by beta which then accordingly you get like here you get 8.4 percent as risk premium. Overall, the person can expect 16.4 percent return.

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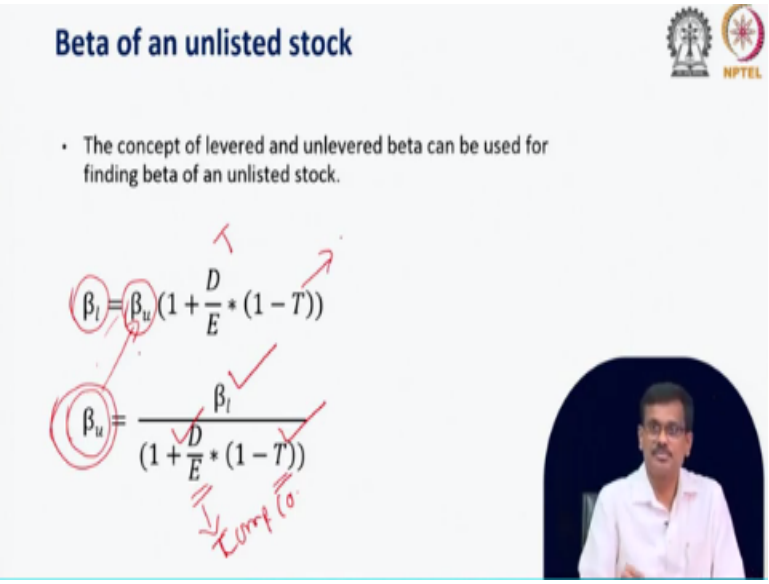

When you look at the beta of stock which is not listed but you still want to use CAPM we need beta for that matter. In that case we can get the beta of the stock by getting the unlevered beta by comparable stock and once you get the unlevered beta apply that unlevered beta to get the levered beta of your target stock. So, for that we need day to get ratio we need tax rate. So, that we can find out the unlevered beta.

So, this is required for the target let us say. So, this is actually a comparable company tax rate, comparable debt rate ratio, comparable company levered beta then you get the company unlevered beta and use that only about beta by using the target companies' debt rate ratio and target companies corporate tax and you do that. So, we will be discussing more examples of finding levered beta and unlevered beta in the subsequent session.

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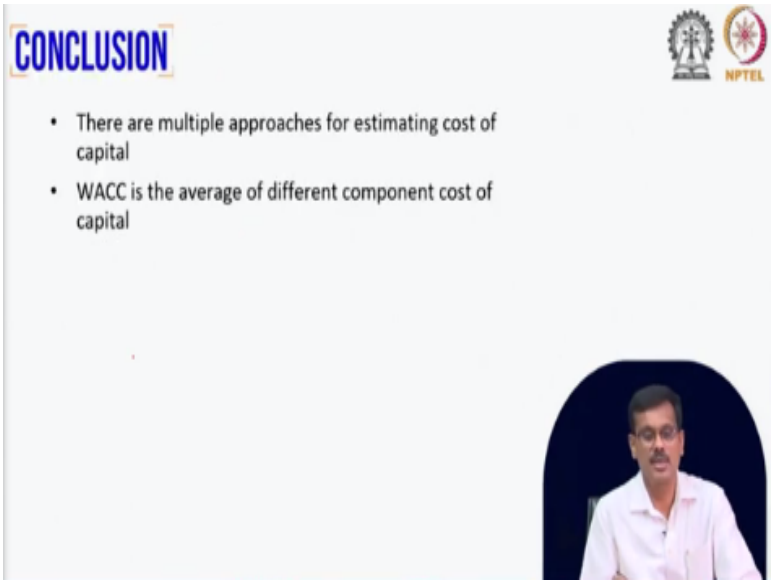

So, in this particular session we will talk about what is the estimation of cost of capital which is an important ingredient in the valuation of shares of the valuation company on which side I would talk about weighted average cost of capital which is nothing but average of the different component cost of capital for a particular company or firm. In the next session we will talk about other premises other things applicable into discounted cash flow.

And we also have certain exercises full **(()) (36:03)** exercise and the cost of capital itself where you will get the find the cost of capital of a particular company by taking different companies the cost of capital.

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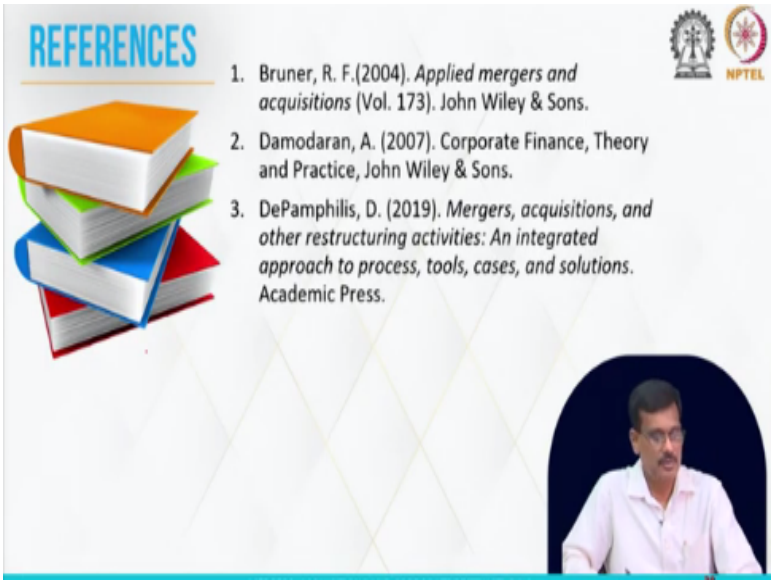

Thank you, happy learning.