Financial Management for Managers
Professor Anil K. Sharma
Department of Management Studies
Indian Institute of Technology, Roorkee
Lecture 49
Cost of Capital -Part 3

Welcome students, so in the previous class we were talking about the different sources of the debt, the long term as well as the short term. In the long term we talked about the debentures or bonds and then the bank borrowings or the borrowings from the financial institutions. And we learned about that how to calculate the interest or the cost of capital for the debt that is the debentures as well as the say borrowing from the financial institutions.

At the same time, we talked about the one short term instrument which was a commercial paper, and I told you that commercial paper is different from the normal borrowing instruments because on the commercial paper, no interest is paid rather the commercial paper is sold at discount in the market to the investor and redeemed by the firm, the borrowing firm at par. So, the difference is called as the coupon rate or the interest rate or the say you can call it as the differential amount is called it as the return on that investment on the commercial paper.

So, finally, what we can do is, if the firm is using the multiple instruments, then we can calculate the average cost of capital and for calculating the average cost of capital, we will have to now learn about or with the help of some example, we can learn that how we can calculate the average cost of capital. So, I am taking here the different debt instruments and then we will learn about how to calculate the average cost of capital.

Because normally for all that debt instruments, we show the interest cost in the profit and loss account and that interest which we debit in the profit and loss account or be debit the profit and loss account with is this sum total of the interest on the or the average cost on both long term and the short term sources. So, that is basically called as the average cost of that debt capital.

So, how to calculate that average cost of the borrowed capital or debt capital that we will learn here. So, you can say that how to do that, we will do with the help of this particular calculation or this particular table.

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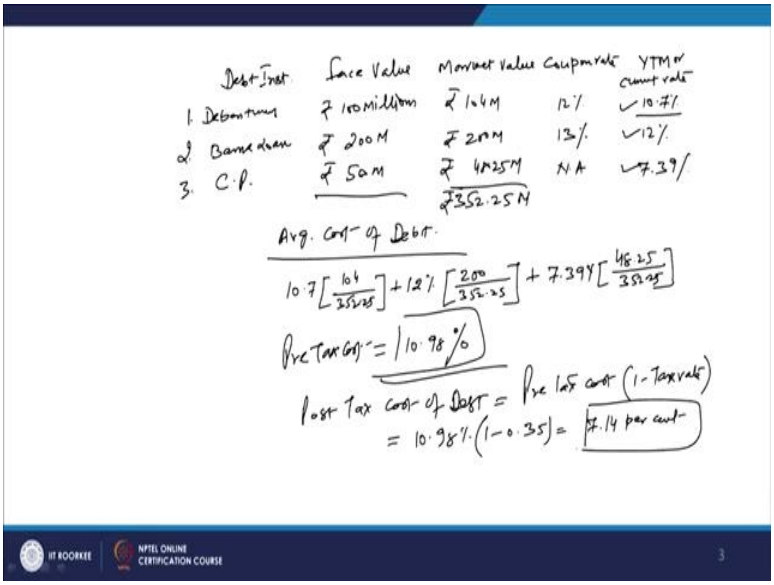

For example, we take here as a debt instrument right, we write here as the debt instrument and then we write here as the face value. We write here as the face value and then we write here as the market value.

This is the market value, this is called as a coupon rate and lastly this is called as the YTM Yield To Maturity or you call it as the current rate, current borrowing rate, yield to maturity is basically the current borrowing rate. So, we will take here as the debentures, first is the debentures or bonds right, in case of the debentures the amount is how much we are going to raise? 100 millions, this is the 100 millions.

So, we are going to raise this 100 millions and the 100 millions the face value of 100 millions and the market value of that which we are going to sell because as I told you that against the face value sometimes the bonds and debentures are sold at premium. So, the market value here we assume is 104 millions right, coupon rate is that is the 12 percent and yield to maturity we have already calculated, learned how to calculate it and that is 10.7 percent.

Second we talk about the bank loan or borrowing from the bank or financial institutions. So, as I told you, that we are going to consider the current borrowing rate, not the previous borrowing rate. So, previously the firm must have borrowed at the rate of 13 percent or 14 percent, but the current borrowing rate is at the rate of 12 percent. So, the 12 percent is important for us not the previous one.

Because we talk the marginal cost of capital in terms of marginal cost of capital not in terms of the historical costs of capital. So, marginal cost of capital is means the subsequent borrowings which you are going to make in the market at what rate of interest we are going to borrow. So, that is more important is the current rate and here also we are taking into account the current rate in case of the debt instrument right.

So, we are assuming here that this is say 200 million. We are going to raise from this market this amount 200 millions we are going to raise from the market, again loan is going to be same, so it means rupees this is 200 millions is going to be this value and the rate of interest, current rate of interest we are assuming is 13 percent right, sorry the previous rate of interest was 13 percent at which the firm has borrowed, coupon rate is the 13 percent at which the firm has borrowed the funds and the current rate of interest is the 12 percent, it is 12 percent and then third one we are going to talk about is the commercial paper CP.

And in case of the commercial paper, we are going to raise how much? 50 million rupees and say the market price because I told you the commercial paper is sold at a discount. So, the market price for this is 48 point we are considering it as 48.25 millions right and coupon is not there because it is sold at discount. So, no historical cost is there and we assume that the say as per the discount rate given, the yield to maturity is 7.39 percent, right.

So, in this case now, we have to calculate the average, these are the three sources from where this total amount is coming and the total borrowing which we are going to have is how much? 350 millions, but the market value which is more important for us is the market value is how much? That is 352.25 millions right, this is more important for us.

So, before calculating the average cost of capital we take into account the market value of any borrowing, not as the face value of the borrowing. So, in this case, because here we are talking about 48.25 because when we are issuing the commercial paper worth rupees 50 millions in the market, actually the firm is getting the cash flowing back to the firm is after discount is 48.25 millions against a bank loan 200 is 200 million same.

And against the debentures against the debentures of face value of 100 rupees, we are going to raise 104 million rupees, because we are going to sell the debentures at premium. So, it means total market value of this debt which we are going to raise from the market with the help of different instruments, both long term and short term is 352.25 millions. So, now, for calculating the average cost of capital, we will have to take the sum of all these three and in this case for calculating the average cost of capital, average cost of capital.

Now, we will calculate that we are not calling it as a weighted average cost of capital, weighted average cost of capital will be the one when the capital to the firm will come from different sources both internal and external. So, there we will try to find out what is the component of equity, what is a component of preference capital, what is a component of the debt capital, there will be we will be talking about the weightages.

Here we are going to talk about the total simple average of the say total debt coming from the different sources depending upon the different rate of interest being charged by the financial institutions and the investors. So, average cost of capital has to be calculated average cost of debt, average cost of debt has to be calculated here. And for calculating this average cost of debt, we have to take now, the market value as I told you is important for us.

So, we will take this market value and then we have the, already we have got this current rates they are important for us 10.7, 12 percent and 7.39 percent. So, for calculating this how to do it, 10.7 into right what is the first in this total amount? 104, divided by total amount is how much? 352.25, 352.25 is the first component we are going to raise from the market, then is a second plus next is a 12 percent, into 12 percent into how much we are going to raise, 200 million.

So 200 divided by 352.25 millions and close the bracket and then third one is how much? That is 7.39 percent into how much is the total amount we are going to raise? 48.25 divided by 352.25. So, you close the bracket here, if you try to find out the average cost of capital after solving this equation, you will find out that the average cost of capital here works out as 10.98 percent, 10.98 percent is the average cost of this capital, right.

So, it means, we are and we are calculating the average cost of capital because it makes a sense also because finally, at this rate we are debating the profit and loss account. So, you can say that one source or the long term sources, because in India now, we have the term structure of interest rates. So, long term borrowing sources charge higher rate of interest short term borrowing is charge a lesser rate of interest.

So, average cost of capital works out on the all the debt instruments both long term and short term in the one for example, it is 12 percent or maybe in this case 10.7 percent in 12 percent and then it is 7.39. So, average cost works out as a 10.98 percent. This is the average cost of the total debt we are raising from different sources, both long term debt and the short term debt right. But here one important adjustment now has to be made also, and that is with regard to the tax.

The main advantage of the debt as a source of funding is that it is basically tax deductible. So, overall effective cost of the debt comes a seriously down as compared to the cost of equity, this advantage is not available in case of the equity capital neither in case of the preference capital right because in the equity capital also in the preference capital also no interest is paid back to the investor rather we paid back them the dividend.

And dividend is not something which is tax deductible, you cannot means show the dividend payable or paid as a cost of the funds in the profit and loss account. It is not the financial cost, it is not the part of the financial costs, it is not the component of the financial cost. So, this only, this liberty this feature, this important feature is only associated to the borrowed capital.

So, if there is a negative feature with the borrowed capital that it is a fixed charge and in every situation, you have to pay back the interest as well as the principal back to the

source or to the lender. So, the another positive feature or maybe the positive feature of this instrument is that it is tax deductible, whatever the financial cost we pay to the different sources, from where the funds are being borrowed, that cost is subject to the deduction from the tax liability.

So finally, we are going to call it as this average cost of capital we have calculated is basically this is pre-tax cost. This is the pre-tax cost, and we have to calculate now the post-tax cost of debt, post-tax cost of debt or average cost of debt is that you can calculate, how can you calculate that post-tax cost is that is pre-tax cost, you write here, pre-tax cost into 1 minus tax rate.

1 minus tax rate so what is a pre-tax cost here? Pre-tax cost is 10 point we have calculated it is 10.98 percent, right, this is a pre-tax cost and multiplied by 1 minus tax rate. We assume here that tax rate is for example 35 percent, corporate taxes are largely more than the individual taxes or the personal taxes. So, it is we assume in this case is 35 percent. So 1 minus 0.35, so it becomes how much?

If you solve this, this becomes as 7.14 percent, this is 7.14 percent, so post tax cost of the debt, post tax average costs of the debt is 7.14 percent. So, this is the main reason, this is a bone of contention, which creates a problem that in the capital structure of the firms which is the next topic we will discuss after completing the discussion on the cost of capital is that should the firm raise more funds from the debt or from the equity.

And here is the main difference, point of difference between the debt and equity that though the debt is basically the risky source of funds because in every situation you have to return back its financial charged that is the, means the interest cost and the principle amount, you have to service the debt in the form of interest and then you have to pay it on the maturity value of the loan or that debt you have to pay on the at the time of maturity in every situation you have to pay it back.

Otherwise the lender will get the firm declared insolvent or liquidated. So, that risk is there but if the firm has the assured profitability, then it is always better and advisable to raise more funds from the debt because it is number 1, fixed charge against the profits of

the firm or from the against the revenues of the firm not profit, against the revenues of the firm. And second thing is effective cost of debt is much less as against the cost of equity, because it is number one fixed and secondary it is tax deductible.

This feature is not embedded with the cost of equity both whether it is a cost of equity capital or it is a preference capital. Their dividend is not tax deductible. So because of this basic difference between the debt capital and the equity capital, the capital structure becomes a very serious issue and firms are even today are not able to decide whether they should have higher amount of debt or higher amount of equity in their capital structure. right.

So, you have seen that how we calculate the average cost of capital in case of the external source of funding largely in case of the debt instruments, whether it is a debenture, whether it is a bank loan or whether it is any short term instrument like commercial paper and finally, by calculating the individual cost and yield to maturity, we calculate the average cost of capital and that average cost of capital is calculated as the post-tax cost of debt or the cost of borrowed capital.

Now, we talk about the next part and the next part is preference capital, how to calculate the cost of the preference capital?

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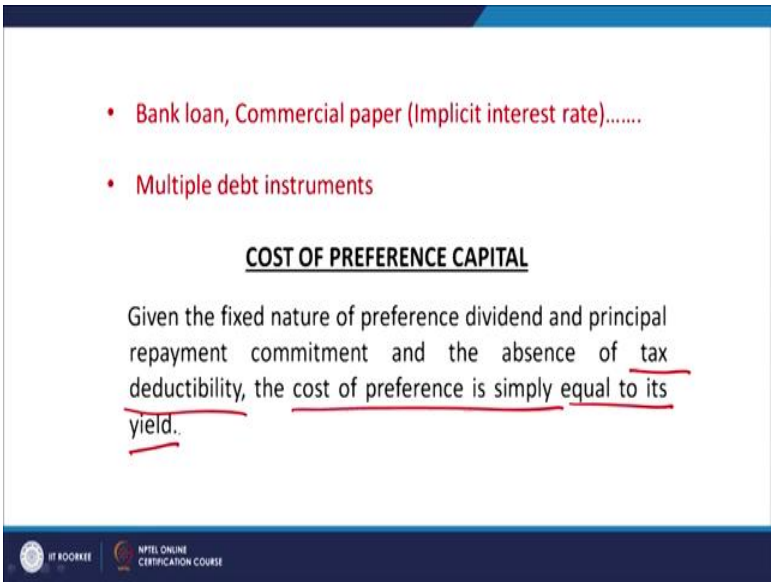

Here it is written that given the fixed nature of preferences dividend and the principle repayment commitment, given the fixed nature of preference dividend and principle repayment commitment, and the absence of tax deductibility, the cost of preferences simply equal to its yield, because the feature as I told you this tax deductibility feature is not there with the preference capital.

You cannot deduct the tax payment, because dividend is not subject to the tax deduction, it is only the interest. So, because of the absence of this feature, finally, the cost of preference capital is simply equal to its yield, that how much yield is available to the preference shareholder, who is making the investment in any company's preference shares is becoming or is called as a cost of preference capital.

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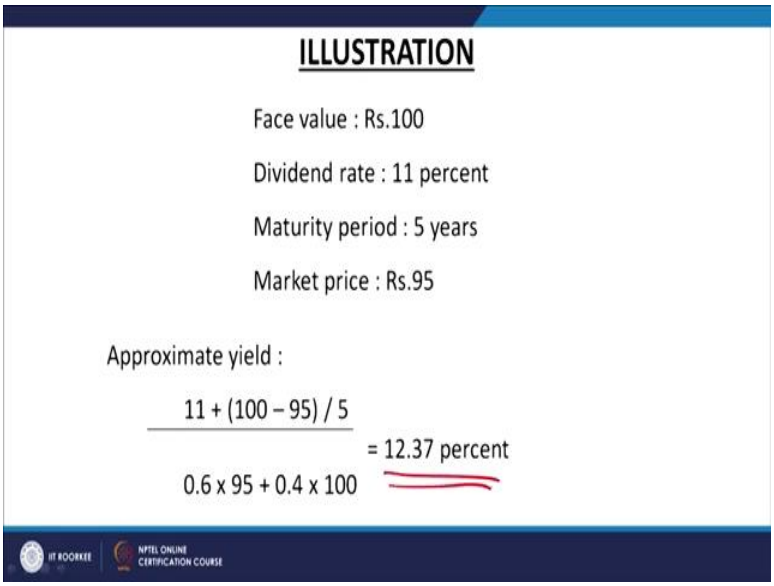

We have taken the illustration here, for example, the face value is 100 rupees of any preference share, dividend rate is which is 11 percent. So, on that say share certificate, it will be written as 11 percent preference share at the face value of 100 rupees. So, face value is 100 rupees, dividend rate is 11 percent, maturity period is 5 years and the market price is 95.

In this case we are assuming a preference share having the face value of 100 rupees or the maturity value of 100 rupees is being sold in the market at a discount and discount is 5 percent or 5 rupees. So, 100 rupees face value share, preference share is selling in the market for 95 rupees it means 5 percent discount is there. So, for calculating the yield, same approximation formula or the method can be used here also and same all the components will be same.

We have got the market price also, we have got the face value also, we have got the maturity period also and we have got the coupon rate also. So, it means finally if we use this approximation method, not the trial and error method. So, if you use the approximation method then you would say that approximate yield on this investment is 12.37 percent, right.

So, against the dividend rate of 11 percent we are getting the and this is largely the cumulative you can call it as a preference share, because in this case in the cumulative preference shares, we are investing the dividend back and finally, at the end of the say 5 years when we are getting the total return back, that is the principal amount along with the cumulative dividend, so that yield works out as 12.37 percent.

So, against the standard dividend rate of 11 percent, the yield on that investment works out as 12.37 percent. So, this is how we can calculate the cost of the preference capital. So, almost as same as the debt capital only difference is that this cost is not tax deductible. So, you have to pay the dividend but you cannot take the advantage of the reducing the tax liability by paying any kind of the dividend on the preference capital. So, this is the discussion about the preference capital and the debt capital.

And now, we will move forward with the next and the most important part and the most complex part also with regard to the cost of equity and for calculating this cost of equity, we have to now learn it in detail that how we can calculate the cost of equity, what are the different methods, what are the different ways we can use for calculating the cost of equity. In this case, for example, cost of equity as I told you, it creates a problem because the dividend amount is not fixed.

Sometime you pay very high amount of dividend, it may be possible that sometimes equity shareholders are getting 50 percent dividend right against the investment of 100 rupee their annual return is 50 rupees on one share. If the one share if they have bought from 100 rupees, so, they may get back 50 rupees. So, it means the return is 50 percent which is totally you call it as unexpected return from the market.

And there could be situation they do not they get anything back as the return means they get the zero return, they get back the 0 return. So, in both cases means ultimately they have to face the music whether say not I would say it or not to face the music, music they are going to face only in case of when they are not getting any dividend. But in that case also if the firm is profitable, and they are not getting the dividend back, the total profit is being reinvested back into the business.

So, that way the overall market value of the firm is going to increase because the capital base of the firm is going to go up, right. So, cost of equity as I told you dividend remaining the main deciding point and it is uncertain. So it is very difficult to calculate the cost of equity, but still we have number of ways to learn about that how to calculate the cost of equity and different ways different methods of calculating the cost of equity are.

First of all, let us read these points, before reading these points, I will discuss 1 or 2 more points, that when you talk about the equity, now you understand from where the equity comes, what are the sources of equity capital. There are two sources of equity capital, one is directly by issuing the stock in the market before you call it as through IPO, initial public offer or through FPO followed on public offer in the market.

So, directly when we issue any equity shares in the market, people subscribed to that. So, we get the equity capital right, this is the one source. Second sources that when I am saying the company has a profit, but they do not pay the dividend or you can call it as dividend payout ratio is very, very small and larger part of the say earning of the business are going to be reinvested back. So you call them as their retained earnings. So, equity also comes from the retained earnings also, when you are investing.

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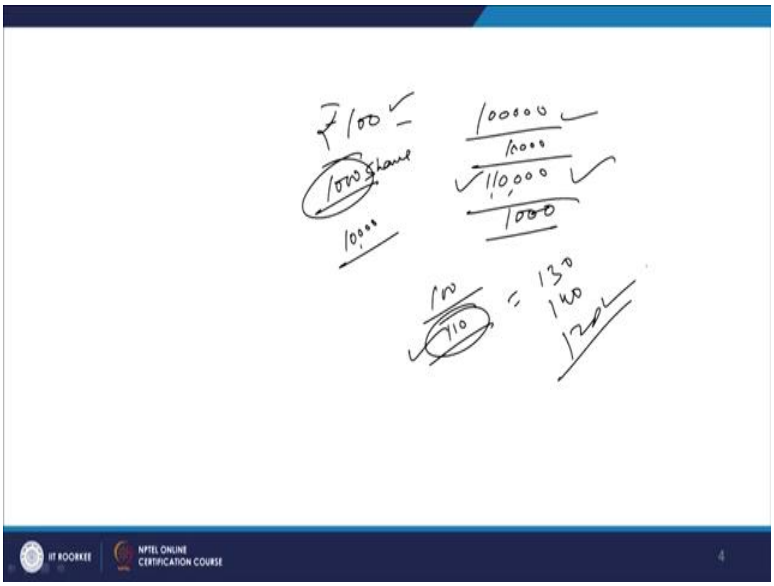

For example, we have got the say 100 rupees, one share of the 100 rupees is there right, we have sold it in the market and total base of the company is going to be how much? 1 lakh rupees, if we assume that number of shares we have sold in the market and for one share of 100 rupees so total number of shares are how much? 1000 shares are issued in the market. S

o, it means the total base of the company in the first year is 100000 rupees and in the first year the company earns a profit of say 10000 rupees, profit of 10000 rupees, but the firm means the management of the company, the board of directors decide that we are not going to pay the dividend because of our capital requirements are high. So this 10000 rupees which we have earned the profit at the end of the first year are going to be reinvested back into the business.

So this 10000 we are going to invest, so this at the end of the next year (sorry) or in the beginning of the second year, this base of the firm, capital base of the firm becomes 110000 rupees, right. So, in this case also if you divide it by 100 or maybe 1000 shares, because number of shares are going to remain the same 1000 shares. So, it means a face value of the share which was of 100 rupees, now it has become you call it is a book value of the share has become 110 rupees, right.

So, similarly when the book value of the share is increasing, the market value of the share is also increasing in the market. So, if any shareholder who is not satisfied with non-dividend paying policy of the firm, he can easily sell off his share in the market, in the secondary market and very easily he will recover for this dividend amount of 10 rupees rather he would be able to sell his share which is purchased for 100 rupees, 1 year back.

Maybe easily for 130 you call it as 30 rupees or 140 rupees or minimum 120 rupees, so he has recovered for the face value also, he has recovered for the dividend also and he has made some profit also on that investment, maybe by just a meager amount of 10 rupees. So, both ways it is possible.

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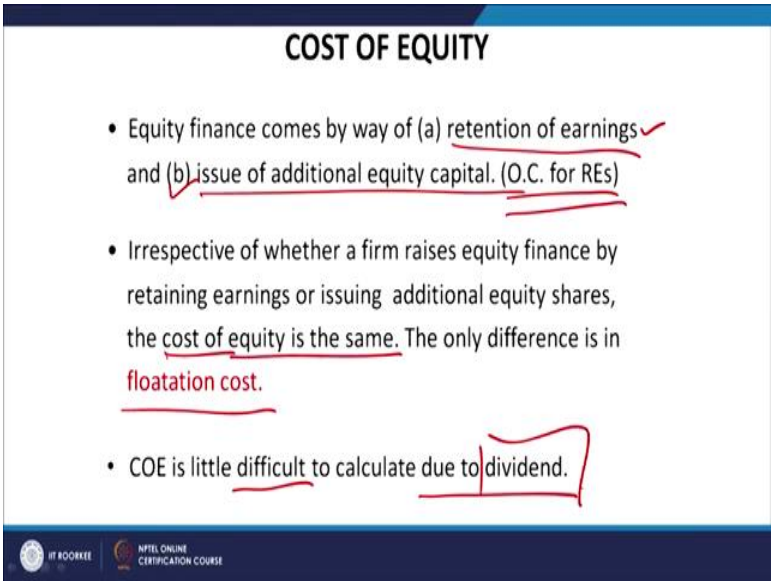

So, when you talk about the sources of equity, it is written here, equity finance comes by way of number 1, retention of earnings, this is one and this second is issue of the additional capital. So, first time when any company when it is converted from the private limited company to a public limited company, the company converted into the public limited company start raising the capital from the market that is done with the help of IPO Initial Public offer, right. And once that amount is raised and companies start making use of that amount sufficiently or maybe very efficiently in the market, so, they start earning the profits.

And maybe as I told you that they may decide that we will not declare dividend or maybe we will pay only 10 percent profit as dividend, 90 percent will be reinvested back. So that 90 percent will becomes the source as the retention of earnings and one source is the capital raised through IPO. And when that capital which is raised through IPO is a fully exhausted, we can go with the further issues of the capital also and they are called as FPO Followed on Public Offers also.

So, two sources are there, from where this capital comes in the business and that is from the equity sources or the equity capital. Here now, the one important thing is the opportunity cost of the say retained earnings. That is a very important concept. While talking about the retention of earnings we should be taking care of the opportunity costs of the retained earnings.

And if you talk about the opportunity costs of retained earnings because it creates a problem. For example, we are investing that profit into the business and business is returning 10 percent back average return for the business is 10 percent whereas if it is invested in the market in open market, the return available from the market is 12 percent. So, it means opportunity cost of that investment is high. But in a way, we have to look at from the other angle also.

That will be borrow the capital from the market it will come at 12 percent but it if we say reinvest our own profits back it will be available at the rate of 10 percent. So, it means when the cost of borrowing or investment is lower and the return start increasing, that differential can be easily made up, but we should be say keeping into consideration all the times that the retained earnings always had the opportunity cost and we should be worried about this component.

It may be possible that for example, if the funds are easily available in the market, and in the market, the rate of interest or the borrowing rate or the cost of equity capital, maybe the boring rate is 8 percent. There is other opportunity costs of capital is 10 percent so it may be possible that we can invest our own funds out in the market and we can borrow from the market at the rate of 8 percent. So, overall cost of capital will go down.

So, all these, these evaluation should be done but largely when you talk about the equity cost or the cost of equity, first of all be clear equity comes from two sources. One is the retention of earnings. Second is from the IPO and the FPO. Next point, irrespective of whether a firm raises equity finance, by retaining earnings or issuing additional equity shares, the cost of equity is the same, we treat it as the cost of equities is same.

In both the cases the cost of equity is the same. Though we evaluate it against opportunity costs of capital, but we do not provide two cost, we take the total sum, how much is the total equity investment, that is the paid up capital as well as the free reserves that becomes the total equity capital and the only difference is the flotation cost, it is written here only difference is the flotation cost that in case of the retained earnings, no flotation cost has to be paid.

Whereas, in case of the equity capital, fresh issue of the equity capital, maybe IPO or FPO we have to pay the flotation costs. So, what is a concept of the floatation cost? I will discuss with you in the subsequent lectures, floatation cost is basically preparing the cost of preparing the prospectors, then the fee is to be deposited with the registrar of companies and printing expenses, advertising expenses, because for the advertisement of selling the equity shares in the market.

You have to give the advertisement into the print and electronic media. So, all these costs are associated which are not there with the retained earnings. So, means bearing that flotation cost which is specifically going to take place in case of the IPO and FPO other costs are going to be same. So other than the flotation costs, cost of retained earnings and the cost of equity is going to be treated as the same cost.

And next point is cost of equity is a little difficult to calculate due to dividend, due to dividend it is little difficult to calculate due to dividend right from the beginning of the discussion, I am means emphasizing upon that dividend is the bone of contention, because it is not fixed and it is the only reason which makes the calculation of the cost of equity little difficult right.

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So, for calculating the cost of equity, we have the different approaches. First approach is the security market line approach, second is the bond yield plus risk premium approach. Third approach is the dividend growth model approach. And fourth is the earning price ratio approach. These four approaches are there, which we normally use, these four methods are there, which we normally use for calculating the costs of the equity and first is the most important which you call it as the CAPM approach also Capital Asset Pricing Model approach also.

Security market line basically, we draw with the help of the CAPM capital asset pricing model. And if you want to use it most objective method we call it as, if you want to use the most objective method of calculating the cost of equity, then the first method is the most important that is the calculating the cost of equity with the help of capital asset pricing model or the security market line approach.

Otherwise, we can use the other subjective approaches also, which is maybe the bond yield plus risk premium approach, dividend growth model and then it is the earning price ratio approach right. So, what are these four different approaches which are normally used to calculate the cost of equity to take care of the dividend issue, I will discuss with you at length one by one.

All the four approaches, all the four models but that too in the next class, for the moment, I will stop here and remaining discussion about the calculation of the cost of equity I will discuss with you in the next class. Thank you very much.