Financial Management for Managers
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Lecture 47
Cost of Capital – Part 1

Welcome all. So, now as a next part of discussion or the next topic, which we are going to take up in this subject of the Financial Management for the Managers is the cost of capital. Cost of capital is very important topic for the financial management students, because it plays a very important role in many ways or in many senses. That if you want to say know about any investment opportunity, if you want to evaluate any investment opportunity especially what we discussed in the capital budgeting. That is a new investment proposal or the new investment opportunities, in that case, cost of capital plays a very important role.

Normally, we use the concept of the weighted average cost of capital in the corporates or in the corporate life, because the capital in the corporate life comes from the different sources. And when it is coming from different sources, the different sources has the different cost of that capital. Equity capital, preference capital and debt capital these are the 3 important sources. There are the other sources also but largely these are the 3 sources which is called as the equity capital, preference capital and the borrowed capital or the debt capital.

And all these 3 capitals have the different rates or different cost, which the borrower has to pay. So, largely the cost pertaining to the preference share, preference capital or the preference shares and the debt is fixed, you have to pay that cost in any case whether the firm earns the profit or incurs the losses. Whereas the cost of equity only can be managed in a way that, if there is a profit, you pay the dividend and if there is no profit you can avoid the dividend. But, all the 3 sources have the cost, equity is called the internal source of fund and preference capital though it is also the capital.

But, we normally consider it as part of the debt and it is considered as a external source of fund largely for the purpose of categorizing it though it is capital, you can call it is as a share capital. Like equity capital, the preference capital is also the share capital but because all the properties of the preference capital are as same as that of the debt, so it means we consider it is or we treat it like a borrowed capital because it comes for a limited period of time.

And the amount of dividend has to be paid for certain, whether the firm is into the profit or the firm is not into the profit. So, same is the case same are the properties associated with the debt. So these are the 3 sources, when the capital is coming from the, these 3 different sources and having different rates or the cost associated to them. Then naturally, for calculating the average cost of capital we will employ the concept of the weighted average cost of capital.

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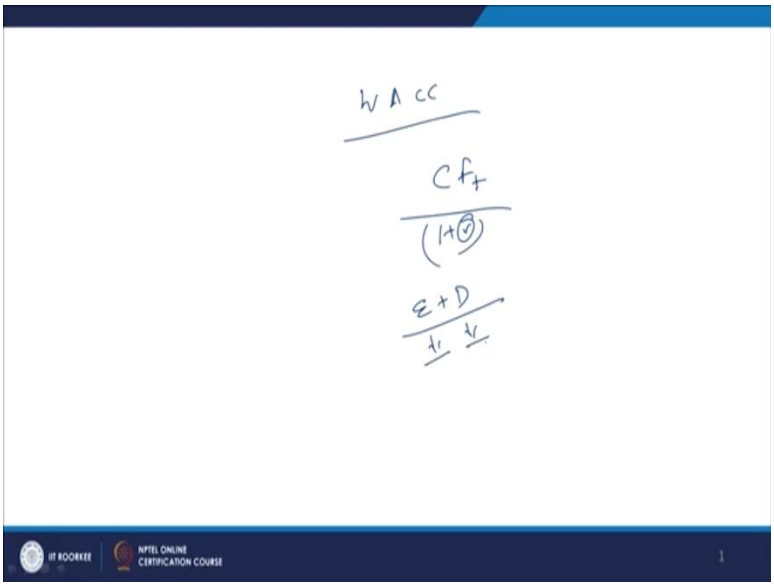

So, WACC is more important, here we call it as the cost of capital means we use the concept of the WACC – Weighted Average Cost of Capital. Because weightage of the different sources is different. So, for calculating the cost of capital we multiple the weight or the proportion of the capital by the rate of interest or the rate of dividend and we add up all these 3 and then the, whatever the capital comes up is called it as the weighted average cost of capital, so it is a very important concept.

In the capital budgeting you might have seen that we worked out the cash flows and then we discounted the cash flows to arrive at the present value especially of the cash inflows. And in case of the cash outflows also when the investment is made in the subsequent years also those outflows also have to be discounted to calculate their present value. So, there we were using something in the denominator, we were writing if you call it as that is the CF cash flow in the year T or you call it as a cash flow in the year T.

So, we will write it as if you recall it is a CF for the year T and it was discounted by something called as 1 plus R. So, what is this R, R is the discount rate and that discount rate is anonymous to the cost of capital that depends upon the cost of capital. What is the cost of capital? We have to discount. Because the cost of capital already gets adjusted for the inflation. If the inflation goes up cost of capital will increase, if the inflation goes down cost of capital will go down.

And inflation is the one which largely impacts the time value of the money or because of which the time value of money changes, if it is already embedded in this R which is the discount rate and discount rate depends basically upon the cost of capital. Without the cost of capital evaluating any new investment proposal will not be possible. So, it is a very important concept cost of capital, we used it for the capital budgeting proposals, we used it even in case of the sensitivity analysis.

While talking about the risk analysis in the capital budgeting proposals, but now we are going to learn about it what basically the cost of capital is and how it impacts the overall performance of the firm. So, cost of capital is important in many cases whether it is an evaluation of the new investment proposals, cost of capital is important because without that you cannot discount the cash flows. It is very important in determining the capital structure.

Capital structure is the next topic we will be discussing after the cost of capital in detail that is why I am moving in the sequential form that once the previous thing is cleared to you so in the next thing we are going to use it we know it already in advance. So, in the capital structure also the cost of capital is going to play a very important role. In the say capital structure, we have the 2 kind of sources, equity and debt and both these have the cost.

Equity cost is different, debt cost is different and depending upon the weighted average cost of capital, because in the capital structure, we determine the capital structure of any firm in such a way where the expected cost of capital remains as low as possible. Weighted average cost of capital remains as low as possible. So, in the determination of the capital structure also we take care of or we make use of cost of capital.

Similarly for assessing the leasing proposals, for assessing the leasing proposals we make use of the cost of capital and many a times many companies who generate electricity, who even

distribute the water because these days you have to spend money on the treatment or processing of the water also for generation of the electricity. So, when we make investment in generation of these facilities and finally we have to distribute it to the people.

So, it means we have to use the cost of capital so as to determine the price, at what price per unit of electricity or the power should be sold to the people, per unit of the water should be sold to the people. There the investment takes places, means whatever the investment has taken place that has to be properly evaluated with the help of the cost of capital. And then finally, the pricing of the final product has to be done.

So, in many cases any capital budgeting proposal is not possible to be undertaken without the cost of capital or may be the capital structure of the firm cannot be decided without considering the cost of the capital, so it is a very important concept and now we are going to learn in detail how to determine the weighted average cost of capital and for determining the weighted average cost of capital, how to determine the cost of the individual sources of the capital.

There we will learn about how to determine the cost of debt, how to determine the cost of equity, how to determine the cost of preference capital. And what important factors that play the role in determining. Because if the cost of the individual sources can be walked out, then calculating the weighted average cost of capital is not a difficult process, it can very easily be done. So, now let us go to the formal discussion in this case and what is we have written here, what do we mean by the cost of capital actually.

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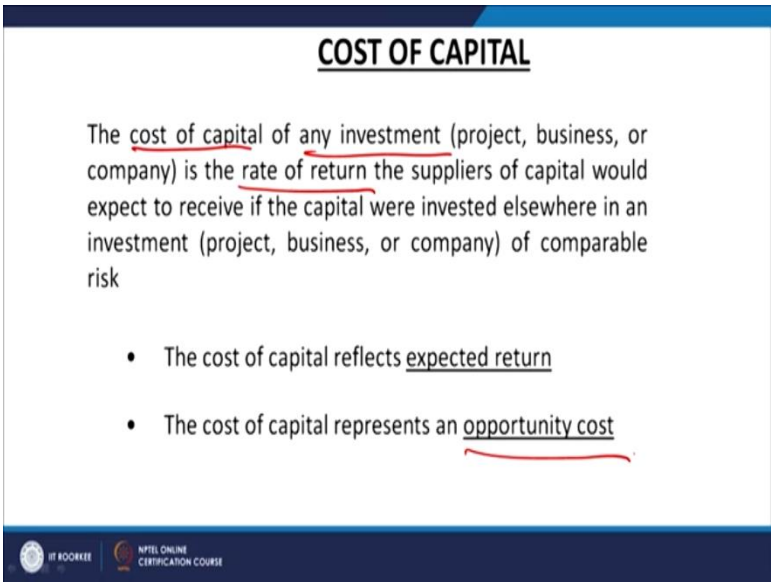

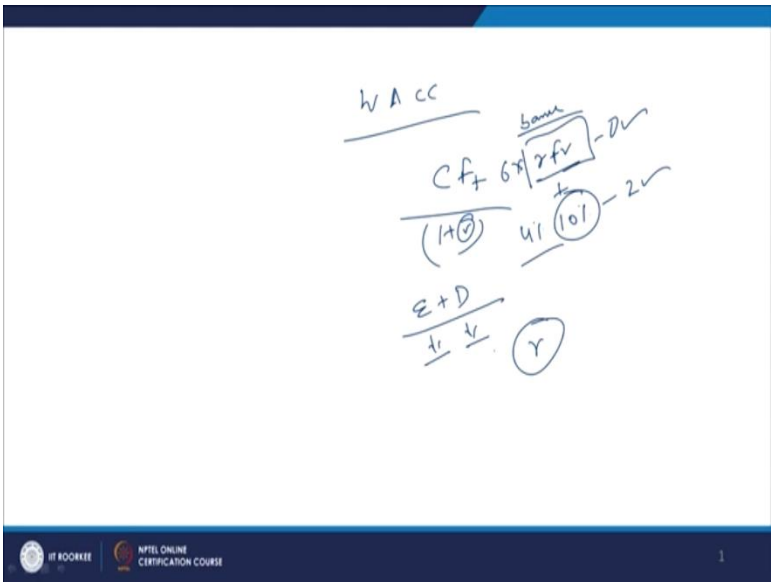

It can be understood from these 2 – 3 lines given here. The cost of capital of any investment project, cost of capital of any investment project, business or company, is the rate of return the suppliers of capital would is basically the rate of return, the suppliers of the capital would expect to receive if the capital were invested elsewhere in an investment project, business or company of the comparable risk. Basically, it is synonymous to the rate of return required.

Normally, when we have the surplus savings available with us, we depending upon the risk profile or the risk taking capacity of we individuals. We decide the investment avenue, if we had totally risk hours, we deposit our savings in the bank because their minimum rate of interest will be given by the bank without any kind of risk. But if are not satisfied by that return then we have number of other options.

We can invest that into the bonds, market, we can invest that into to the stock market, we can invest our savings into the real estate market. So, number of options are available but the moment you want to increase your returns you tend to increase the risk also. So, depending upon the risk profile or the risk complexion of any individual or any organization, the cost of capital means in a way the rate of return depends. More the risk you are ready to take more rate of return, more cost of capital will be your capital will have the higher cost of capital.

But if you are not ready to take the higher amount of risk then certainly your rate of return or cost of your capital will be treated or considered as low. So, the rate of return and the cost of capital are considered as the same thing. But here the question arises, do you feel that the rate of return or cost of capital are just interest rates? They are not interest rates, they are more than interest rates because they are two kind of returns, one return is the risk free return. So, when there is a risk return which we call it as the RFR – Risk Free Return.

Risk free return is available from the investment opportunities or into the investment products where the risk level is almost negligible or 0. For example, bank deposits, when you go to the bank and give your funds whatever the rate of interest they give it to you, whether it is 3.5 percent on savings and 6.6 percent on the fixed deposits that rate of interest is the risk free rate of interest. If you are satisfied with that, it means the element or the level of risk in that case is 0.

But if you want to increase it that I am not satisfied with this, I do not want 6 percent, I want 10 percent rate of interest, it means you want to add up how much 4 percent here and when you want to add 4 percent the risk will not become 0, it may become 1, 2 or 3 units. So, it will also increase, as the return increase risk will also increase, so I can say, when I am saying I want a return of 10 percent, it means in a way I am saying the cost of my capital is 10 percent.

It is not less than 10 percent, so I want minimum that much of the return, if that much of the return is not available I will not make investment. But if I am asking 4 percent more return as against the risk free rate of return I have to take more risk. So, level of the risk is 0 here, level of the risk is 2 here, it means the moment you increase your cost of capital or rate of return you increase the, or you automatically tend to increase the risk also.

So, it means, the cost of capital is basically the rate of return and that is why when you discount the say cash flows here with the R, the capital in the capital budgeting proposals, when we are discounting the cash flows with 1 plus R. So, it means R is basically the rate of return that is why we call it as R. And rate of return is synonymous to the cost of capital, it depends upon the cost of capital, higher the cost of capital higher will be the percentage of R.

Lower the cost of capital lower will be the percentage of R. So, it means R is basically the required rate of return and that depends upon the cost of capital. So, cost of capital reflects, expected return and second thing is it represents the opportunity cost. Expected return from any investment proposal, so that is the, if I am satisfied with that means I am making investment in the bank I am satisfied with the 6 percent, so it means my expected return is 6 percent and I am satisfied with that 6 percent. So my opportunity cost or the cost of my capital is also 6 percent.

Second thing we are talking about here is opportunity cost. Opportunity cost means the cost or the return, which is expected from the other projects, other investment options at the comparable risk. So, it means when the amount of risk is same, when the amount of returns is going to be same, so it means the opportunity cost of my capital is 10 percent, so I will not make investment at 6 percent if I make investment in the bank I am going to get 6 percent.

If I go to stock market I am going to get 10 percent because I am risk pro I am risk neutral when I am ready to risk then I am expecting the higher rate of return so cost of return on my investment or cost of my capital will be 10 percent and not 6 percent. So, it is a very important concept. When you talk about the weighted average cost of capital you talk about something this kind of the model.

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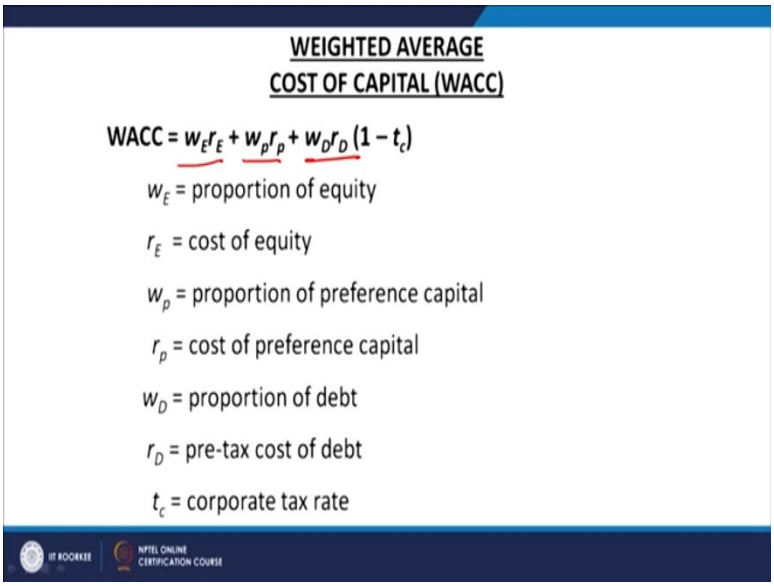

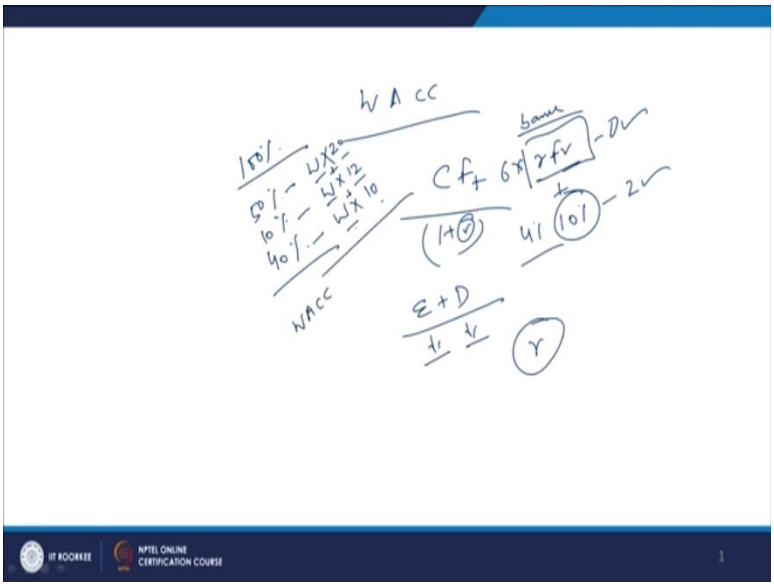

Here is the weighted average cost of capital and we have the 3 components here. This is 1 component, this is the second component, this is the third component. First component is that, WErE. WE is basically the proportion or weight of the equity. In the total, if you call it as, if the total investment required in the company is 100 percent. So, what is the percentage of equity, say 50 percent. What is the proportion of the preference capital, is 10 percent, and what is the proportion of debt is 40 percent. So this 50 percent, 10 percent, 40 percent is the W, is the weight. And this has to be multiplied by the cost.

So cost of equity might be 20 percent. Cost of the preference capital might be 12 percent and the cost of debt we normally take as the after tax. Because the cost of debt, which is the beauty of this particular source, that whatever the cost on that borrowed capital of the debt you pay, that you debit in the profit and loss account and by that amount your profit goes down, so it means if you are not debiting by that amount, the profit and loss account, your profit will increase and you tend to pay the tax.

So this cost is calculated as cost of capital on the debt, but after tax. For example, it is 10 percent. So it means with this weight and this cost, this and this, this and this, this and this, if you calculate the cost and then sum these up, this plus this, this plus this, so it will be called as the weighted average cost of capital and this is what this model is saying. W is the weight of equity, r is the cost of equity. Written here, proportion of equity and the cost of equity.

Proportion of the preference capital that is a WP, and cost of the preference capital is the rP, and proportion of the debt here it is proportion of the debt and the cost of debt multiplied by 1 minus tax, it means that is tax deductible because it helps us to minimize the tax burden, the cost which we pay. Only then trust which you pay on the borrowed capital, you debit with that interest the profit and loss account, but the dividend which you pay on the equity capital, you do not debit that dividend in the profit and loss account, so that is a major difference.

That is why we call it as, debt capital is cheaper as compare to the equity capital, but debt capital being a fix obligation is a riskier also, because in every case you have to pay the interest back to the bank or to the source. Plus the principle amount on the regular intervals. Whereas this is not the case in case of equity. So it is less costly, but being a fix charge more risky. And then we talk about the rD pre-tax cost of the debt, but when you are factoring it with the corporate tax so it becomes a post-tax cost of the debt.

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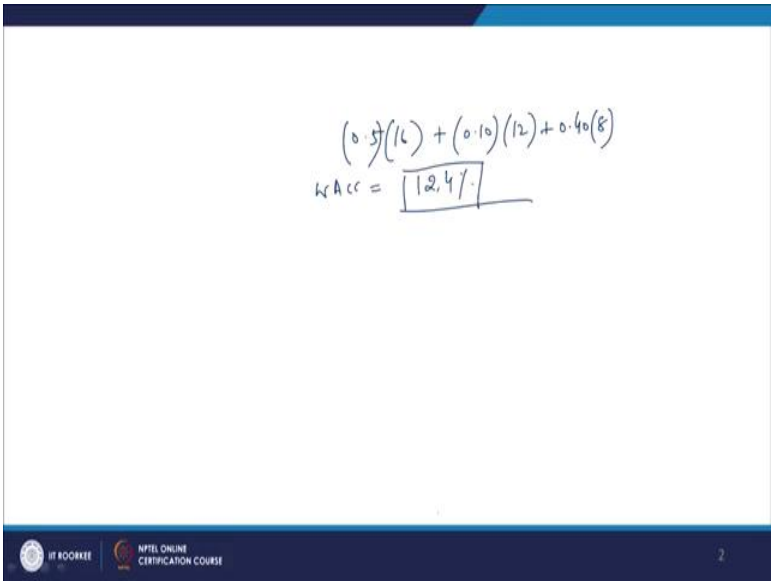

It means cost of equity, proportion of equity plus cost of preference capital and cost of debt and proportion of debt, and the post-tax cost of the debt. So, for example, how we can calculate it, assume it here like this, then for example in any firm, the proportion of equity is 50 percent, so we call it as 0.5 and the cost of equity is 16 percent. Then the proportion of the preference capital is 0.10, 10 percent and the cost of the preference capital is 12 percent plus the debt is remaining amount 40 percent, 0.40 and the cost of the debt we assume post-tax cost of the debt is 8 percent.

So you can calculate if you solve this, you will be able to find out that the, we put this also in the bracket. So this means, 50 percent is coming from the equity at the cost of 16 percent, 10 percent is coming from the preference capital which is at the cost of 12 percent and 40 percent is coming as a borrowed capital as a financial average and the post-tax cost of debt that is 8 percent. So weighted average, cost of capital if you calculate here that works out as 12.4 percent that works out as 12.4 percent.

So, it means you have to be very carefully working it out, that weighted average cost of capital has to be under the control. So, we can say that if the cost of equity is very high, if the cost of equity is very high as compared to the cost of the debt, then we have to look for how risky the project proposal is or the investment proposal is. And depending upon the risk associated to the

proposal, we have to decide the amount of the risk we can take or we are going to take. If it is risky proposal more funds should come from the internal sources from the equity capital, though it is expensive.

But if it is less risky then we can depend more upon the preference capital and the borrowed capital, because net result available to the equity shareholders because of borrowing more funds from the market will be very high. This is the model which is helping us to understand the concept of the weighted average cost of capital. And this we will be using for further reference whatever the discussion we are going to make that is called as a weighted average cost of capital. And as a r, the discount rate which we used in the capital budgeting or in the risk analysis of the capital budgeting was also the weighted average cost of capital, not the simple cost of capital.

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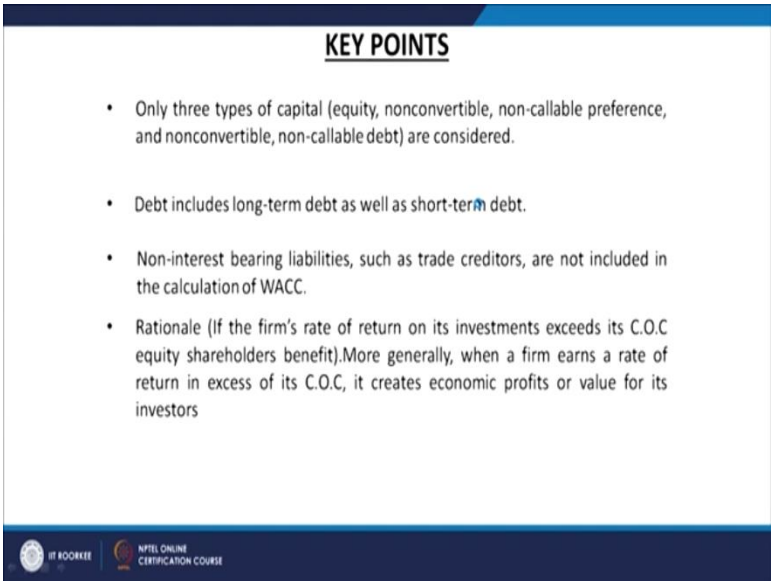

So, now the important points to be bought in mind are here. Only 3 types of the capital, equity capital, and preference capital and in the preference capital also non-convertible and non-callable we are going to use and the debt also is going to be the third component which is also non-convertible and non-callable. So, in the broader sense, you can say that only 3 type of the sources we largely used, we use the capital from other sources also, but bonds also, debentures also we use.

But we are, means for our discussion here, we assume that the capital in the businesses is going to come from the 3 sources, that is equity capital, preference capital and borrowed capital in the form of debt from the financial institutions. Number 2, Debt includes long term debt as well as short term debt. In certain cases for calculating the weighted average cost of capital we do not include the short term debt but this is not a right approach.

Total debt has to be taken into account and the cost has to be calculated accordingly, whether it is a short term borrowing or long term borrowing, both the borrowings had the cost and it should be taken into account for calculating the WACC. Number 3, non-interest bearing liabilities, such as trade creditors or expense creditors. Trade creditors are basically the suppliers of raw material on credit and expense creditors are basically employees of the company, who work for 30 days and they do not ask for the salaries before 30 days.

The suppliers of the electricity, water, and these utilities supply companies they are expense creditors. They supply all these inputs for a period of 30 days or sometimes 60 days also they do not ask for the payment before that period of time. So, these are known as the expense credits. Trade creditors, expense creditors they are called as the spontaneous sources of the finance. So, we have 3 sources of finance, short term sources or other way round long term sources, finance or the spontaneous sources of finance.

For our discussion, we will take into account the long term finance, short term finance but not the spontaneous sources of finance. Fourth, rationale, if the firms rate of return on its investments exceeds its cost of capital, if the firms rate of return on its investments exceeds its cost of capital equity shareholders benefit, means why we are going to talk about the cost of capital because ultimately who are owners of the business. Equity share holders are considered as the promoters and the real owners of the business and ultimate purpose of every business is to maximize a return to the equity shareholders, to the owners of the business.

And there the cost of capital plays very important role. Because if the cost of the external sources that is debt capital and preference capital, if it is under control or minimized, then whatever the returns are available from the project that will be available to the equity shareholders. So, what is written here, that if the rationale of understanding the cost of capital carefully is, if the firms rate of return on its investments exceeds its cost of capital equity shareholders benefit.

That the total returns available from any investment proposal, if they are more than the cost of capital average cost of capital then whatever the remaining amount is that is the benefit to the equity shareholders. More generally, when a firm earns a rate of return in excess of its cost of capital, it creates economic profits or value for its investors or basically the shareholders or basically the equity shareholders. Investors here means the equity shareholders or the owners of the business.

Now, how we talk about, we understand this rationale that the expected return from the project and the cost of capital of the project. What I am saying here is that if the expected returns from the projects are more than, if they exceed the cost of capital, so it means it is going to get or provide the larger economic value, larger economic benefit to the equity shareholders the real investors and that should be ultimate objective that the capital structure should be decided in such way that the cost of weighted average cost of capital is as low as possible.

Or especially, the cost of capital with regard to the external sources, preference capital and debt capital is as low as possible. So that the total returns minus the cost of external sources, means the difference is going to be the larger one and that is going to provide the larger benefit to the equity shareholders.

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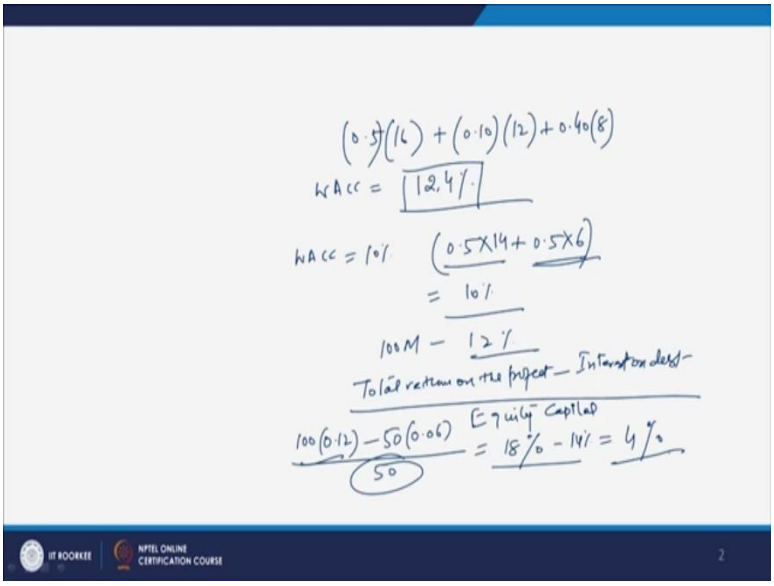

We can understand this concept with the help of a small calculation. For example there is a project where the weighted average cost of capital of the firm works out as10 percent. How it is worked as 10 percent? For example they used the debt equity in the equal proportion. So in this case, what we are going to do is, 50 percent of capital is going to come from equity and the cost of equity, because equity is costlier, considered as costlier than debt. So we assume the cost of equity is 14 percent and the cost of debt is say, we call it as6 percent, cost of debt is, post-tax cost of debt is 6 percent.

So it means, what is the weighted average cost of capital in this case? It is going to be equal to 10 percent. This weighted average cost of capital of the company is going to be 10 percent. Because we have calculate this, this multiplied by this, this multiplied by this, summing up both, so this comes up as 10 percent. And same company now, for example, employees or invest how much? 100 million rupees. They invest 100 million rupees and the project earns the returns at the rate of 12 percent.

What will be the benefit to the equity shareholders? Means the benefit or the returnable to the equity shareholders can be calculated with the help of this formula – Total returns on the project, total returns on the project minus interest on debt, minus interest on the debt, we write here this is minus interest on the debt, minus interest on the debt divided by say equity funds, divided by equity capital, divided by equity capital.

So, now on the basis of this if you calculate the total returns from the project. What are the total returns from the project? How much investment we are making? 100 millions. And what is the returns available from this? That is 12 percent. What is the cost of debt capital? 6 percent, and how much is the proportion 50 percent, total investment is 100 million. So, 50 million has come from the debt capital and the cost of the debt capital is how much? Only 6 percent.

And remaining funds have comes from? Equity capital. If you solve this, it works as it how much? 18 percent, and this 18 percent is the return available to whom? This is the return available to this source of capital which is basically the equity capital or suppliers of the equity capital, why? Because from the total returns of the project the cost of the debt has already been subtracted. Under 100 million are invested, 50 million is the borrowed capital, 50 million is the equity capital and earnings of the project are 12 percent.

So, it means 100 into 12 percent minus the cost of the borrowed capital, debt capital if you subtract then whatever the return is now available is a remaining return that is the return available is 18 percent and that belongs to the equity shareholders. So, what is the cost of capital equity shareholders? 14 percent. So it means the net benefit to equity shareholder is of the 4 percent.

And in this cases, in this situation value of the firm stands maximized, in this case value of the firm stands maximized, so it means they wanted to earn 14 percent, but actually project is giving to the equity shareholders to the owners of the business. How much? 18 percent. So, it is very good situation where they are going to earn the very good rate of return or the high rate of return or more than the expected rate of return which is larger than the cost of the capital of the firm.

This is just the initial discussion on the cost of capital or the concept of the cost of the capital which I wanted to introduce you with. So, I have started with what is the cost of capital? How we largely calculate the cost of capital and what are the important sources from where the capital comes?

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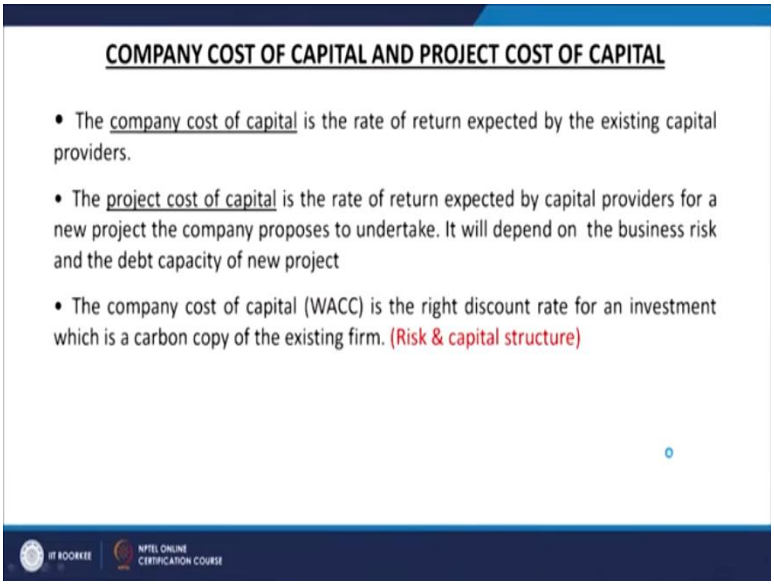

So, further discussion on this particular topic that is about the cost of capital, company cost of capital and the project cost of capital and then the cost of capital of the different sources like equity capital, then the preference capital, debt capital all these individual sources. What is the

cost of these individual sources? How to calculate the cost of individual sources and then finally how to calculate the summed up cost or the average cost which is called as WACC? All these concepts I will discuss with you one by one in the subsequent lectures.

Till then thank you very much