Security Analysis and Portfolio Management

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Module No. # 01

Lecture No. # 12

Valuation of Equity Shares – II

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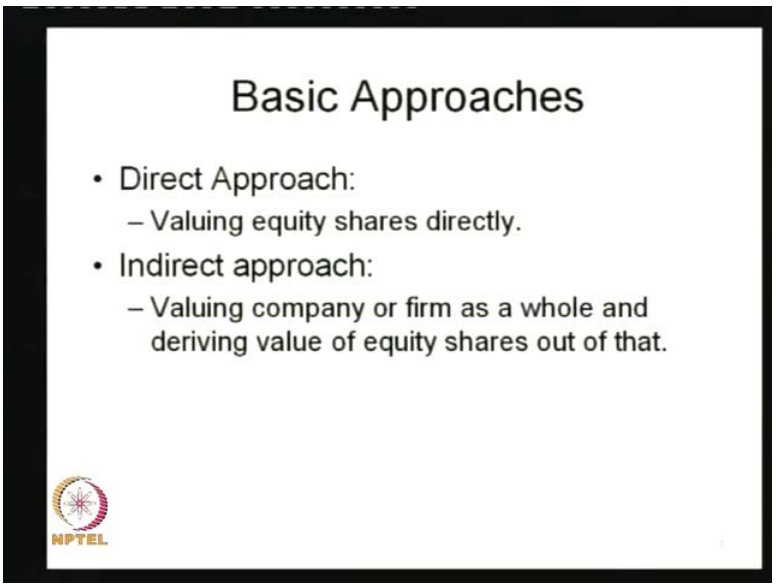

Hello, this is the second part of our valuation of equity shares section. In the previous session, we discussed about the valuation of shares; we talked about basic approaches and we were talked about valuation of equity shares can be done directly and also it can be done indirectly; in indirectly, the valuation of company is done as a whole and then from there, the valuation of shares is derived.

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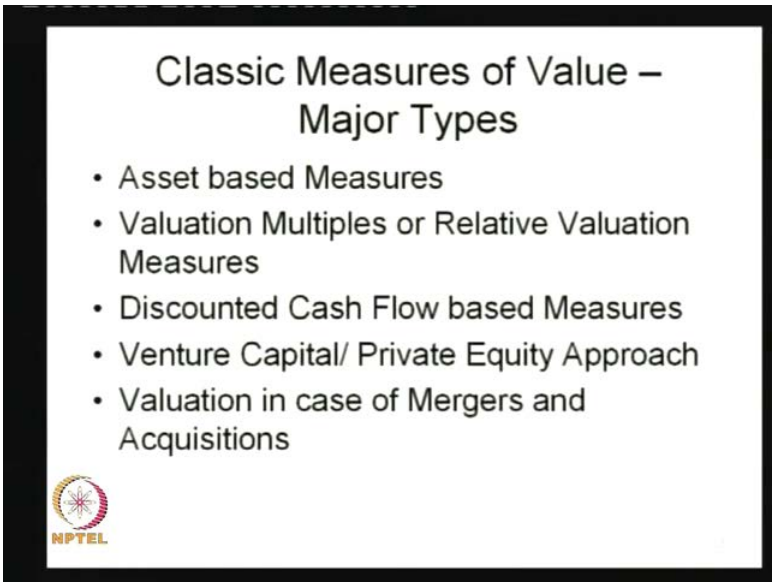

And coming to the valuation of the equity shares, we discussed different methods and these methods are like asset based measures; we have talked about book value, liquidation value, replacement cost approach; then we had something like valuation multiples, where we talked relative valuation. In that, we have to value a company, based on the peer group in that particular sector, where the company belongs to and taking a comparable then we valued the company. Then, we have got further measures like discounted cash flow based measures, venture capital and private equity approach and valuation in case of mergers and acquisitions.

In this session, we will be discussing about the discounted cash flow approach for valuation and also touch up on the venture capital approach and what is the special consideration in case of mergers and acquisition cases, where you have to do the valuation of company also.

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Coming to the discounted cash flow approach measure which has fundamentally there are two types, one is a dividend discount model and second one is the free cash flow model. And the free cash flow model, one has got free cash flow to the firm from where again the valuation of firm can be derived and from there one can find out the valuation of equity just like in indirect approach.

Directly also, free cash flow to the equity can be found out and from there the valuation of equity can be found out. So, these are the three features we will discuss in this session. Coming to the basic approach of simpler approach called dividend discount model, this is the dividend as we know. Dividend is nothing but distribution of cash distribution of profit in terms of cash to the equity investors. There are certain investors, in-fact most of the investors will always like to have dividends in their hand as a return on their investment particularly equity stock or equity share.

So, there will be some companies which keep on declaring very good dividends; some companies they may not declare at all any dividend for that matter. For example, we have got a company like Bharathi Airtel since it is insufficient; it never declared dividend, but in 2009 march around 2 rupees per share it declared dividend in the last financial year.

So, it is not necessary that all the company should declare dividend. So, if the company is not declaring dividend, if it does not have any history of declaring any dividend, then this model is not going to be applicable. So, this is applicable for certain companies, where dividend is declared and also it is also useful for such investors who invest in the shares to get some dividend as a regular source of income.

For instance, if you have got a pension or a senior citizen who invest in the shares of the company and he will look for or to this dividend as a regular source of income at the post retirement stage. Since for them dividend valuation model could be most appropriate, but there will be several investors who invest in the shares of the company not to get dividend, they rather look for something like a market appreciation and capital appreciation.

For them discount dividend model may not be useful, but in any case, dividend discount model is a very age old model also is a robust model; if you one has to believe dividend as one of the value driver or one of the driver for this share price, in that case it is going to be useful and from there we will move on to the free cash flow approach.

Coming to the dividend discount model what happens in this? The company is going to declare some dividend and investors are required to expect that this is going to be dividend in future year.

And as we know, the valuation of any company, a valuation when it is based on cash flow is nothing but, if you have V 0 is today's value, then value is nothing but a function of the cash flow, where in the in the future year and where the t is something can raise from 1 till infinity. In this case, valuation of the share will be function of instead of source cash flow, it will be d now; it is called dividend t, where again t can be from 1 to infinity.

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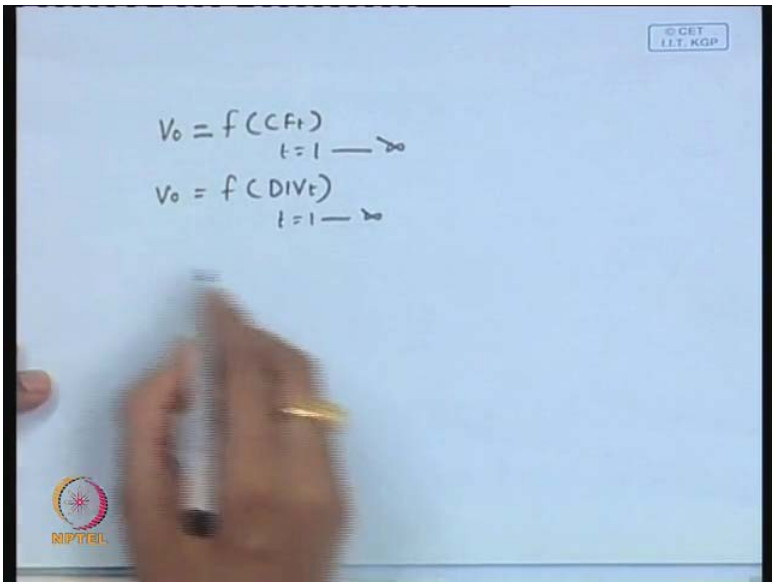

So, to make it a present value of approach, where because the dividend of 1 2 3 is going to come up to 1 or 2 or 3 years hence. So, in such case is nothing but we have got dividend t divided by 1 plus k; k is the appropriate discounting factor to the power t and we make a summation, where t is equal to 1 to infinity.

So, if somebody knows what is the dividend for year one till infinity, in that case it can be applied. So, it is quite possible that one can find out the dividend for a near period like 1, 2, 5 years, 4 years, 6 years something like that. And then we can one can expect that a dividend is going to stabilize and the dividend may grow, dividend may not grow all this assumptions can always be made. So, at the end of the day one has to have the dividends for first year, second year, third year and up to infinity year.

And then discounted a particular cost of equity or discounting factor, because it is being done for the equity investors point of view. So, the appropriate discounting factor is going to cost of equity; cost of equity is nothing but the return expected by the equity holders from the company for that matter.

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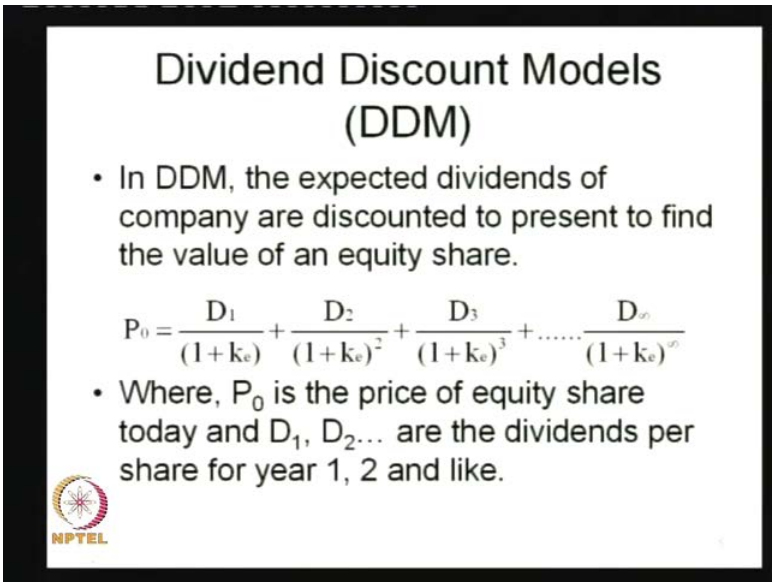

So, in this case what is happening? So, price P 0 is today's price is the price of equity share today and it is nothing but D1, D2 are dividends per share for year one and two and and like.

So, one has to typically expect estimate the dividend up to the infinite stage, because equity investment is something which is going to be there for a long very considerably long period of time; it is like no time limit, it is actually perpetual investment by the equity share holder.

Equity share holder may exit from the particular company at a particular point of time, but company has issued the shares keeping in mind that the shares are not going to be return back or the cash is not going to be given back.

Unless the company some other time decided the company is going to buy back the shares from the market that is the different case which is decided at that point of time only. But while issuing the shares, the company labors says that the shares are going to be redeemed, particular equity share is going to be redeemed after certain point of time.

So, that is why the time horizon for this valuation is infinite period. So, it is not possible to find out the dividend which is going to be there after even 10, 50 or 20 years. So, in that case one has to make an assumption about the pattern of dividend; the dividend may

grow up a very high rate, because the company may be under very high growth phase, then the growth may decline, then the growth may stabilize.

So, keeping those things in mind the valuation can be actually done. So, all this assumptions can be kept into the model kept in the model, and then, valuation of the shares can be taken care. So, coming to the different approaches of valuation model and dividend discount model, we can have one model where it talks about there is no growth in dividend; in this there is no growth in dividend is like a perpetual.

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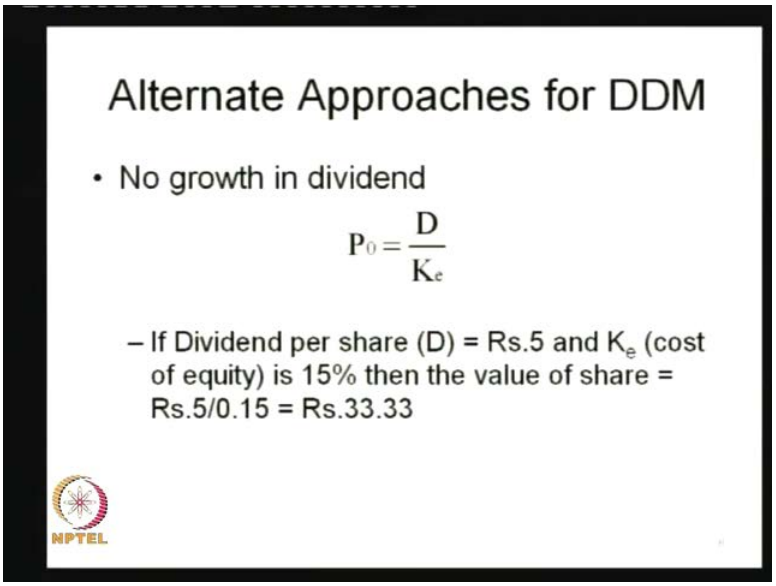

And if the dividend that you are going to get is going to be same for all the years from 1 till infinity in that case, the valuation is nothing but it is simply the dividend per share of the particular company divided by the discounting factor.

You do not have to discount all the years dividend separately, we can just divide D by k e and that case the values comes. So, if you look at this example, this company, one of the company let us say the dividend per share today is rupees 5 and since the dividend is not going to grow, it is going to remain constant till infinity.

(Refer Slide Time: 08:20) And the cost of equity is given as 50 percent, then the value of the share is nothing but 5 by 0. 15, so that comes to rupees 33.33. So, this is the value assuming that the 5 rupees per share and there is no growth in dividend.

So, but it is quite unlikely that dividend of the particular company is not going to grow. So, because the dividend of a particular company depends upon the profitability earnings of the company and we always expect the earnings of the company is going to change over a period of time, it is going to expected to grow, it is a natural expectation that the company should grow and the profit and everything should grow in accordingly.

In that case dividend is supposed to be growing as such if that is the case, if somebody can one can find out with a suitable measure that yes, a dividend or growth of the company is going to be something like this dividend is going to grow at a particular rate. Accordingly this model can also be changed, and then, the grow dividend discount model can also be applied.

So, if you look at the next model, the next model talks about constant growth in dividend in this case, we have got the dividend of the next year that is D1 divided by k e minus g. So, this is nothing but dividend with a growth.

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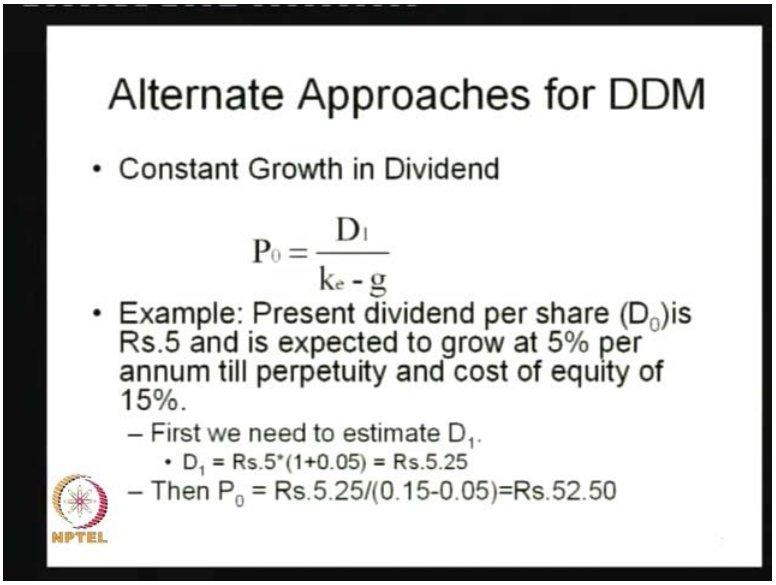

So, if you look at this example, in this case, you have got present dividend per share is 5 and we have expected to grow at 5 percent per annum till perpetuity; that means, this is stable stage and it is going to grow for 5 percent since the growth is not going to change over a period of time and the cost of equity is let us say 50 percent, in that case one has to find out the D1- the dividend 1- the dividend is nothing but the dividend 0. So, D1 is

nothing but dividend 0 into 1 plus g. So, in this case, we have rupees 5 into 1.0 5 is a 5 percent is the growth rate. So, that is comes to rupees 5. 25.

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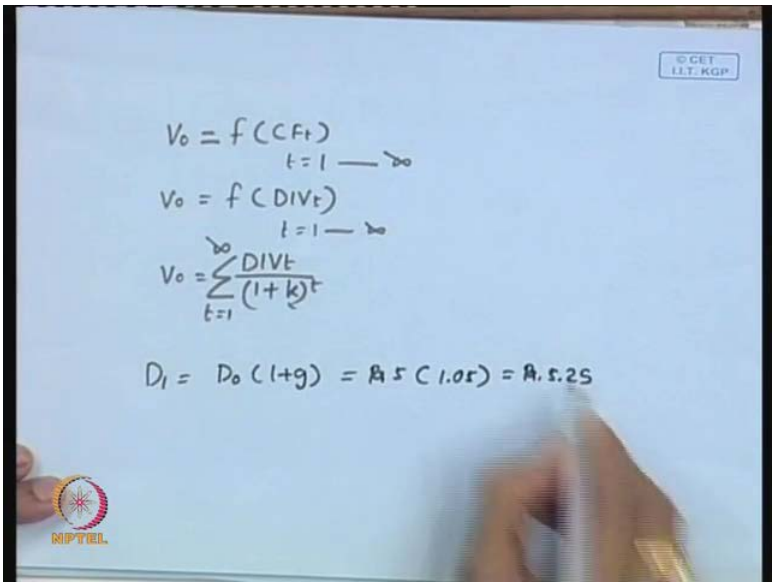

And this rupees 5, then the value of the share of the price for today should be, so 5.25 is D1 divided by k e is given as 0. 15 - 0.0 5 is the growth. So, that gives us 5. 25 divided by 0.10, which gives us rupees 52.50 that is 52 rupees 50 paisa is the dividend is the price of the share; if the dividend is going to be 5 is 5 rupees today which is expected to grow five percent at a per annum for all the years to come.

So, this is the example for dividend valuation model, where there is a constant growth, but it is quite possible that dividend will not grow at a particular constant rate immediately. Depending upon the growth pattern of the company in industry and where when the company is established, the dividend of the company actually can grow at a high rate in particular stage or low rate for that matter, then the growth may change from may decline, may increase.

And accordingly, the dividend is going to change in that case, we cannot apply the simple measure like this the constant growth model; we have to capture this constant growth model also and also the other factors into consideration we have to consider.

So, if you look at that the other approaches that you have got dividend called multistage growth model. So, in the multi stage growth model, that means, the growth and dividend

is not going to be same for all the periods to come. So, dividends may go at a very high rate in initial years then it may decline to certain rate then it may stabilize for that matter.

So, in that case, one has what has to do here is one has to estimate the dividends for different years of super normal growth or high growth period, then individually, and then, we have to find out the dividend when the dividend actually stabilizes. So, if you have a company, where there is a high growth phase of this company or the super normal growth phase is let us say 4 years and then this stable growth phase arises after 4 year.

So, in that case, one has to find out the dividend for first year, dividend for second year, dividend for third year separately, then dividend fourth, for the fourth year which is going to grow at a particular constant growth rate. So, this D 4 can be used with this growth to find out the value what is going to be at the time called t 3 and this time 3 what is the value which is decided based on the dividend of the fourth year and the constant growth, then that is nothing but the known as terminal value at the time of third year. So, the fundamental approach is like this, P 0 is equal to when the constant growth, it is nothing but D 1 by k e minus g.

So, in that case, if it is going to be P 3, then it becomes D 4 by k e minus g. So, this P 3 is also known as something called terminal value. So, terminal value is going to be now d 4 divided by k e minus g.

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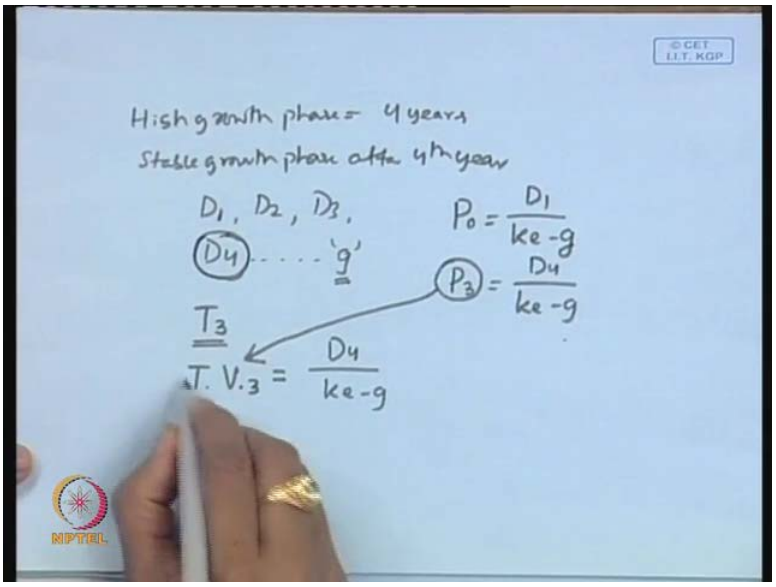

So, once if terminal value 3 is found out and we have also got dividend 1, dividend 2 and dividend 3, now, the valuation becomes simpler; this valuation becomes now a function of D 1, D 2, D 3 and terminal value 3. So, what will happen? In that case, we have a D 1 divided by 1 + k e + D 2 divided 1 + k e to the power D 2 D 3 1 + k e to the power 3 + terminal value 3 divided by 1 + k e to the power 3.

So, this is going to be the price for share a value of the equity as per a model, where the D1, D 2, D3 has been found out separately applying the super normal high growth and the terminal value has been found out by applying the fourth years dividend as well as the stable growth from the fourth year onwards.

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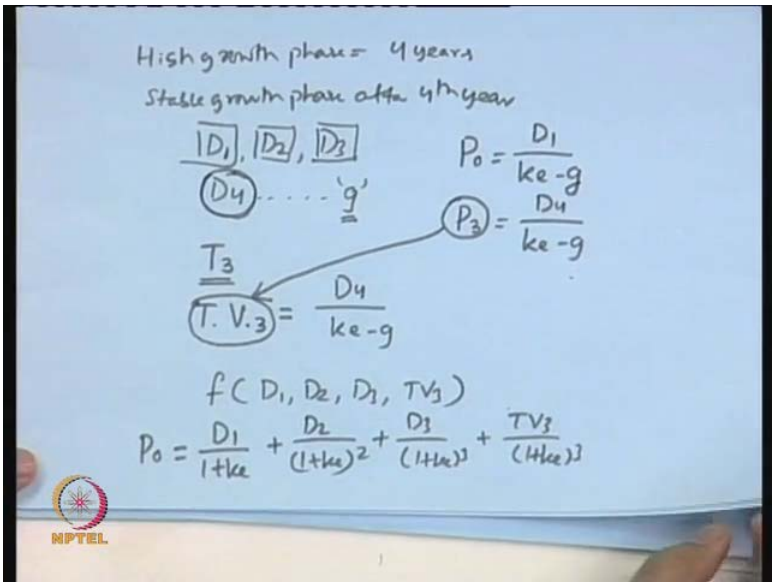

So, this can be this is the basic approach for valuation of a share, where multi stage growth is there. In-fact, this D1 to D2 growth can be different from D 2 to D 3. So, in that case, we are saying that in this super normal stage growth, there is one growth which is very high, another growth could be little lesser growth, then it comes to stabilization, it comes in a three stage growth model; we can have a two stage model or we can have three stage or more than three stage model also.

So, if you look at this example here, so in this case, we have got a present dividend of the company is 4 rupees, which will be growing at 12 percent for the next 3 years, and then, 10 percent for the subsequent 2 years and which after which the growth will stabilize at 8 percent. So, if the cost of equity is 50 percent, what is the value per share that is our exercise here.

(Refer Slide Time: 15:16) Then what can happen we have estimated like this, so 4 rupee is the D0. So, in that case D 1 is nothing but 4 rupees into 1.12, because for 12 percent is the growth what that happened, this super normal growth high growth during the growth period as such, then D 2 is nothing but twice this getting multiplied to 1.12 to the power 2 So, it become 5 point 0 2; D3 is nothing but 1.12 to the power 3, so 5. 62.

Then D 4 is 5.62 to the power into 1.10, because after third year, the growth rate declines to 10 percent as you have given here. So, growth rate is to 2 percent for subsequent 2

years and then it stabilizes to 8 percent. So, 5.62 into 1.10 is, so d 4 is 6.18; D 5 is 6. 80, then we have a D 6 which is nothing but 6. 8 0 that is say 8 percent growth upon the D 5 is a 6.8 0, it becomes 7. 34.

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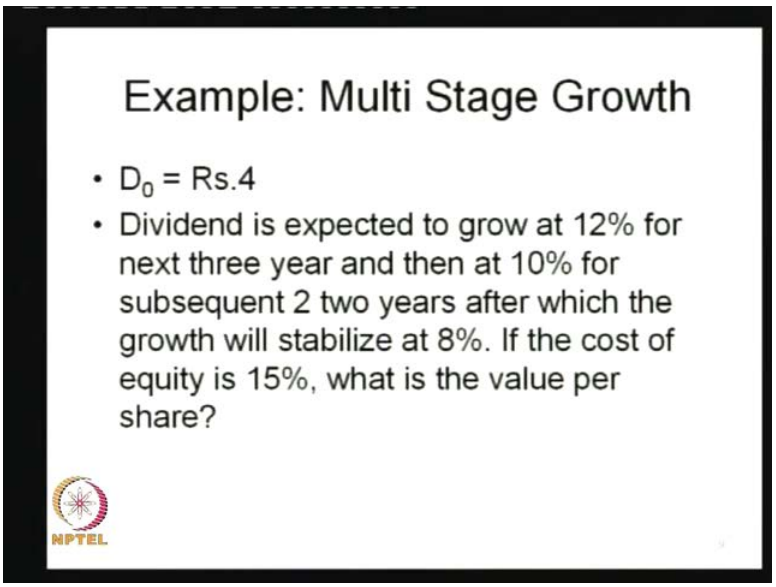

In-fact this D 6 is going to be used to find out the terminal value at the end of fifth period that is why the D 6 has been found out, because D 6 onwards is a stable growth model which will give a terminal value at the end of fifth year, then we can apply the model and find out.

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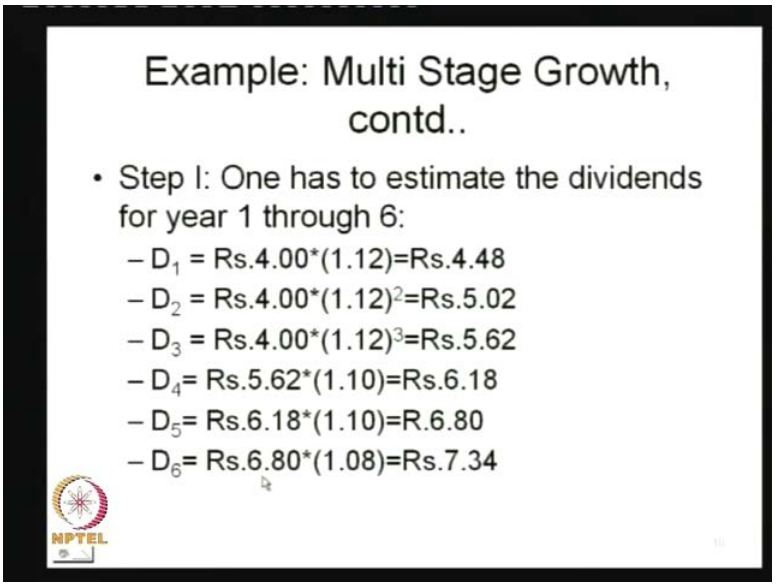

So, if you look at the terminal value of the 5 is nothing but D 6 divided by k e minus 0 that is 7. 3 4 was our D 6 divided by cost of the equity which was given as 50 percent. And the growth was given at 8 percent. So, 0.15 minus 0.0 8 that gives us 104.91 is the terminal value and this value was like the five year dividend that we have got 4.48 to 6.8 0, then the 104.91, they discount at the respective rate that is 1.50 percent discounting factor.

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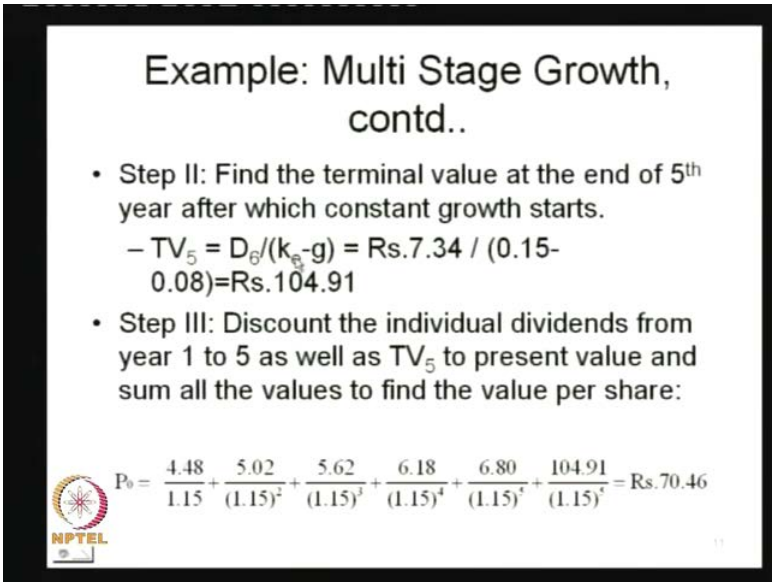

So, first year discount is 1, second year discount twice, like that we have got a value per share of 70. 46. So, this is the approach for valuation of shares as far as the multi stage growth model is concerned. Basically we find out the individual dividends for individual years in the super normal or a very high growth phase, and then, we find out terminal value at the time when the stable growth arise, and then, the terminal value is also brought to the today's present value depending on terminal value if it is 50 as a discount 5 times.

Then similarly, other dividends are also discounted depending on the time period and summation of these figures gives us the value per share; this is the approach of dividend model.

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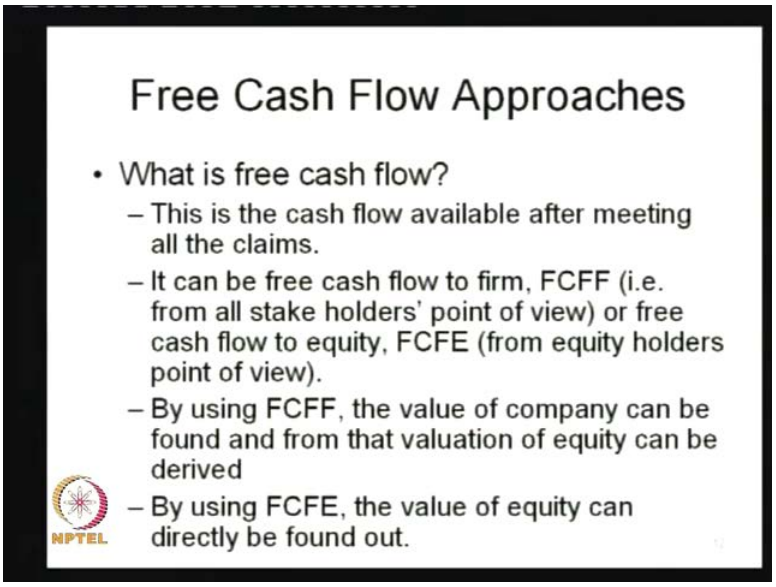

Then we have got the next model is called free cash flow approach. So, the before we go to free cash flow we should know what is free cash flow as such. So, what happens the company makes profit, then the profit will be there in terms of cash and non cash whatever that may be the profit it will be there, expected will be cash profit.

So, from the cash whatever profit whatever cash profit or cash surplus has been generated that cash is going to be used for certain activities, like may be for future expansion or the repayment of debt; company also can raise up, their financier can also get the money for that matter.

So, all those things cash flows are going to be there and the moment there is no encumbrance on the cash flow, there is no claims of any out sided party which you have to combine and settle; once all these things are taken care of, whatever cash flow is left for the company is called the free cash flow.

And that free cash flow belong to the stake holders depending upon the approaches all stake holders are equity depending on that the cash the cash flow belongs to different stake holders. So, in that case what do we have here in the free cash flow approach? We have got something called free cash flow to the firm. So, what happens in this case from the all stake holders point of view or we have got something like free cash flow to equity.

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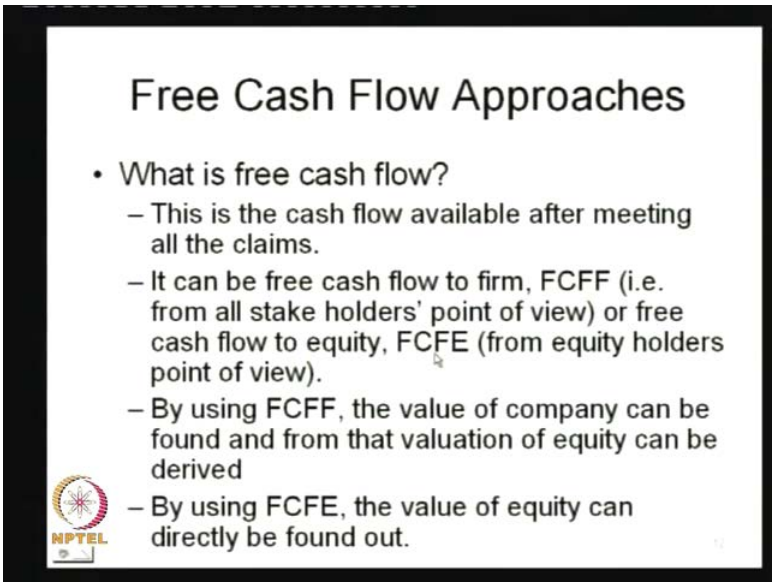

So, there you talk about free cash from equity holders of view. So, by using the free cash flow for the firm, the company or the company can be found out the value of the firm can be found out; then from the value of the firm one can also take out the valuation of value of any debt the company has, then it can be valuation in other stake holders is there that can be taken out, then the valuation of equity can be found out.

If the company is totally equity financed, there is no there is no preference share capital in that case, the valuation of firm of course, free cash flow approach will be also same as valuation of equity. Because there is nothing there to be deducted from the valuation firm, because there is no other outside stake holder for that matter outside stake holder means we are talking about non equity stake holder.

So, whatever value of the firm is there that entirely belongs to the equity holders and then we can also use the value free cash flow to the equity and the valuation equity can be found out directly from there.

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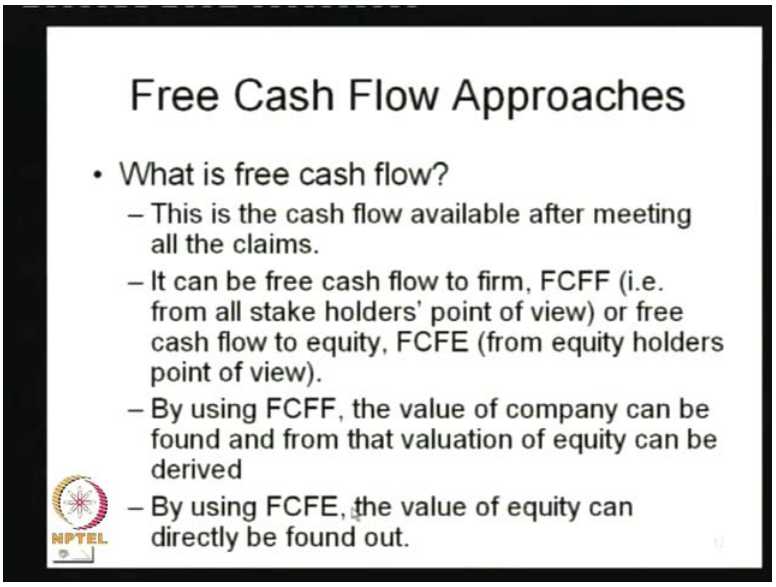

So, what happens, let us let us discuss about different models there. So, at the end of the day there is no fundamental difference between the valuation of firm and different cash flow approaches like the dividend model or free cash flow model.

So, what happens in this case, actually dividend becomes a special case of cash flow. So, instead of taking cash flow for the company, free cash flow equity or free cash flow of the firm the valuer as going to is taking the dividend as the proxy for the cash flow there.

So, the basic approach that we discussed in dividend discount model, the discounting future cash, future dividends to bring find out the value of share, those basic approaches remains same. But only difference is that how does one estimate the free cash flow for a company or for equity share holder for that matter.

So, that is the crocs of free cash flow approach compared to the dividend discount model, because dividend is something which can be possibly estimated using the past dividends of the company. And may be easy to forecast dividend, but for free cash flow calculation, lot of estimates, lot of assumption, lot of calculations have to be done for that matter. So, what happens in the firm valuation?

So, in this case, we value the companies, whereas the firm is taken care by discounting the expected cash flow from the firm and that is a residual cash flow after meeting all operating expenses and taxes, but prior to debt payments. So, debt payment is not taken

care, because whatever cash flow is found out for the firm that should take care of the debt payment.

So, that is why debt payment is not taken out and whatever the cash flow to the firm is found out that has to be discounted or something like an overall cost of capital that is called weighted average cost of capital, because in the numerator, you have got the cash flow to the firm. So, the denominator in the discounting factor has to be also take has to represent the overall expectation of the all the investors.

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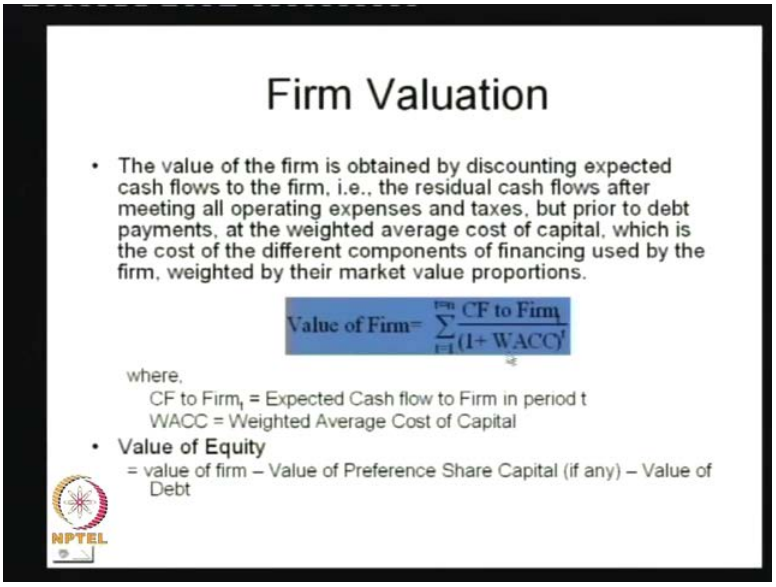

That is nothing but again, if there is a two type of investor of a particular company, that is, a debt investors and the equity investor in that case, the cost of capital will be taking care of both the rate of return expected by equity holders as well as debt holders. And accordingly something called weighted average cost of capital is found out based on the weights of equity or debts.

So, the basic thing is that there is a numerator you have got; cash flow to the firms or discounting factor accordingly has to be the overall discounting factor keeping all the investors in keep in mind. So, once you have the expected cash flow, and then, discount

it, then we have the value of firm and the value of firm also can be used to find the value of equity. So, from the value of the firm one can find out take out the value of preference share capital if that is there.

Then value of debt can be taken out and whatever left over is called the valuation of equity for that matter and this valuation of equity whatever you get, we will get the valuation entire equity to the particular company. And by dividing with number of shares of the equity number of shares number of equity shares one can find out the value per share.

So, coming to the next one that is equity valuation, so in this case, we do not consider the valuation of firm rather what you do? So, we got the residual cash flow after meeting all expenses, tax obligations, interest and principal payments, because here what happens, it is only for equity holders.

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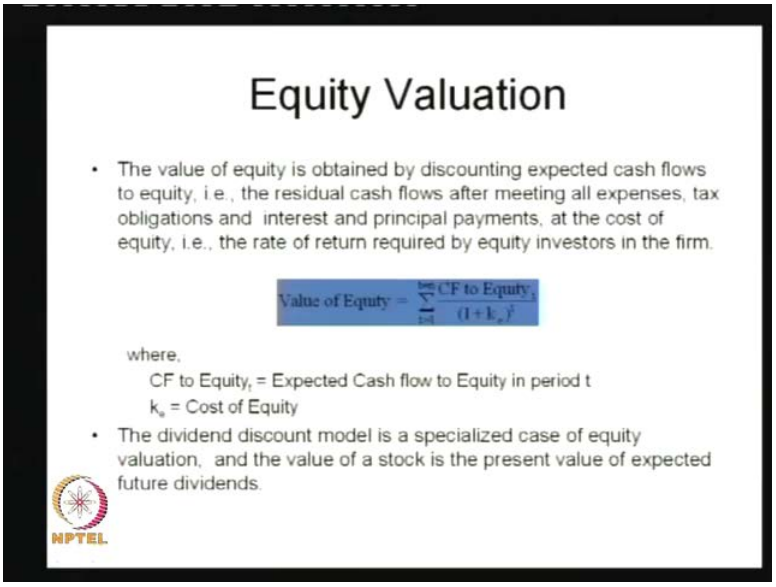

So, if there is a cash flow generated by the particular company to the extent of 50 crore, so, this need not be taken as the cash flow for the equity holder, because out of this 50 crore, let us say 5 crore interest has to be taken out; so that remains 45 crore.

Then say there is a scheduled debt repayment of… So, this is our interest and this is our scheduled debt repayment that takes place.

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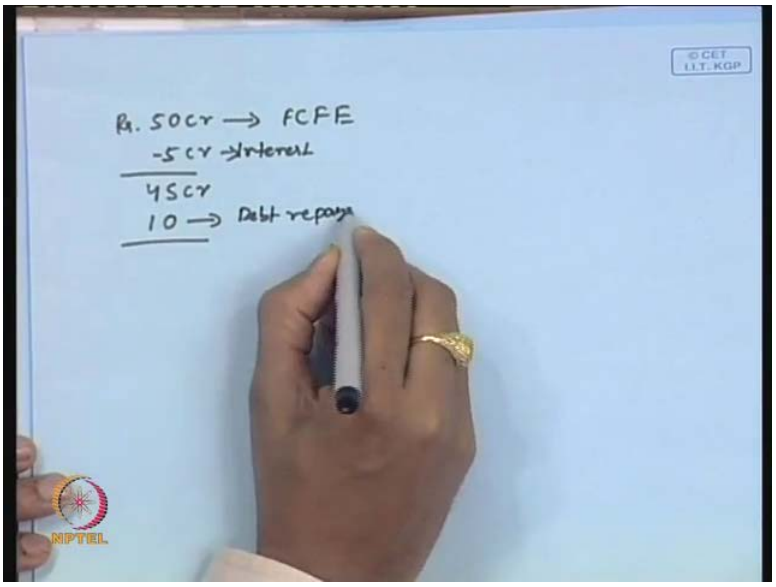

So, that gives us 35 crore which is actually available for the equity holders, but it is quite possible that out of this 35 crore, may be 20 crore is required for expansion and that is the equity portion of financing the expansion in that case, 50 crore is going to be the free cash flow for equity.

So, let us keep in mind, we talked about equity portion of financing, that means, this 20 crore is not the total expansion actually expansion may be to the extent of 40 crore and if the company has a debt equity ratio of one is to one.

So, 40 crore is going to be financed 20 crore through debt and 13 crore through equity, so in that case, so 35 crore whatever is left over for the company after paying taking care of interest and principal repayment 35 crore is left.

So, 30 crore will be used out of equity to finance, that other way round this can also be found out. So, 35 crore is the figure that we got, then the company gets 20 crore as debt, that is a debt this is the debt the company has raising additional debt. So, one can see here, there is a 20 crore of debt raise as well as 10 crore of debt repayment that took place because of the prior commitment.

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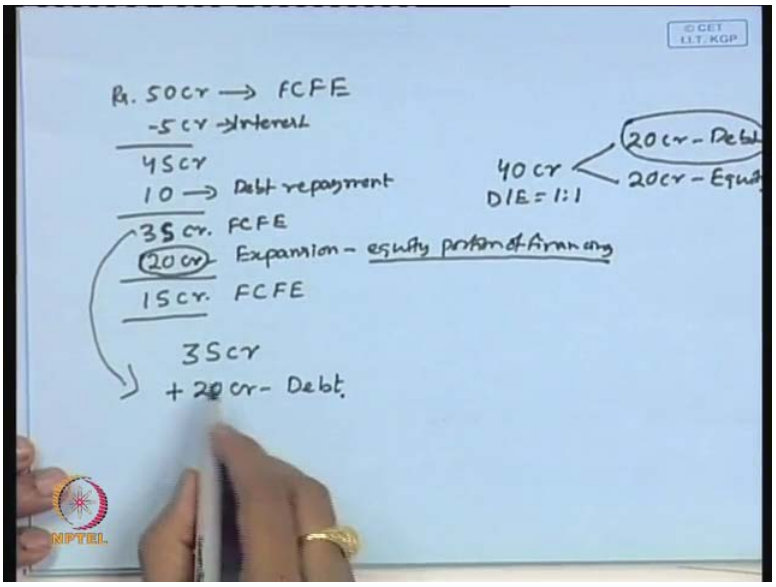

So, the total cash flow available for the company equity holder is now 55 crore, but we require actually expansion how much? We require to the extent of 40 crore for expansion. So, in that case what happens, the 50 crore is now the free cash flow for equity.

So, either we add the debt in flow, then take out the entire cash outflow because of expansion or we do something like this, that ultimately on 55 crore you just take out the equity percent of expansion requirement then you find. So, both the things have given the same value. So, that is one; another approach is that, if you have got a x crore of expansion, then if the debt ratio is D percent, then equity component will be x crore into hundred minus D percent.

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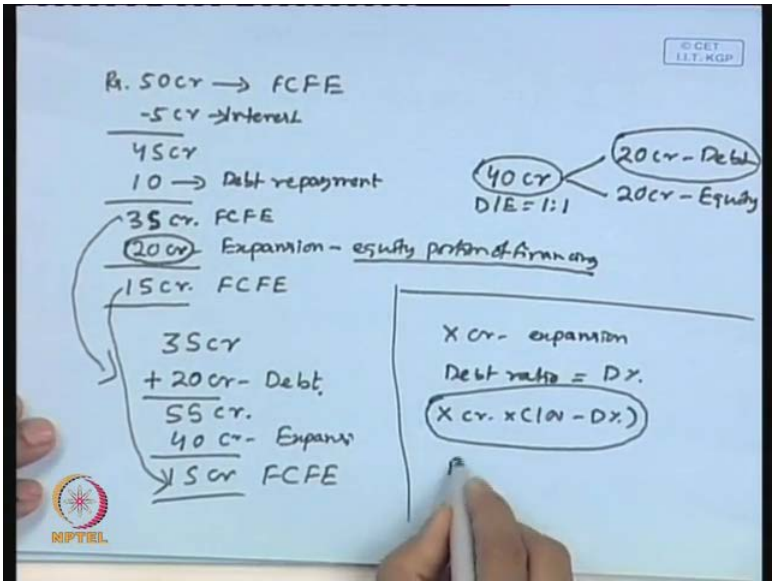

So, this will be taken out to find out the free cash flow for equity and besides expansion requirement, we talked about only talked about expansion requirement; in that, we are talking about expansion for long term assets as well as the short term assets.

So, possibly this 40 crore that you have the figure here is taking care of both capital expenditure is called capex as well as any short term assets, net of any short term liability that is called the net working capital.

So, this together it is there; if this 40 crore is only capital expenditure, then we have to find out the net working capital requirement and accordingly, the free cash flow for equity will be changing for that matter. So, this is the simpler, very simpler approach to estimate the free cash flow for equity.

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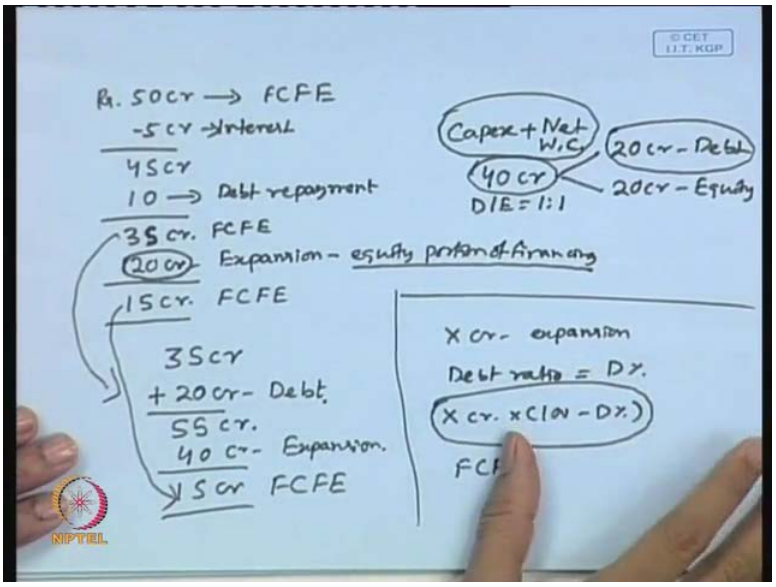

Once you have the free cash flow, that is, if for equity or for the or it is for the equity or its for the firm what happens here, these particular this is a equity or free cash flow of the firm is going to be there for year 1, 2, 3 like this up to period infinity.

So, like in dividend model, you have D 1 to D infinity like here also you have got free cash flow for first year, second year, and third year like that up to infinity. So, one has to forecast this free cash flow for this firm or free cash flow of the equity as the case may be from first year till infinite period with certain assumption like growth and all whatever that may be.

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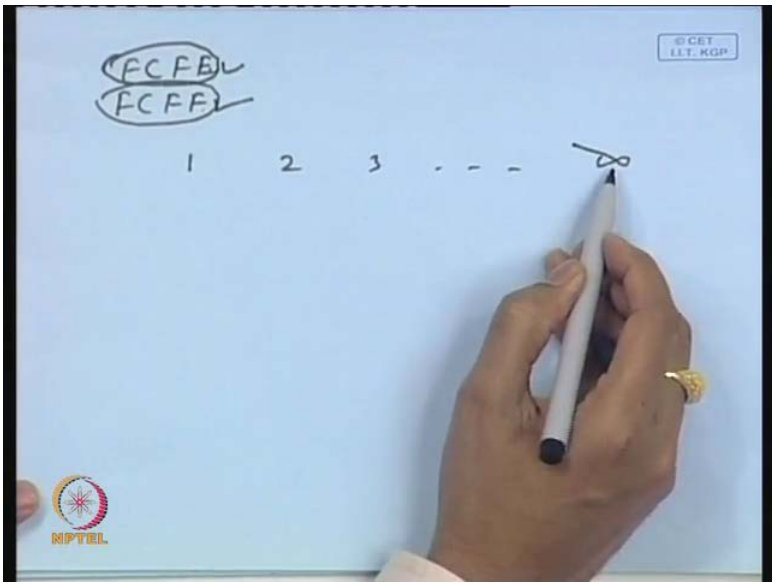

So, this has to be estimated; so, this free cash flow estimation has got lot of requirements to be taken care. So, the difficult part of this particular approach is only the estimation of free cash flow and which is the croc of the model as such.

So, as you have as I mentioned also here, the dividend discount model is nothing but a specialized case of equity valuation. In this case, the cash flow to equity is replaced with something and dividend to the equity holders coming to the generic discount model as you have discussed earlier.

So, we have got the cash flow 1, cash flow 2, cash flow n number of period. So, instead of infinity, you have got n number; that means, the investment horizon for the investor is n number of as a definite horizon for that matter, and then, you have got a cash flow, it could be firm. So, it is pre debt cash flow is the equity after debt the cash flow.

So, in firm before debt what the cash flow is there? At the cash flow by the firm in equity after debt cash flow will be considered, then you have got the growth here, growth in the earnings when growth in which will be also drive in the growth in equity and growth in equity is nothing but growth in net income growth in earnings per share. Then with what happens after certain time? This is the high growth period and then the company comes to something like a stable phase.

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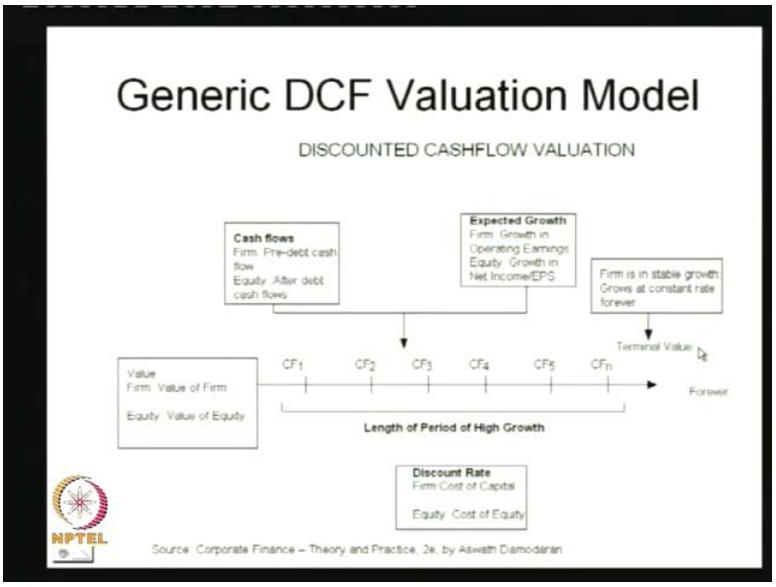

And the stable phase growth with the c f n can be used to find out terminal value and so you have got the estimation of cash flow for the CF 1 till n year, then you have got terminal value at the time of n th year, and then, we discount them with a particular cost of capital; if it is a free cash flow for the firm, we take the cost capital or the weighted average cost of capital; if it is the free cash flow for equity, then you take cost of equity into consideration

So, based on that debt, the relevant cash flow and relevant cost of capital or cost of equity, we end up finding the valuation, the firm of valuation of equity and this valuation firm also can be used to find out the valuation equity indirect as per indirect approach. So, what happens, the next thing that what are the different ingredients that drives the free cash flow for a firm or for a or equity for that any free cash flow for that matter. So, there are different thing that drives the free cash flow is one is the discount rate. So, one is the discount rate is equal to cost of equity or cost of capital.

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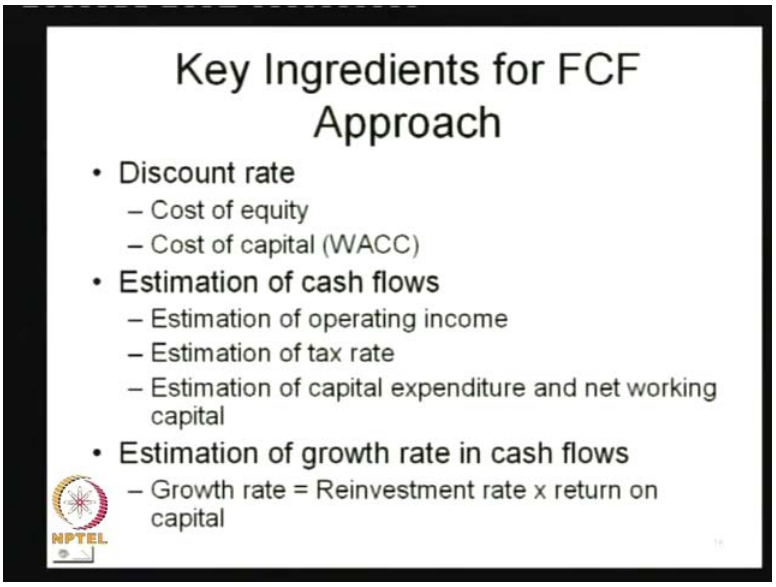

So, cost of equity will be used for company for the approach, where you are going to use something like free cash flow for the equity. So, cost of equity there could be multiple models of cost of equity return expected by the investors one of the popular model that is used for cost of equity is the CAPM approach that we have discussed some time back that is called capital asset pricing model.

And as per CAPM, the return on any stock i th stock is nothing but risk free rate of return + beta into r m - r f. As we have discussed in our earlier sessions, beta is nothing but the systematic risk found out by regressing the return on the market as independent variable and return on the stock as a dependent variable. Beta is found out, high beta is supposed to be high risk; low beta is supposed to be low risk.

So, this is taking a risk component this is a risk free component. So, if we have got a particular company, where the beta is let us say 1. 2 0 and the return on market index or portfolio the benchmark for that matter is let us say 50 percent and if the r f is let us say 8 percent in that case, the r i which is nothing but again used for finding nothing; cost of equity is nothing but 8 percent is r f + beta 1.2 into r m is 50 percent minus r f is 8 percent. So, that will gives us 8 percent plus 8.4 percent, so that gives us 16.4 percent. So, the discounting factor or the cost of capital for cost of equity for that matter is now 60.4 percent.

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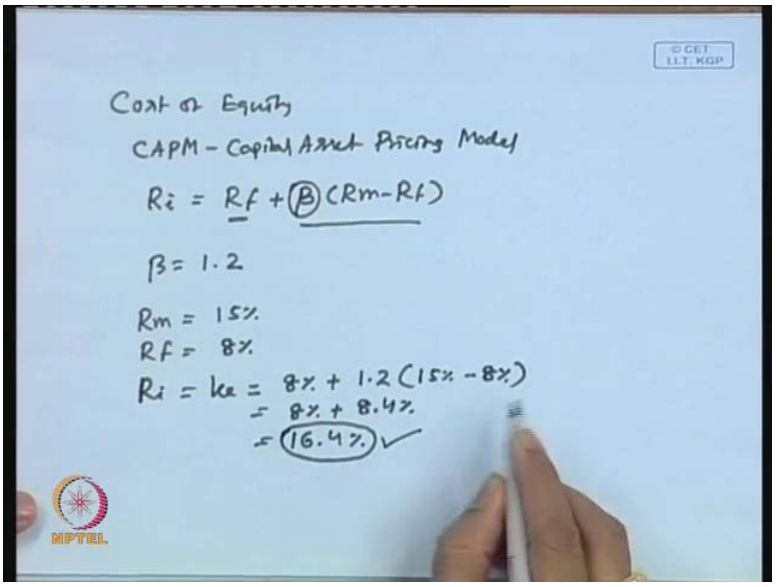

So, if you are finding out the valuation of equity with a free cash flow free cash flow of equity approach, then this 60.4 percent is going to be the relevant discount discounting factor.

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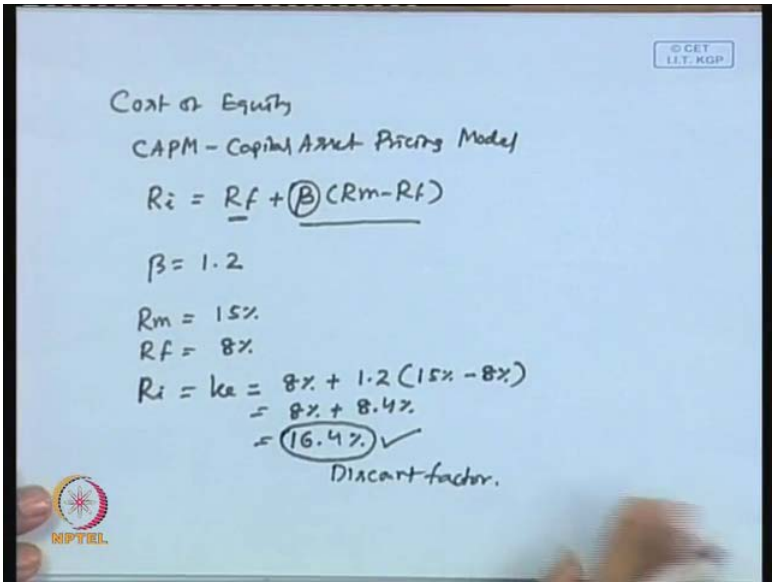

So, after getting this 60.4 percent discounting factor, so that is your cost of equity is 60.4 percent, and if the cost of debt is let us say on a post tax basis if it is let us say 10 percent and the debt to equity of the particular company is let us say 50 is to 50. So, equal weight

is there; then the cost of capital called simple called k is now 0.5 0 into cost of equity plus 0.50 into cost of debt.

So, that gives us 0.5 0 into 16.4 percent plus 0. 50 into 10 percent; so, that gives us 8.2 percent plus 5 percent that gives now 13.2 percent.

So, if it is free cash flow for the firm. So, the relevant discounting factor is however, cost of capital; if it is the free cash flow, for equity discounting factor will be the cost of the discounting factor is going to be the cost of equity which is nothing but 16.4 percent.

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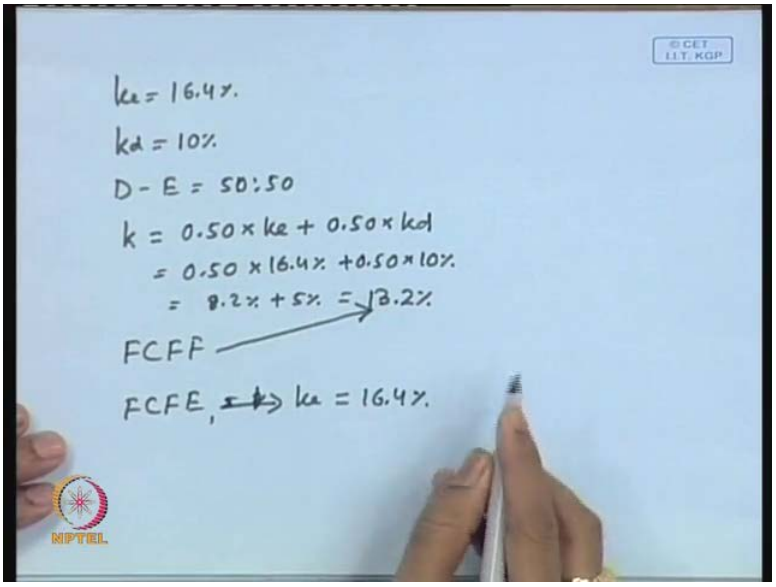

Depending on the type of cash flow the discounting is going to be changing. So, next is that you have got the estimation of cash flow; estimation of cash flow depends on several things, one is the fundamental driver of cash flow is nothing but the operating income.

Operating income is that income which is generated out of the main line of activity particular business. So, if the company is into selling of FMCG products, operating income is nothing but the selling whatever income is generated by selling the FMCG products only.

It will not be considering any other income that is like income on investments dividends from subsequent company all these things are not considered in the operating income because that is something a non-operating income.

And operating income is obviously, found out by taking out the operating expenses from the operating sales income, and then, the operating income and one has to adjust for the tax there. So, if the operating profit is x, so you multiply; 1 minus t becomes now operating profit after tax. So, what happens if operating profit before tax is rupees 50 crore?

So, in the operating profit after tax is called net operating profit after tax popularly known as nopat is nothing but 50 crore into 1 minus tax rate.

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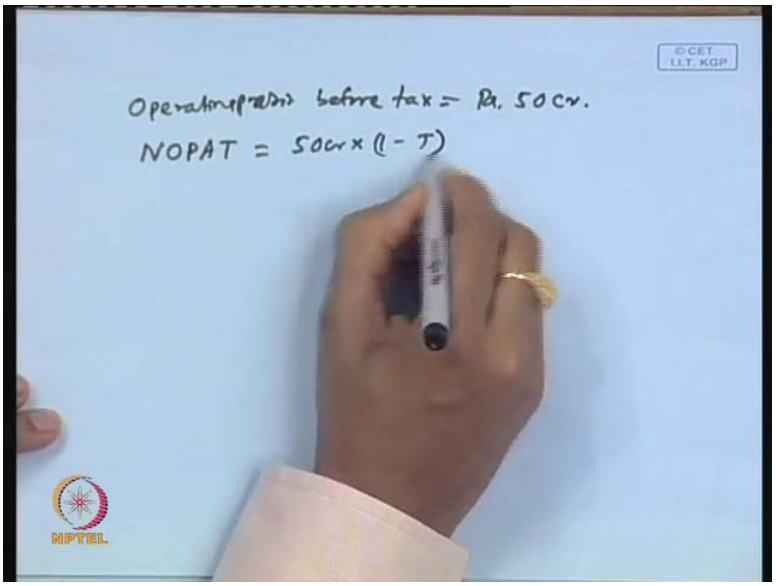

So, if the tax rate, let us say tax rate is thirty percent, so the operating profit now becomes 50 crore into 1 minus 0. 30 that becomes 35 crore is the net operating profit after tax.

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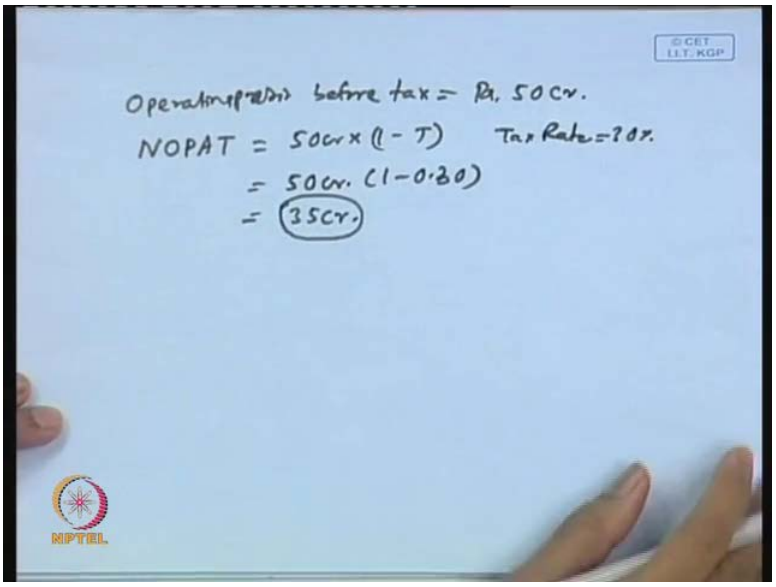

So, this is the way the operating income is found out when the tax is taken care; this tax is usually the corporate tax of the particular company and the corporate tax of the company can be different from what ever has been prescribed from the government of a particular company for that matter.

So, in such case if the company is in a position to have a better tax planning and is rates of the corporate tax rate by mandated by the government is thirty percent, but the company is somehow able to manage like twenty percent tax rate in that case, the effective tax rate becomes actually 20 percent.

But over a period of time what happen the company tend to have a corporate tax rate which is equal to the government's prescribed tax rate. So, if nothing is given, then we can take the prescribed corporate tax rate of the government particular government as the tax rate in this particular valuation.

Then we have got estimation of capital expenditure and net working capital. So, how much of money is going to be there in that and which will be actually used for capital expenditure that has to found out; in that case, you have to also estimate the capital expenditure requirement. And capital expenditure requirement depends upon the growth that is planned by the particular company and the growth is going to be higher; obviously, capital expenditure is going is going to be higher in that case.

And beside the capital expenditure one has to also look at what is the net working of requirement which is nothing but, because there will be also investment in the current asset and this current assets also going to be partly financed by the current liabilities.

So, if you have got a current assets requirement of rupees 20 crore and if there is going to be current liability to the extent of rupees 5 crore, so the difference is nothing but net working capital which is nothing but rupees 15 crore. So, this 15 crore is the requirement to taken out of the free cash flow that is the firm equity as the case may be.

So, instead of 20 crore to be taken, it will be actually 15 crore, because 5 crore is any way being financed by current liabilities. So, this 5 crore is not required out of the free cash flow that we are going to find out for that matter.

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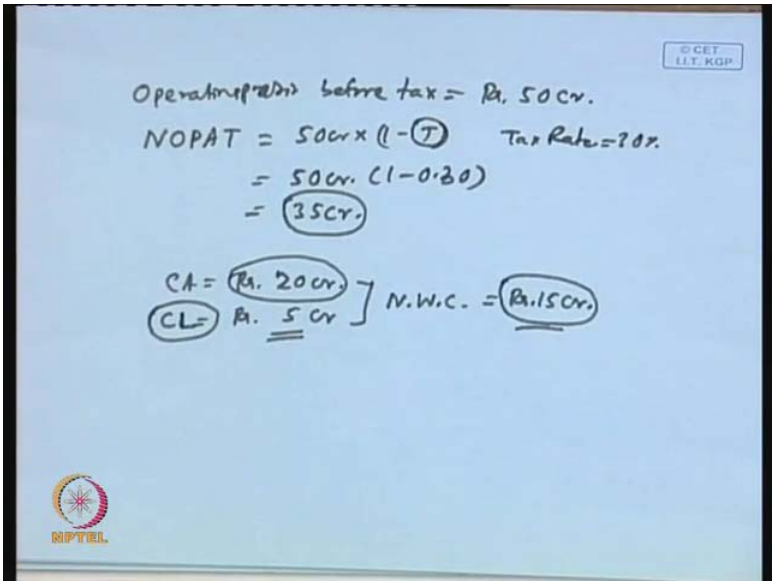

Then one has to also find out the growth rate. So, growth rate is a very important aspect of a cash flow, because the cash flow is not going to remain constant from period to period cash flow is going to change from one to two and another period and that depends on what is the growth is going to happen.

The popular formula for growth that we have also dividend discount model dividend model is nothing but g is equal to b into r, where b is nothing but retention ratio and r is nothing but return on equity.

So, if it is a free cash flow for the firm. So, retention ratio is nothing but the reinvestment rate. So, retention is something where the company keeps the money for the growth purposes internal growth purposes and does not distribute anything.

So, this is the retention ratio or otherwise known as the reinvestment rate reinvestment rate, and then, your return on equity if it is a reinvestment rate for the entire firm as a whole, then in that case instead of return on equity, we replace it is something a return on capital. So, if the return on capital r o c is 12 and the reinvestment which is called b, let us say 16 percent and the growth comes to 12 percent into 0.6 that comes to 7.2 percent.

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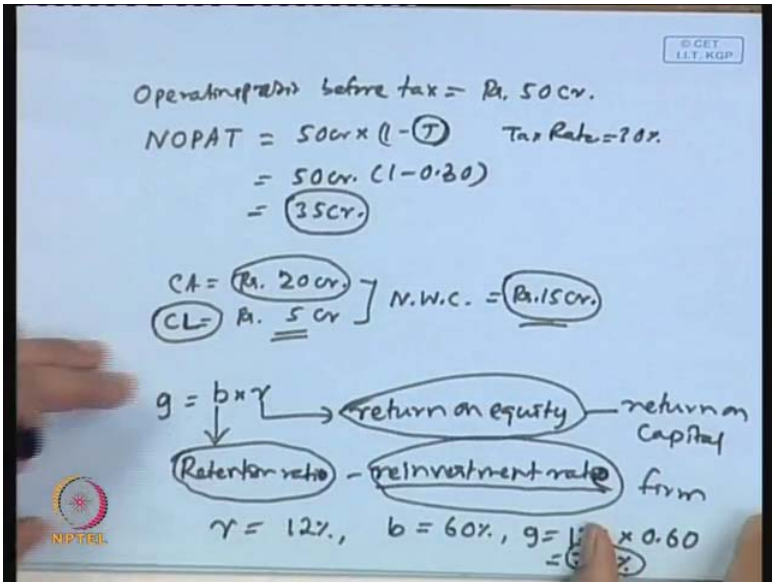

So, this is the growth which has to be used to find out the cash flow of the sub sequent year which is nothing but a based on the growth up on the previous year's cash flow.

So, these are the certain things to estimate the cash flow, then in general in generic model for a free cash flow of the firm is nothing but what happens, operating profit that is earnings before interest and tax into one minus t plus depreciation. Why depreciation is there, because depreciation has been deducted to find out the earnings before interest and tax because depreciation has got a certain tax advantage.

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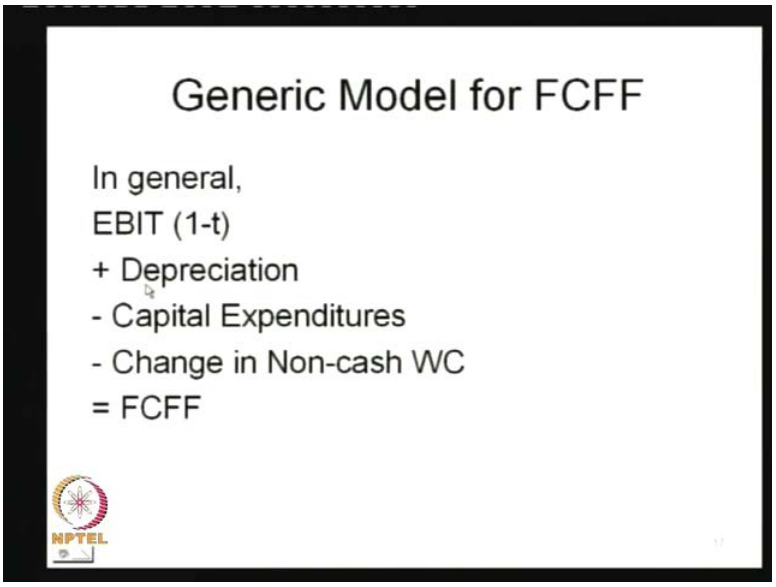

So, if the company has got an earnings before depreciation interest and tax of rupees 40 crore, and then, it has got depreciation of let us say 10 crore, so it is becomes now 30 crore is earnings before interest and tax and the tax rate is 30 percent, then you have got 9 crore, then it becomes 21 crore is the net operating profit after tax, then in that we add depreciation that we have already here that is 10 crore. So, we have 3 1crore, actually the cash profit for that matter. And from this 3 1 crore, we take out capex and we also take out net working capital that gives us the free cash flow for the firm.

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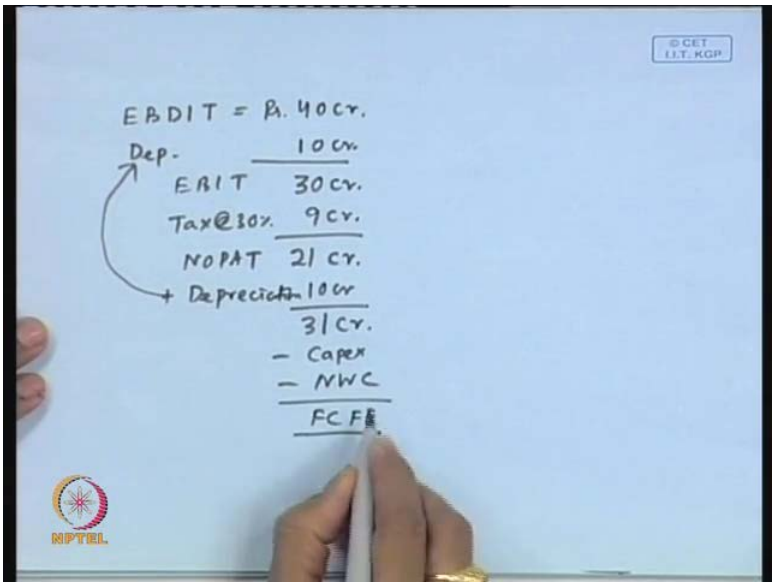

So, this depreciation has been taken out from this 40, because tax is if this depreciation is not taken out, this is a company there is a let us say one company this is called which has not got any depreciation to claim. So, this is a nil.

So, this becomes now 40 crore the tax at thirty percent becomes now 12 crore. So, the net operating profit is more than 21 by 28 crore, but the tax out flow is now 12 crore instead of 9 crore. So, the difference between these two is nothing but rupees 3 crore and this 3 crore has been found out can be found directly by having thirty percent of depreciation that is 10 crore that gives us actually rupees 3 crore.

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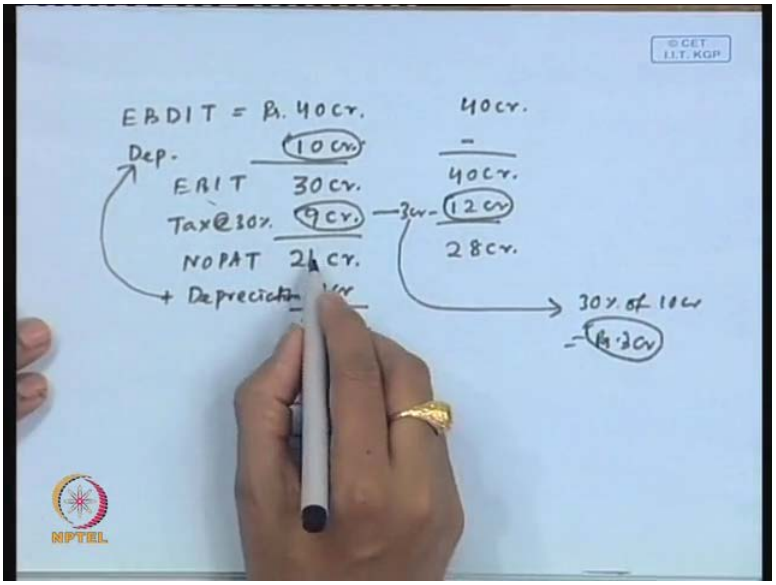

So, since this companies is able to save a tax of 3 crore that is a depreciation add deducted and since the depreciation does not involve any cash out flow, it is only a book entry in the books of accounts and the its takes care of reduction tax as such that is a depreciation added to find out actually the cash flow 31 crore, then we take out capex and network capital, then we got the free cash flow for the firm and this free cash flow of the firm can be again adjusted with for the debt repayment or debt raised or interest payment or any other outsider investor stake other than non-equity investors that gives us. So, adjusted for these, all these factors that gives us free cash flow for equity.

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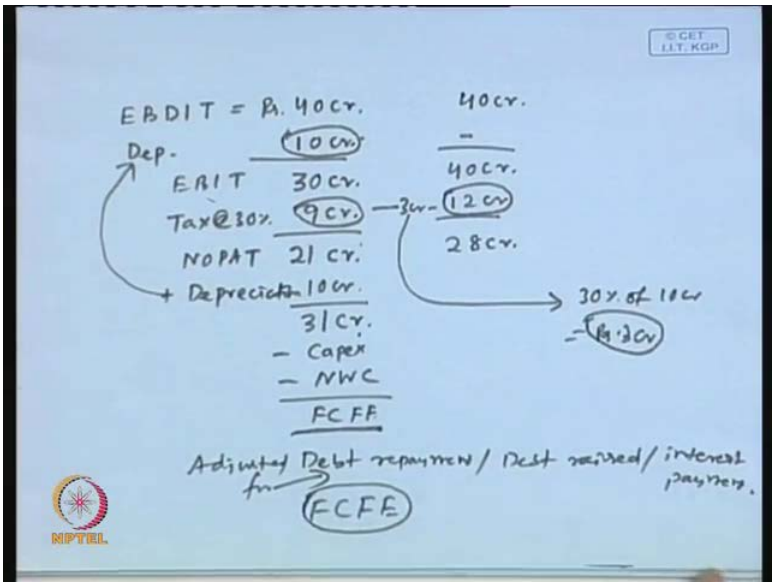

Coming to the next one, next some example, here we have got where this is a company, where you have got the high growth phase is the ten years and stable growth phase is after ten year is called is there and reinvestment rate for this company is let us say 65.98 percent which has been estimated using the growth and all those things into consideration or the past ratio and the also depends on the what is the expansion requirement, then return on capital this reinvestment rate for the companies.

So, this return on capital is the thing, then you have got expected growth rate is now reinvestment rate are multiplied with 6.59 percent that gives us 4.35 percent; the expected growth which is in case of high growth phase, then we have got stable growth phase.

So, this is a two stage model; one is a high growth phase and your stable growth phase. In fact, it can also be three stage models, where the high growth phase can possible phase can possibly divided in two parts: a super normal super high growth or the high growth, then you have got stable growth.

So, in any case, the stable growth model in stable growth phase, you have got 59.36 percent is the reinvestment rate and 8.42 is return on a capital multiplied with this two things that gives us 5.0 percent. And the cost of capital is found out for high growth phase separately and also for the stable growth phase separately. Because this is expected

high growth phase supposed to be little more risky in that case, the beta of the particular company stock is not going to be same.

So, it is going to be 1.01compared to 1.00 in case of a stable growth, then you have got the cost of debt. So, 5.50 percent and which remains as 5.50 percent, the debt ratio for this company is 19. 92 percent in the high growth phase; whereas it is 13 .00 percent in the stable growth phase. Then applying the appropriate, this beta has been used with the appropriate return on market and return on r f that we have discussed previously. where we have talked about r f is plus beta into r m minus r f that has given us certain cost of equity.

And both this cost of equity that we estimate and the cost of debt applying together, we have got a cost of capital the 9 .17 percent and 8.42 percent respectively in high growth phase and stable growth phase.

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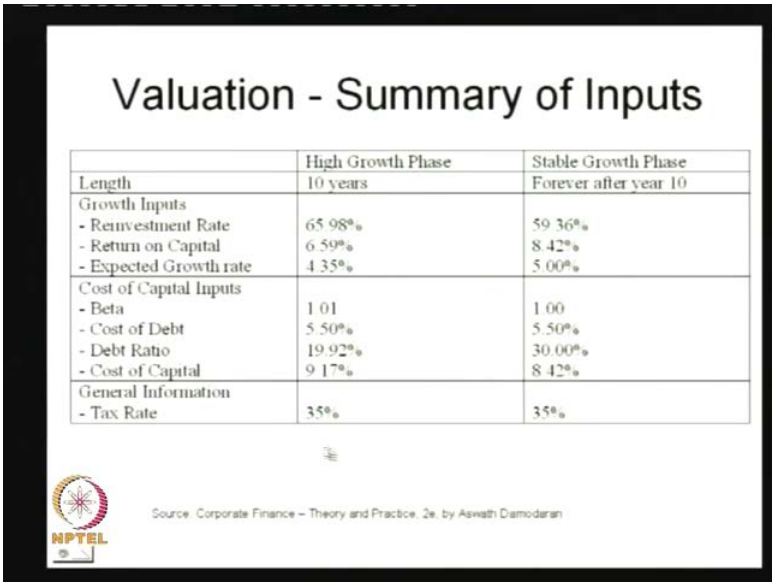

And there is a tax rate for the company is 35 percent both in high growth phase and as well as the stable growth phase in that case, the valuation will look at how the valuation is done. So, what happens in this case, first of all we have got the earnings before interest and tax that is like for your one is 1.1723 million dollar going to something like 2728, this is super normal high growth phase. Then you have got a normal growth coming after tenth year and then from the respective years the reinvestment amount has been

deducted. So, one one 3 z is applying the reinvestment rate of 165.9 percent, 98 percent or the 59.36 percent depending on that, here it has been 159. 36, it is 65.98 percent.

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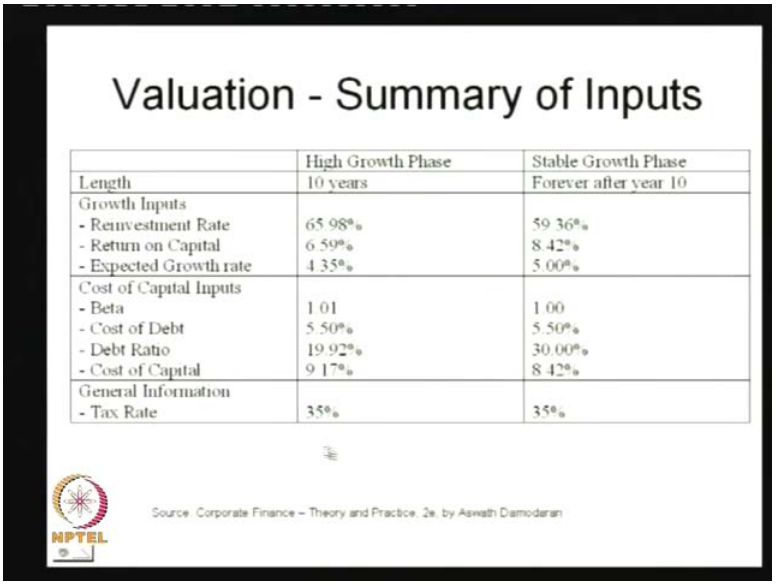

Then you have got free cash flow for the firm from 5 8 6 crore like that, it has grown 6 on 2 6 3 8 like this; it has become now 8 16 and the terminal here the cash flow is now 1 0 7 8. So, this is the terminal value that 11 year which has been used to find out our terminal value to t 0. So, by dividing that cost of equity minus the growth, so you can see here the cost of equity as the…. So, cost of capital is 8. 4 2 percent minus growth is percent. So, that is nothing but the k minus g here; so 0.842 minus 0.05. So, what about the cash flow? is there That is we have got now 31,496 is our terminal value.

So, this terminal value which is coming at the end of tenth year is discounted to bring it to here along with the individual cash flows also have been discounted at the respective cost of capital, and then, the firm value has been found out at 17,500 crore. Now, one more thing one has to look at in the valuation of firm is that, whatever valuation that we talked about that is based on free cash flow for the firm. We took something like net operating profit after tax, then adjusted depreciation like that we kept on doing. So, this particular profit is based on the operating revenue which is driven by certain operating this operating revenue which is driven by certain like operating assets.

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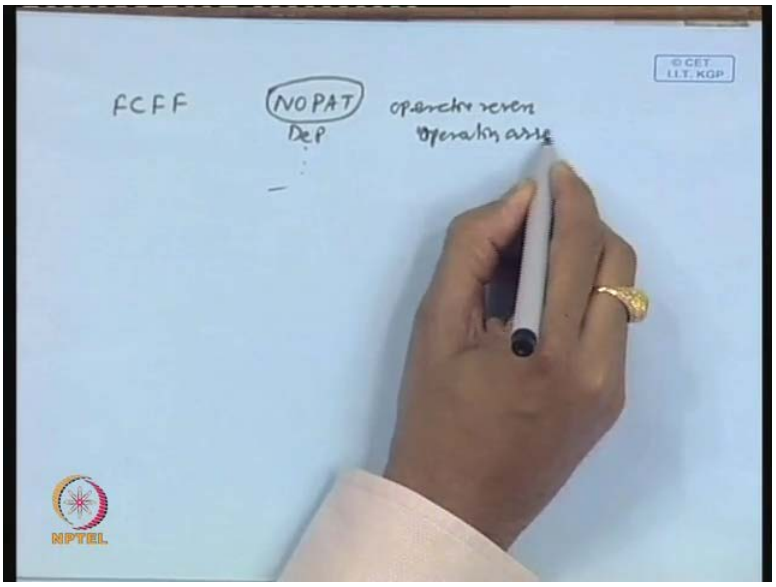

But it is quite possible that the company has got certain non-operating assets in terms of excess cash, that means, some cash is there by the company which is actually is not used by the company for generating any income is something like idle in that case, whatever operating profit has been found out, it is driven by those assets other than those excess cash; if that is the case because since the cash is always there with the company.

So, whatever value has been derived by the method that is the value of the total operating assets of the particular company and when to that what we do add this cash components. So, in this case, we have got 4323 is the cash.

So, total because now 17500 which is nothing but discounted value of all this free cash flow plus cash of 4323 that is the value of total firm from that the company's debt has been taken out that is for a existing debt is 8194.

Then comes the valuation of equity that gives 3000, 600 30, then there may be some special cases, where there could be the company could have certain options, which certain option holders which actually gives a right for the investor, the option holder to buy the share of the particular company at a particular of time.

So, this has got certain rights about the assets of the company. So, in that case, the value of the optional also can be found out by applying suitable mechanisms like possible one can use like Black and Scholes model, to find out the value of the option. So, this option

holder also has a claim over the assets or the value of the company as such. So, this entire value that you have got this 13,630 crore is not the value of the equity holders at present, it include certain claims of the option holders which is found out by valuing a particular option valuation model.

So, ultimately we take out that and whatever value has been found out, then number of shares should divide the value per share come to now 13. 14 dollar as per this particular case and you can look at here for the discounting he has been used.

We have got 3. 58 percent the cost of debt; 10.5 8 percent is the cost of equity and 18.08 percent is the cost of the weight of equity, then 19.92 percent the weight of debts and applying that, you have got 10.58 percent cost of capital. This has been used to discount and ultimately got 700, 500, and then, we can also see here the risk free is 5 percent; the beta of the company stock in the high growth phase is 1.01, then risk premium is nothing but the market return minus risk free return that gives 5.5 percent and in-fact, this beta also can be estimated using like something like unlevered beta and firms debt equity ratio.

So, this is typically for this company, we have got unlevered beta, which is not levered company the company has no debts; we got the unlevered beta and this unlevered beta can be refined to find the levered beta. Because by default beta when you say this beta is nothing but levered beta, this is actually beyond the scope of this particular discussion, but this unlevered beta and levered beta concept can be used for certain companies, actually the company which is actually not listed. So, for them the beta is not possible to be found out, in that case what happens, we can find out the beta of comparable companies and this beta is actually levered beta and this levered beta can be adjusted to find unlevered beta for the respective companies.

And one can take, then unlevered beta of the particular company by applying this formula like this, levered beta divided by 1 plus d by e, it is the adjusted leverage and 1 minus t. So, that gives unlevered beta. Once you have unlevered beta for 1, 2, 3, 4 that is five companies take the average of unlevered beta and that is the unlevered beta is suppose to proxy unlevered beta for the target company which is actually not listed.

And this unlevered beta can be used by used to find out the levered beta. So, unlevered levered beta is nothing but beta unlevered beta into 1 plus d by e into 1 minus t. So, d by e is the target comprised debt equity ratio tax is the target company's corporate tax rate. So, this is there; so, we can one can this this particular model is useful for those companies where the share price is not listed unlisted company.

But still we like to use the CAPM, which requires cost of capital, which requires the beta for that matter and this beta can be used as a proxy for the beta for CAPM model. So, like that, we have got the valuation of the firm and we got the value per share is 13.14, and then, we have got different other approaches for the valuation, we have got a private equity approach.

In the private equity approach what happens, private equity players is actually something like the next level of venture capital is venture capital is actually invest in a very high risk companies. But private equity players actually invest established entities, where there are lots of growth potential, but a lot of risk is also still there.

So, the valuation is done as per one of the approach that you have already discussed, but if they are using something like a discounted cash flow approach, they rather use a very high discounting rate instead of using a normal discount of a fifteen to seventeen percent, they use a very high discount rate, because the risk involved in this particular cash flow is going to be very high. So, that is the fundamental difference in the private equity players approach.

And then So, that is the only difference there, then we have got the valuation for the mergers and acquisition, where you talk about the valuation approaches in the mergers and acquisition what happens, the valuer or the company who is your the acquirer is going to have a control over the company also. So, any values that you found out in different approach of dividend model, relative valuation model or the free cash flow approach, that gives the value per share, let us say the value per share comes to rupees thirty.

So, that is something from the retail investors point of view, but since the valuer that the particular acquiring company is going to have a control over that, so in that way, what happen? They will be typically adding something like control premium, which may

depend upon the past e-mandate transaction driven by past e-mandate transaction is a control payment is let us say ten percent.

So, the value per share is going to be thirty plus ten percent of thirty that becomes now rupees thirty three per share. So, this thing is this is the price to be paid per share as far as the mergers acquisition transaction concerned, whereas thirty rupees is going to pay when the retail investors are going to value the share.

So, with this, we have discussed different methods of valuation; we started with asset based valuation, then we and then, we talked about relative valuation approach, the comparable company approach.

In the first session and this session, we talked about the different cash flow based approach like your dividend discount model and free cash flow; from the firm free cash flow of the equity, we also touched upon the special cases of valuation in case of private equity players case or in mergers acquisition case. Thank you.