Management of Commercial Banking
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Lecture 11
Valuation of Bank Stocks - 1

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Good morning. So, after the discussion on the different bank performance measures. In the module 2, we will be discussing two major things, one is your valuation of securities what the commercial banks issue, like debt and equity. Then as well as we also will discuss about the different risk, what the commercial banks face according to the Basel Norms. Mostly the commercial banks face four types of risk. These are credit risk, market risk, operational risk, liquidity risk. So, here we will define those risk, and we will also explore the different methods which are used to measure those risk.

And how the commercial banks are going to manage the risk that is the prime focus of this particular subject. That also we will be discussing in the forthcoming sessions. So, today we will start, in the second module we will be discussing about the valuation of the equity. We can start with that, then we can move to the valuation of different fixed income securities, which are issued by the commercial bank. Then we can move into the different types of risk, what the commercial bank face and the measurement and the management of that particular risk that will be our discussion in the forthcoming sessions.

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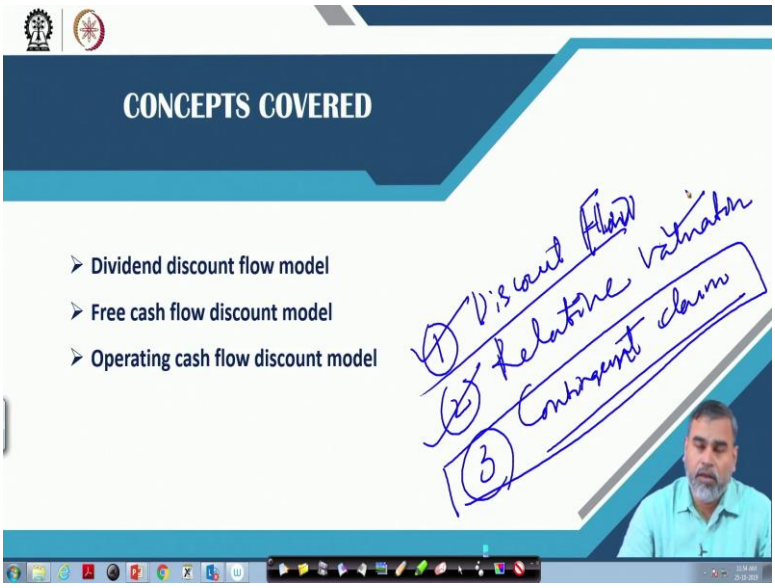

So, coming back to this that valuation of bank stocks. All of you have idea about the valuation in the different subjects whenever we study that valuation is integral part. So, in general the valuations are made using the different approaches. In general term, we have three approaches we generally follow in the financial market. One is your discount flow models, and another one is your relative valuation, relative valuation techniques and another one is that we call it the contingent claim valuation techniques, which is nothing but the valuation of options, future and all.

The contingent claim valuation technique is not a normal cash market valuations. It is vertically contingent claim valuation techniques are mostly applicable for the future market instruments, but these two are mostly used in the spot market valuation techniques. So, today, in this particular session we will be focusing on the discount flow models. The, then in the forthcoming sessions we will move into the relative valuation models.

In the discount flow models basically here what we do that for any kind of valuation already you know that there are, we need a cash flow, which has to be discounted. So, the different discount flow models are divided on the basis of the cash flows what the commercial banks or any organization use for valuation of the stocks or the equity to in that particular system, in that particular organization, and that is basically measuring the intrinsic value of that particular stock.

So, whenever we are dividing on the basis of the cash flows. There are three major cash flows we use for this, one is dividend, another one is free cash flow, then we have the operating cash flow. So, these are the different cash flows which are used for the valuation of the equity in the different organization including the commercial banks. Let us see that how that particular valuation system works.

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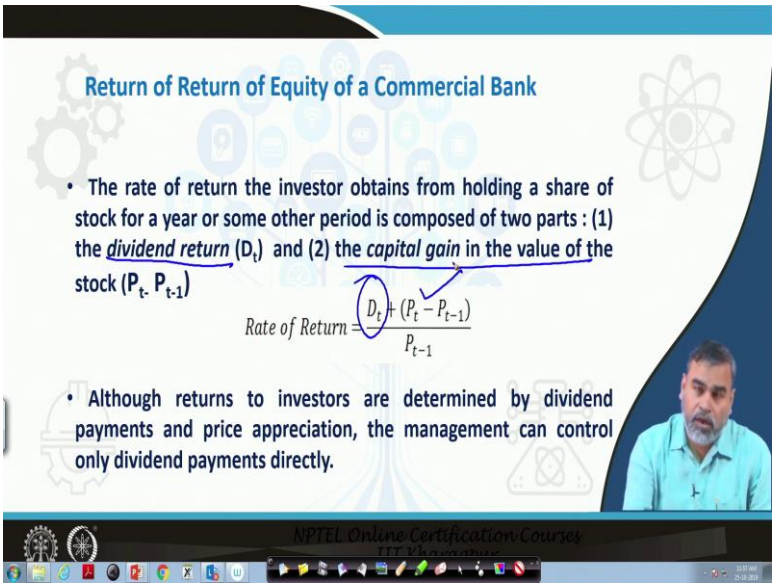

That whenever we talk about the valuation, you see, why we do the valuation? We do the valuation already I told you that or we have discussed that we know, we should know the price of this particular asset. But here what is happening? We generally calculate, whenever a return calculation is done we are mostly concentrated on the market price, but to see that how really the stock is performing in comparison to the market price, which is mostly applicable or used for the investment purpose.

So, then we have to also understand what is this intrinsic value of that particular asset. So, if the intrinsic value of the particular asset is known, then we have the data about the market price, then we are in a possession to compare that really how this particular stock is performing in comparison to the intrinsic value of that particular stock.

So, before that whenever we calculate the return from this particular equity or the stock, it has two components, one is your dividend, one component is the dividend and second component is

the capital gain and what is the dividend? The dividend is the company what pays to the shareholders and we have the capital gain which is your nothing but the price change and this price change is the nothing but the market price. The Pt minus Pt minus 1.

So, the returns what the investors get whenever they invest in a bank stock that is basically determined by the dividend payments and the price appreciation. And the price appreciation and the dividend, the dividend are directly controlled by the managers within this organization, but the price appreciation of that particular stock depends upon the market and as well as the efficiency of the managers to manage that particular font in the open market or to choose that kind of alternatives or the different type of methods or strategies what they are going to adopt to maximize their return.

So, because of that there are some differences in terms of this, although manager have some kind of control over this in terms of their expertise, but that is also determined by the market forces. So, these are the components of the return, but here our today's discussion is that how to calculate that intrinsic value of that particular asset. Because the market price is determined by many factors, where the intrinsic value of the asset is calculated by some specific factors using these valuation concept.

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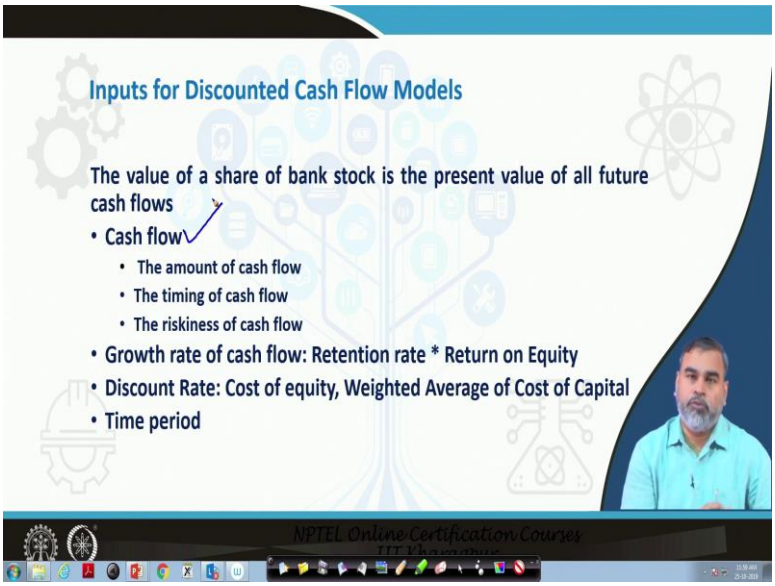

So, whenever you talk about this, let us see that how this particular valuation principle works. Already you know that the value of a share of a bank or any organization is nothing but the present value of all future cash flows, whatever future cash flows you are able to generate if you can calculate or you discount it with respect to a particular discount rate, then the intrinsic value of that particular asset can be calculated. So, already I told you that there are different inputs which are required for the valuation. One is a your cash flow and within the cash flow there are three questions comes that amount of cash flow, the timing of the cash flow, and the riskiness of cash flow.

What is the probability that the same cash flow will be receiving in the regular interval? Or whether really the cash flow is realized in that particular period in a periodical basis? So, that is also another matter and we should know the growth rate of the cash flow, whether, how the cash flow is basically growing. So, all of you know that the growth rate of the calculation is basically done on the basis of the retention ratio of the company. The return earnings divide by the net after tax multiplied by the return on equity that will give you the growth rate of the cash flow.

Then we have the discount rate because any discount rate has to be used. So, what is this cash flow you are using for discounting on that basis your discount rate also will vary. So, nature of the cash flow will decide that what discount rate you are going to use. So, if you are using dividend, you are using cost of equity, if you are using operating cash flow, you are using cost of capital.

So, like that depending upon the cash flow you are, you have to choose that what discount rate has to be used for valuation for that particular asset. Then obviously for time period, up to what time period you are going to discount it. So, if these are the inputs which are given to you, then it will be feasible or possible for you to calculate the intrinsic value of that particular stock of a particular commercial bank. So, this is the way these inputs are basically required for the valuation.

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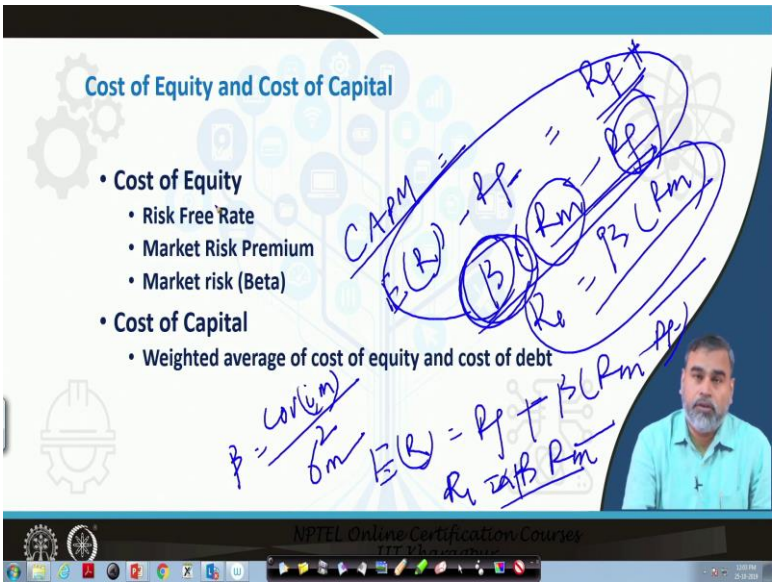

So, here, one thing you remember that whenever we talk about the inputs the most important factor is cash flow and second important factor is your discount rate. Then how, what is the discount rate? The discount rate already I told you that if you are going for valuation of equity or you are going for using the dividend as a cash flow, then the cost of equity is a discounting factor. But if you are going for using operating cash flow then the cost of capital is a discounting factor.

So, how the cost of equity can be calculated? Already, you must have idea about the CAPM model or Capital Asset Pricing Model. According to CAPM model, your equation is like this, that how this cost of equity is calculated? This is your expected return minus risk free rate of return is equal to your beta into Rm minus Rf, or you can also add an intercept Rf plus beta into Rm minus Rf. Or sometimes we can directly calculate your Ri is equal to beta into Rm.

So, this equation and this equation gives you the idea that this market risk premium is Rm minus Rf, beta is equal to your market risk and your Rf is equal to your risk free rate of return. So, many people use it in the different way you can also write expected return is equal to Rf plus beta into Rm minus Rf or you can write also this Ri is equal to beta into Rm, alpha plus beta into Rm.

So, any of the ways you can measure it. So, this equation is called a characteristics line. This equation is called the capital, market line. So, there are different ways, this is the different models which basically help us to calculate the cost of equity and beta is nothing but the covariance between the individual stocks or return with the market return divided by the variance of the market.

So, either of this way you can calculate your, what we can say that cost of equity. So, once the cost of equities will be calculated, you can use it for valuation of your pure stock. Then if you are talking about cost of capital this is nothing but the weighted average of cost of equity and the cost of debt. So, if the cost of equity is calculated and cost of debt is known, then the proportion of cost of, proportion of equity multiplied by the cost of equity plus the proportion of debt multiplied by the cost of debt that will give you the weighted average of the cost of equity and cost of debt.

So, our basic thing is we want to in terms of cost of equity, we want to measure the beta, if you have Rm, Rf then you can put these things estimated value into this, then you can find out the cost of equity for that. So, here what basically we are trying to say that the cost of equity is a discount rate whenever your dividend is the cash flow in the calculation of the or the valuation of the stocks. Then the other cash flow like operating cash flow that uses cost of capital as a discount rate

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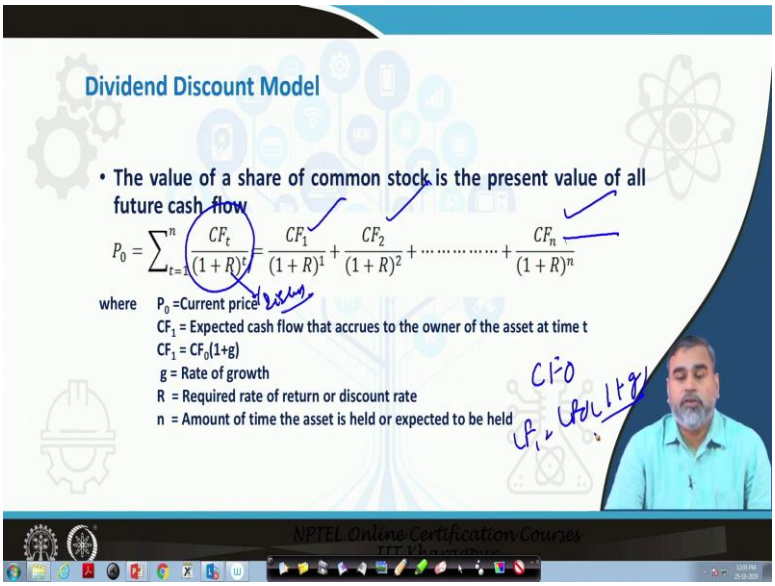

So, now coming back to this that in your dividend discount model if you are observe, that is basically what, your, in a general discount formula if you see that your P0 which is the intrinsic value is equal to summation t is equal to 1 to n, your cash flow divided by 1 plus R to the power t, and your R is equal to your discount rate, and these are the dividends in the different periods.

There are n periods and CF_1, and CF_2 up to CF_n, their dividend what you are receiving and if in the beginning period your cash flow in the zeroth period was the CF_0 then your CF_1 will be CF_0 into 1 plus g. So, g is equal to the growth rate of the dividends. So, therefore, you can use a normal formula which is used for the discounting.

So, here, our cash flow is the dividend and discount rate is the cost of equity. We can use both and calculate these things and we have to know that the n is equal to the amount of time, the asset is held or expected to be held and your P_0 is equal to the current price. So, these are basically what we are trying to use it for valuation of the dividends in general.

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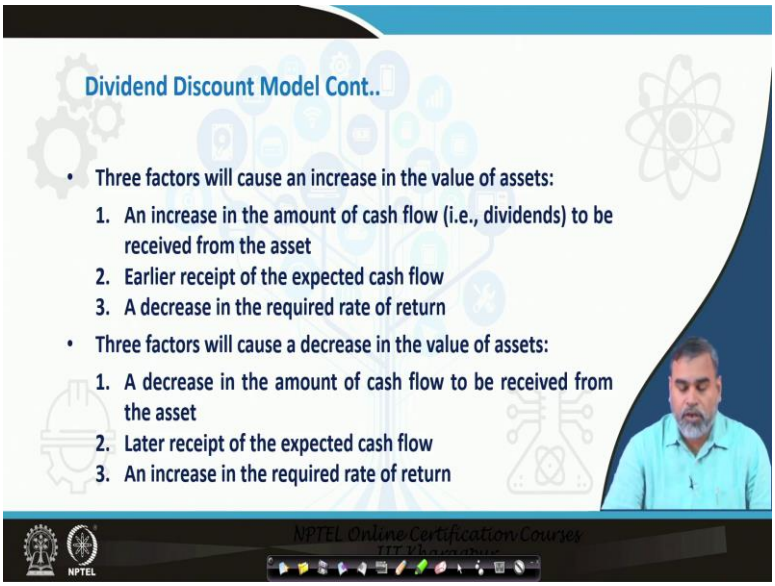

Then what happened that if you see in a dividend discount model there are three factors which cause an increase in the value of the asset, either it is the increase in the amount of cash flow which is dividend and earlier receipt of the expected cash flow if you have and a decrease in the required rate of return because it is in the denominator. If your discount rate is less that means the cost of equity is less than the value will be more.

So, if the dividend will be more then the value will be more or if the rate of increase of the dividend will be more than the rate of increase of the cost of equity then also the value will be more, but if the rate of increase of the dividend will be lesser than the increase in the cost of equity then the value will be the less. So, there are three things either you can increase your expected cash flow or you can decrease your discount rate for that either of these cases you are going to find out or we are going to get better value of this particular stocks.

So, the decrease in the value already I told you either decrease in the amount of cash flow or receipt of the expected cash flow or increase in the required rate of return. The cash flow has a direct relationship and the required rate of return or the discount rate has an inverse relationship with the price of this particular stock. So, this is the basic thing what basically we have to keep in the mind.

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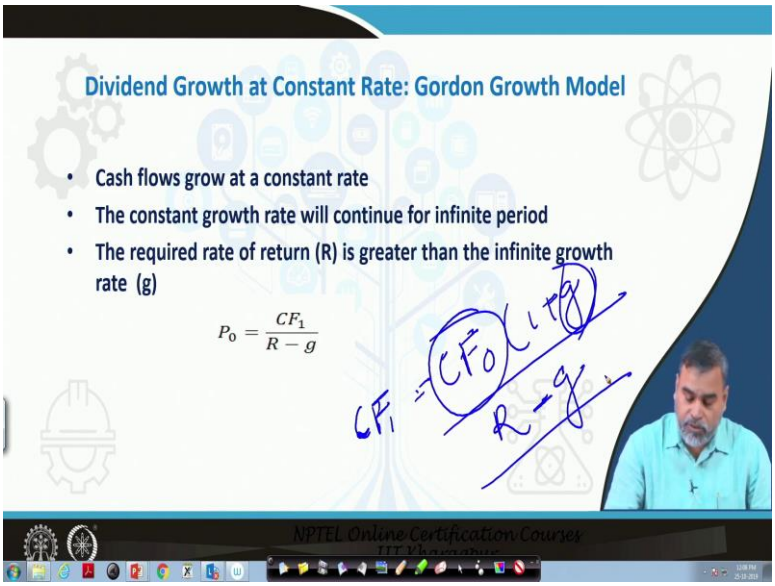

Then within this discount flow models, there are many models we use on the basis of the period of the growth rate, or the change in the growth rate. So, if you assume that the cash flow basically is growing at a constant rate for indefinite period of time, then and as well as also the required rate of return is greater than the growth rate of this particular cash flow, then you can find that this is popularly known as the Gordon's growth model. Then we can basically get this particular value of the stock by only discounting the first period, that here your CF 1, here your CF_1 is equal to your CF_0, CF_0 into 1 plus g divided by R minus g.

So, here if the constant growth rate is there then the beginning your cash flow if you know beginning period cash flow and you know the growth rate then this formula can be prevailed with assumption that the particular growth rate remains (cons) or remains uniform, remains constant throughout this period and that will continue for the indefinite period of time and as well as the required rate of return is greater than the growth rate of the cash flow.

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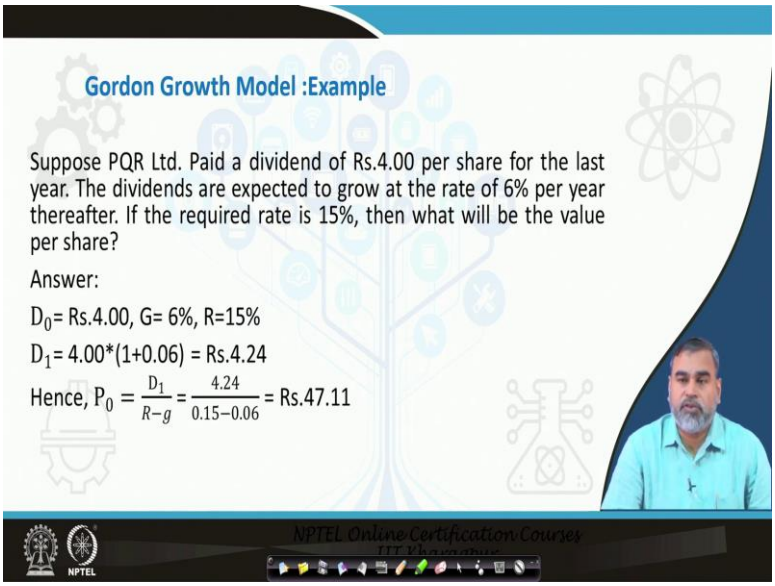

The dividends are expected to grow at a rate of 6 percent per year thereafter. If the required rate of return is 15 percent, then what will be the value of, value per share? Here, we are assuming that the growth rate is 6 percent which is constant for indefinite period of time. Then your required rate of return is 15 percent, then you can find out D 0 is equal to 4, then D 1 is equal to 4 into 1.06.

6 percent is the growth rate and you can get 4.24, then finally your price will be 4.24 divided R minus g that is 0.15 minus 0.16 that will give you 47.11. So, the intrinsic value of this particular stock is 47.11 with this particular data, where the discount rate is 15 percent and the growth rate of the cash flow is 6 percent. So, this is the example for this.

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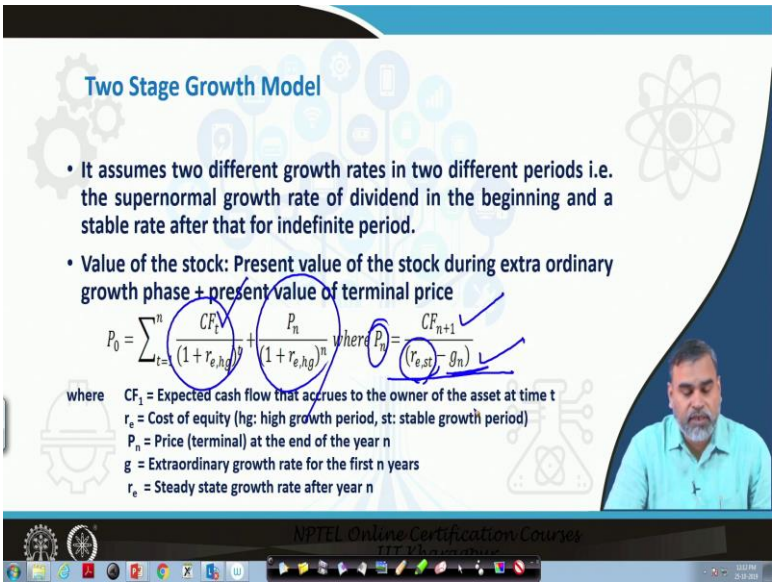

Then we have another model which is called the two stage model here what we assume that there are two different growth rates in two different periods, that is the super normal growth rate of dividend in the beginning that means the growth rate was high in the beginning period and after it reaches a particular time period the growth rate become stable and that stable growth rate continues or exist for this particular bank for indefinite period of time.

So, in that case how basically we have to do? We have to calculate the terminal price of this particular stock. So, that is why there are two components which will coming to into our calculation part, which is basically the present value of the stock during extraordinary growth phase, at the supernormal growth rate what we are realizing in the beginning of the period and the present value of the terminal price. The Terminal price is basically what we are realizing at end of the phases of the super normal growth.

So, here if you see there are two components, this is one component, and this is another component and this two component if you observe this is the discounting what you are making in the beginning of the period and this is the (dis) Pn is basically your terminal prize, which is basically calculated on the (basi) discounting this cash flow at the end of the period n that means at the n plus 1 period. Then we are calculating this and after that this growth rate remains constant.

So, because of that this constant growth rate formula can we used that is the discount rate for the stable growth period and this is the growth rate for the stable growth period. So, because of that your Pn is nothing but CFn plus 1 divided by r e st minus gn. And hg represents the growth rate for the or the high growth what we can say and your re represent the cost of equity and ST is equal to the stable growth period, and Re is equal to the high growth period cost of equity and your steady growth rate after your n that is present also r e, as r e.

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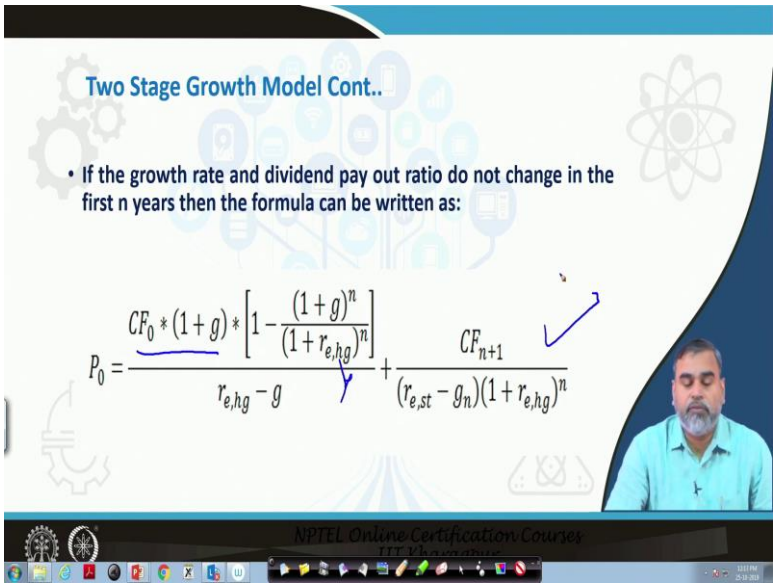

So, in this case, how basically, further if you little bit make the manipulation of this then you can get that if the super normal period the growth is not going to be changed or the growth rate and dividend payout ratio do not change in the first ten years that means up to the high growth rate period. Then this formula becomes like this that your CF_0 into 1 plus g into 1 minus 1 plus g to the power n divided by 1 plus r e h g to the power n.

r e h g basically the discount rate in the cost of equity for the high growth period divided by r e h g minus g into CFn plus 1 divided by r e minus g n into 1 plus r e h g to the power n. So, you can again, from that formula we are dividing this formula and here our assumption is the growth rate and the dividend payout ratio do not change in the first ten years.

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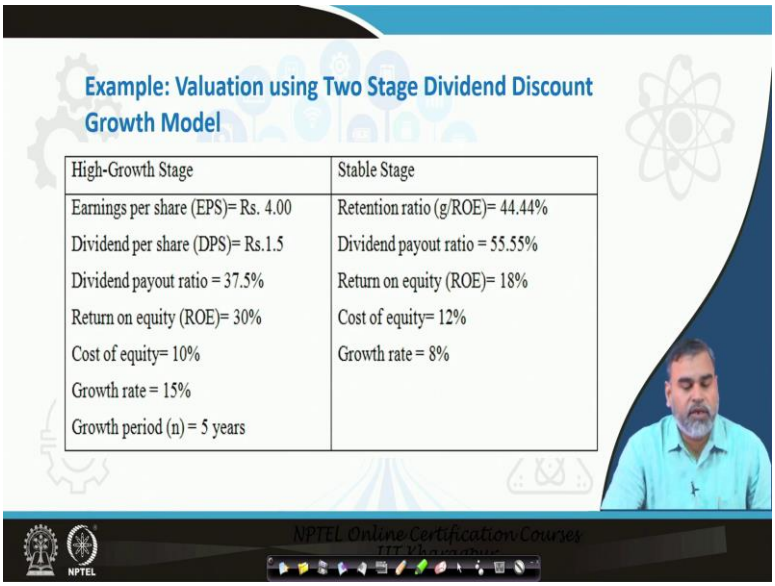

So, in this case, here if you see this example, then how basically it works. Let your earnings per share is 4 rupees, dividend per square is 1.5, dividend payout ratio is 37.5 percent, return on equity is 30 percent, cost of equity 10 percent, growth rate 15 percent, growth period is 5 years which is basically the data for the high growth stage and in the stable growth stage we have retention ratio that is your g by ROE that is 44.44 percent and dividend payout ratio of 55.55 percent which is 100 minus 44.44. The return on equity is 18 percent, the cost of equity 12 percent and growth rate has become 8 percent. Which is, previously the growth rate was 15. Now, it has become 8 percent which continues for indefinite period of time.

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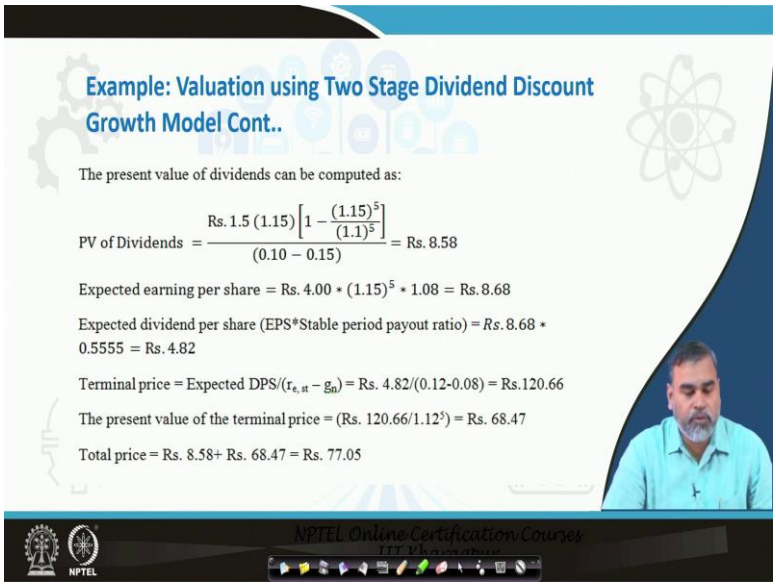

So, in this case what basically if you find out then what we get using that formula, we can find that the present value of dividends is calculated in this way that your 1.5 which is your CF 0 into 1 plus g, g is equal to 15 percent in the high growth period 1 minus 1.15 to the power 5 divided by 1.1 to the power 5. 5 years this particular high growth rate continues divide by 0.1 minus 0.15 that is 8.58.

Then the expected earnings per share will be become 4 into 1.15 to the power 5 into 1.08 that is 8.68, then expected dividend per share is nothing but the EPS multiplied by the stable dividend payout ratio that is 55.55 percent, then you got 8.68 multiplied by 0.5555 then it is 4.82, then your terminal price become 4.82 divided by 0.12 minus 0.08. 0.12 is the cost of equity in the stable period and 8 percent is the growth rate for the stable period that will become 120.66.

Then if you calculate the present value, the terminal price that will become 68.47 and previously in the first period we have calculated the value was 8.68 and in the last period or the stable period that value become 68.47, then the total price has become 8.58 plus 68.47 that is 77.05. So, this is the example of the two stage dividend discount growth model, where we have two different phases, in the first phase the growth rate was very high and after a certain period the growth rate has come down and it became stable for the indefinite period of time.

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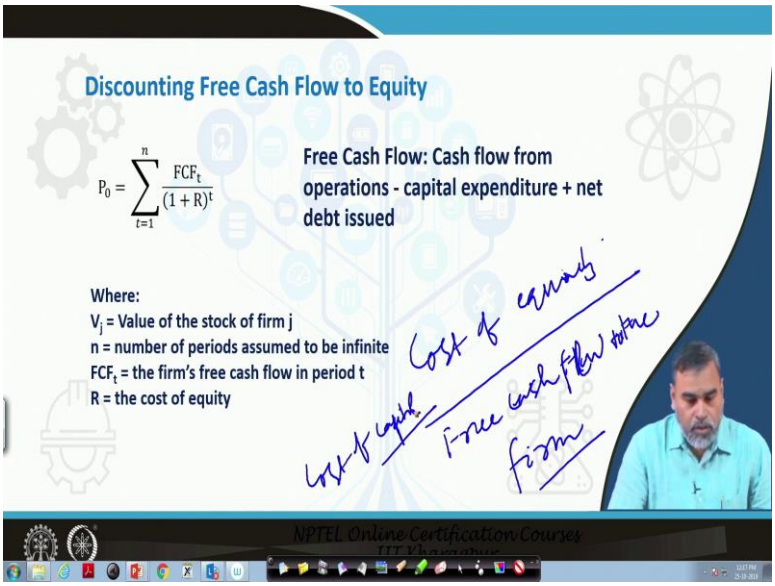

Then another cash flow what we can use at the free cash flow, free cash flow to equity if you consider, it is nothing but the cash flow from the operations minus capital expenditure plus net debt issued by the organization or by the company or by the bank. Then another thing you remember that here we are assuming that the, or we have to remember whenever we are calculating the free cash flow to the equity again the discount rate is cost of equity. The discount rate is cost of equity, if you are talking about free cash flow to the firm, free cash flow, free cash flow to the firm then we can use cost of capital.

So, if you are using the free cash flow the equity, then your discount rate is cost of equity. But if you are going for the free cash flow to the firm, then your discount rate is the cost of capital. Then the same way you can you can use it that FCFt divide by 1 plus R to the power t and you can summation t is equal to 1 to n, n is equal to number of periods and if already I told you that this is the way the free cash flow is calculated.

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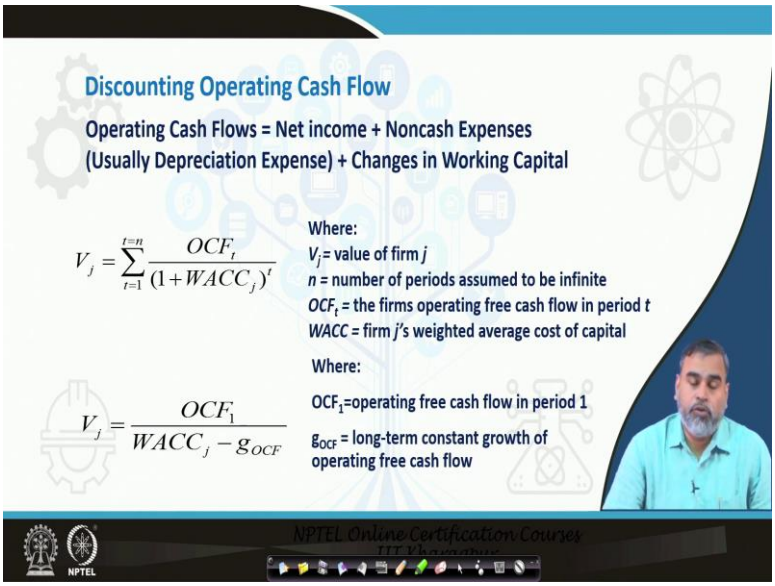

Then we have the other discount flow models, where the cash flow is the operating cash flow and the operating cash flow is nothing but the net income plus non-cash expenses, usually the depreciation expenses of the bank plus the change in working capital. So, here, whenever we are using the operating cash flow we generally use the weighted average of cost of capital as a discount rate, and if you are assuming there is a constant growth rate which is happening for the operating cash flow, then you can use the same Gordon dividend growth model, constant growth model, where your cash flow upon R minus g what we are using in the previous case.

In this case we are using WACC minus g and your WACC is the weighted average of cost of capital minus g is equal to Ocf means it is the long-term constant growth of operating free cash flow and we are assuming that the growth rate remains same for indefinite period of time, the same formula can be used for this case also.

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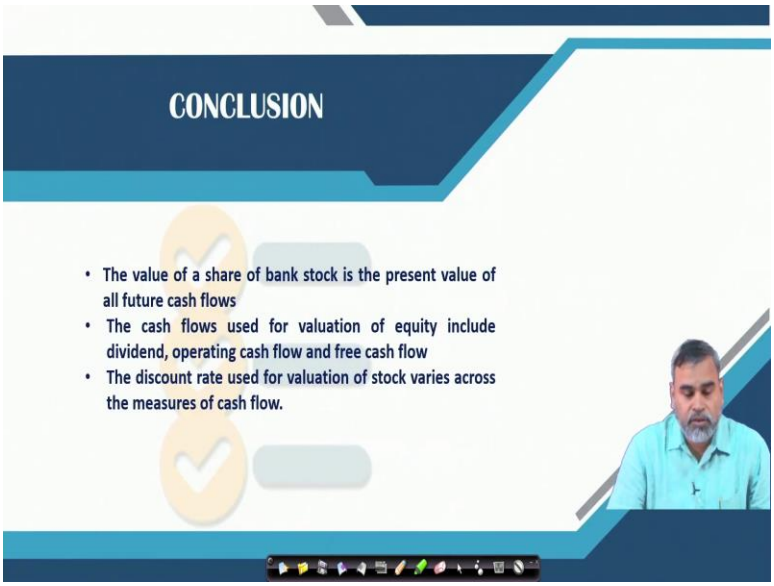

So, here, one thing you remember that whenever we are talking about this valuation there are certain things we have to remember in the conclusion part that the value of a stock is the present value of the future cash flows and the, whenever we are talking about this we have to think that there are major three inputs or four inputs in fact that is basically your cash flow and you have the discount rate, you have the growth rate of the cash flow, then you have the time period.

And we have to be very cautious about the discount rate because discount rate varies on the basis of the cash flow what you are using for the valuation and there are three types of cash flow for equity valuation the banks use, that is your dividend operating cash flow and the free cash flow and already I told you that the discount rate used for valuation of the stocks varies across the measures of the cash flow. So, this is the way the discount flow models works for the valuation of the equity.

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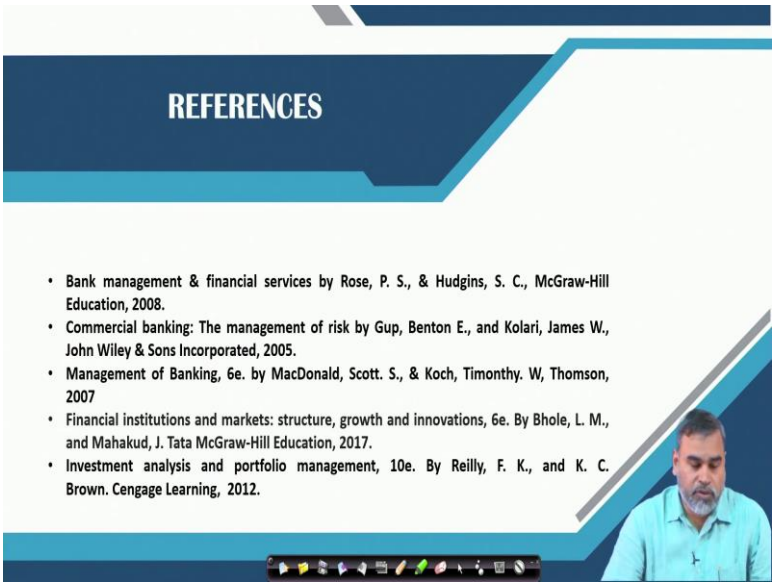

So, these are the different references you can go through to get little idea about the valuation of equity in general, then we can, further we can discuss about the valuation of equity but in the different sense, or what are those relative valuation approaches we can use for the valuation of equity for a commercial bank or in general for an organization. Thank You.