**Investment Management**
**Prof. Abhijeet Chandra**
**Vinod Gupta School of Management**
**Indian Institute of Technology, Kharagpur**

**Lecture - 13**
**Equity Valuation Models (Contd.)**

Hi, there. So, in continuation of the discussion that we are having in terms of the Valuation of Equity, so, this session will focus on the Equity Valuation Model. Particularly, we are going to talk about a discounted cash flow approach or DCF approach of valuing the equity asset or equity share.

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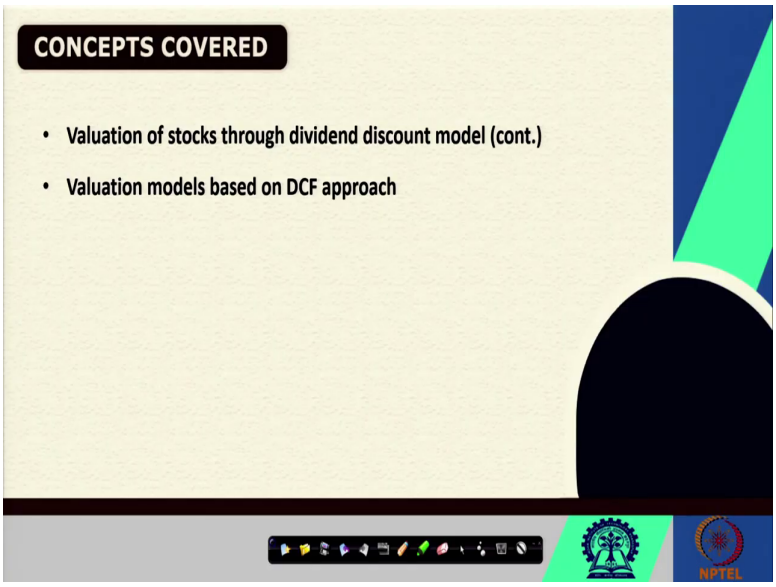


So, we have already discussed about the valuation of stock through dividend discount model. We have seen that dividend discount model can be applied to find the present value of all the

future dividends where the company keeps on paying dividend at a constant rate for in future. And if it is a multiple period scenario, then the present value can be calculated using dividend discount model where we have the present value or P naught is equal to dividend divided by cost of equity or discounting rate.

And, if it is growing at a certain growth rate then we can also use a Gordon's growth model or the method through which we can implement the growth in dividend where dividend keeps on growing at a constant rate and find the present value in terms in terms of P naught. We will also touch upon the discounted cash flow approach or DCF approach of valuation model.

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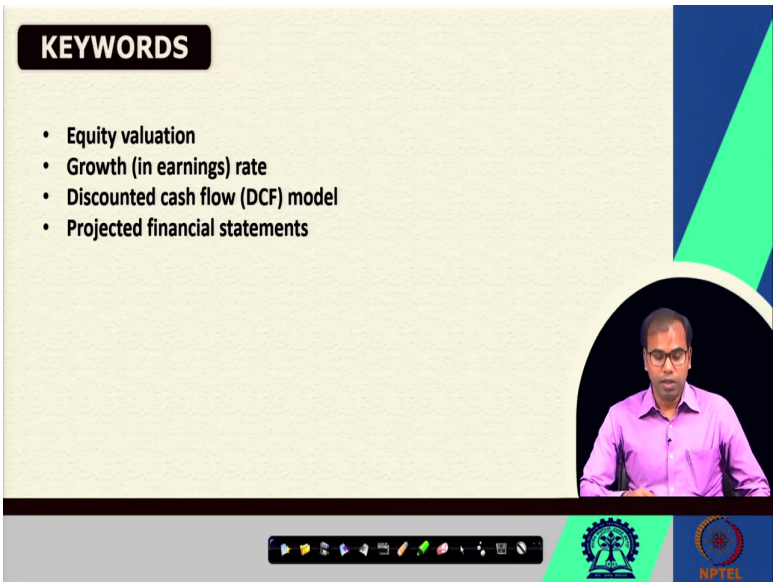


Essentially, we will see first how growth can be measured particularly when it comes to finding the present value of dividends that keeps on growing at a constant growth rate and then we will use these concepts in discounted cash flow approach.

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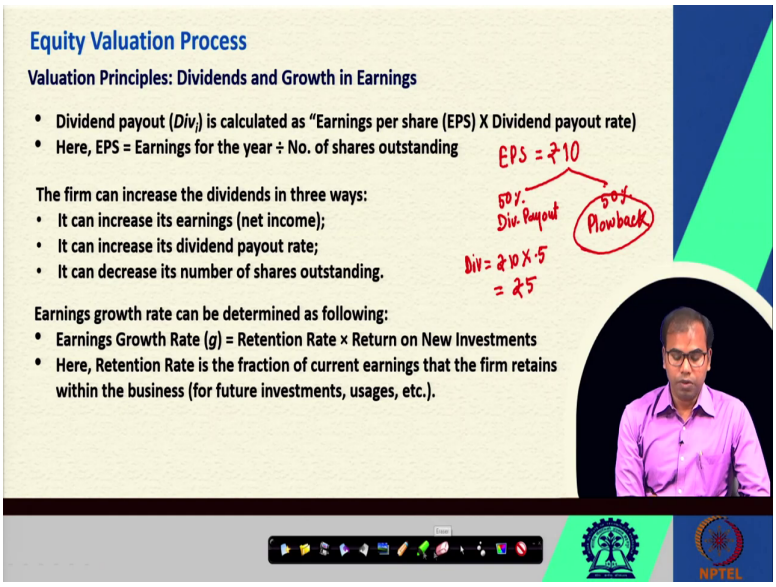


So, to approach or to the valuation principles or to explain the valuation principle we know that the value of a share of a company can be derived by applying the basic present value concept where we assume that a company will keep on paying dividends year after year to the shareholders. And for shareholder the present value or the intrinsic value of such a financial application or financial asset should be the present value of all future dividends that the investor is expecting.

Now, in real world hardly any company keeps on paying constant dividend. So, we believe that company might pay varying dividend and to simplify the matter, the payment of dividend will have a growth rate G which implies that the dividend will keep on growing at a constant growth rate G.

So, to highlight these this issue let us first start with understanding the dividends and growth in earnings. So, as we know from our understanding of accounting concepts, a dividend payout is calculated as the earnings per share also known as EPS into dividend payout rate. Which means if a company pays 50 percent of it is earning as dividends then dividend payout rate will be 50 percent and whatever earnings per share is available for shareholders can be multiplied with dividend payout rate to find the dividend.

So, if a company has 10 rupees earnings per share and it has 50 percent of dividend payout rate, then 10 rupees multiplied with 50 percent will be dividend. It is very intuitive. It says that for every share I have certain earnings and I decide to as a company I decide to pay only half of the earnings per share as dividend to the shareholder and remaining is left in the business as retained earnings.

So, the idea here is if company has EPS of let us say 10 rupees, the board decides that 50 percent will be given as a dividend payout or payout percentage and remaining 50 percent will be retained. So, we can also call it in a common parlance plowback which means 50 percent of the earnings per share is given back to the shareholders and remaining 50 percent is plowed back in the business for further growth, further investment and so on.

So, when we have to find dividend all we have to do is EPS multiplied with 50 percent of dividend payout. So, the dividend will be 5 rupees and remaining part of the profit will go back to the business as retained earnings for further investment that is plowback. Now, in a similar fashion we can do the back calculation for EPS. So, for calculating EPS we know that it is the total earnings for the year available for shareholders divided by number of shares outstanding and that is how we calculate earnings per share.

Now, when it comes to paying dividend companies can increase the dividends in three ways. There are multiple ways to increase dividends. It can increase its earning which means the company can focus more on generating higher revenue and or reducing all cost, so that the net income or earnings can be increased. Once the earnings increase then earnings for the year

available for shareholders will increase assuming that the number of shares outstanding will remain constant earnings per share will increase.

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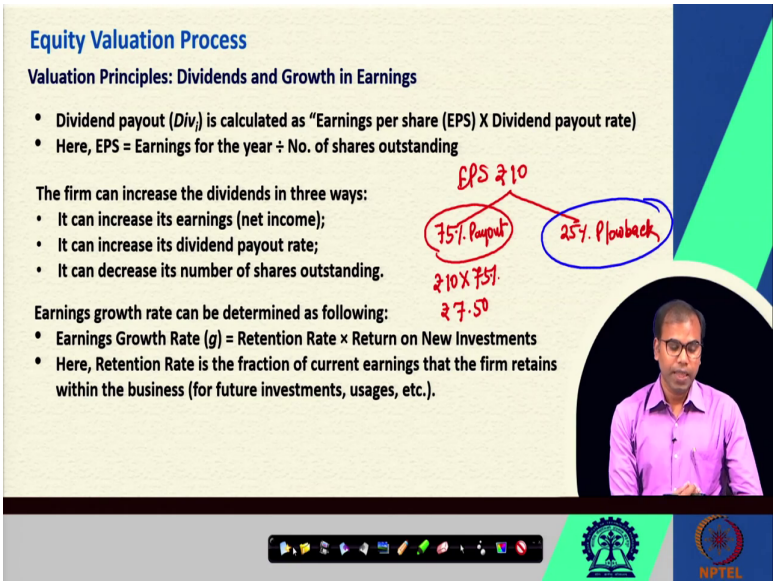


Second approach is the company can increase the dividend payout rate which means if the company has EPS of 10 rupees, earlier if the company was paying 50 percent as payout now, it can pay 75 percent as the payout and 25 percent alone as plowback. In this way the available amount for dividend is increased and now, the company can pay 7 rupee 50 paisa as dividend. So, earlier it was paying 5 rupees, now it can pay 7 rupee 50 paisa.

The drawback of this approach is two fold – one is the company will have less amount of money as retained earnings compared to previous scenario where it had 5 rupees of earnings per share as plowback. Now, it will have only 2 rupee 50 paisa of earnings per share as plowback.

So, company might require a larger amount of fund in future and it might not have sufficient earning retained earnings coming through plowback and it may have to find external sources of funds for investing in newer branches, newer businesses, newer products and so on. So, this will have some repercussions in terms of financial cost or obligations for future.

And, second is if the company keeps on paying higher dividend or if it increases the payout then it might give a signal in the market that the company might not have sufficient attractive projects for future and that is why a major chunk of earnings per share is given back to the shareholders.

Imagine if I have very exciting projects in future which I can take up and develop new products maybe I can acquire higher market share, I can attract more consumers, but instead of doing all these I will give earnings per share more to my shareholders and retain lesser amount with the business itself. Which means, I do not see any profitable any interesting projects for the business in future and that is why I am parting away with the funds that I might have.

So, this is the second approach of increasing dividend and third approach is of course, if we can reduce the number of shares out outstanding, then we can have higher dividends available for shareholders. So, but this approach again is tricky because to reduce the number of shares outstanding a company has to buy back its own share and maybe investors might not be willing to sell back to the company.

So, company has to buy back at a premium price which means the company has to pay higher price to every share holder who is selling the shares back to the company in order to reduce the number of shares outstanding which will eventually benefit the remaining shareholders who still hold the share after the number of shares is reduced.

So, the company can take up any of the three approaches depending on the scenario, depending on the industry trends, depending on the financial condition of the company,

depending on the future prospects of the company, the firm or the company can adopt one or the other approach for increasing the dividends for the shareholders.

In a related note, earnings growth can be determined by using the following approach where we have retention rate which is nothing, but the plowback rate. And if you have plowback rate you can multiply plowback rate or retention rate with return on new investment and that will tell you the growth rate.

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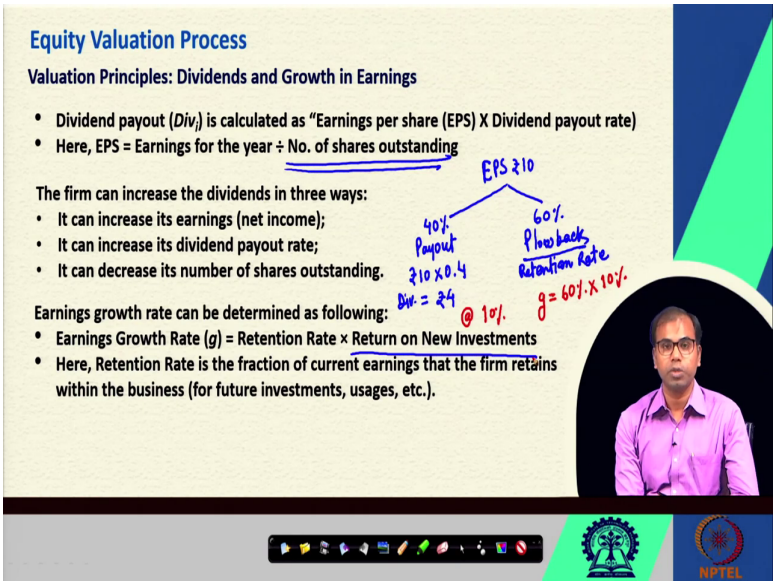


So, assume that in just, this previous example, we have this EPS to be 10 rupees and out of which let us say 40 percent is paid as dividend which means dividend will be 4 rupees. So far so good, but remaining 60 percent is plowback which means this is the retention rate, company wishes to retain larger part of earnings for future investment.

Now, here company has to highlight or company has to project that it is retaining larger part of earnings with itself so that it can invest in new ventures, new projects, new products, maybe new plant, bring new machinery. And, once those new things are taken up, new projects, new product development or R and D or machinery are taken up then return on new investment will be something, right.

So, assume that return on new investment if the if the company wishes to invest more money in new project and that project has return on new investment at the rate of let us say 10 percent, then growth rate in this case will be retention rate multiplied with return on new investment and that will be the new growth rate for the business.

Here basically what we intend to showcase is retention rate is the fraction of current earnings that the firm retain within the business as I was talking about in terms of plowback. And this is done in order to invest, save more money or in order to keep more money with the business for future investment uses, so that dependence on external funds can be reduced.

As we understand the firm can have multiple sources of funds for operating or for running the business. Typically a firm can start with looking into its own retained earnings if the firm has been doing business for quite some time or alternatively the firm can have short term loan as one of the sources of funds. If that is not sufficient then firm can go for long term loan.

And, subsequently a firm requires larger amount of money then firm can go for equity through IPO or FPO or any other mode through which the firm can raise equity. So, equity as a source of fund and that is how typically businesses raise funds. So, first and cheapest and least risky source of fund is the retained earnings which company has been retaining basically the part of profit as plowback or retention rate indicates.

The company has been keeping part of its current earning for future uses and that is what the company might use to indicate expected growth rate in earnings.

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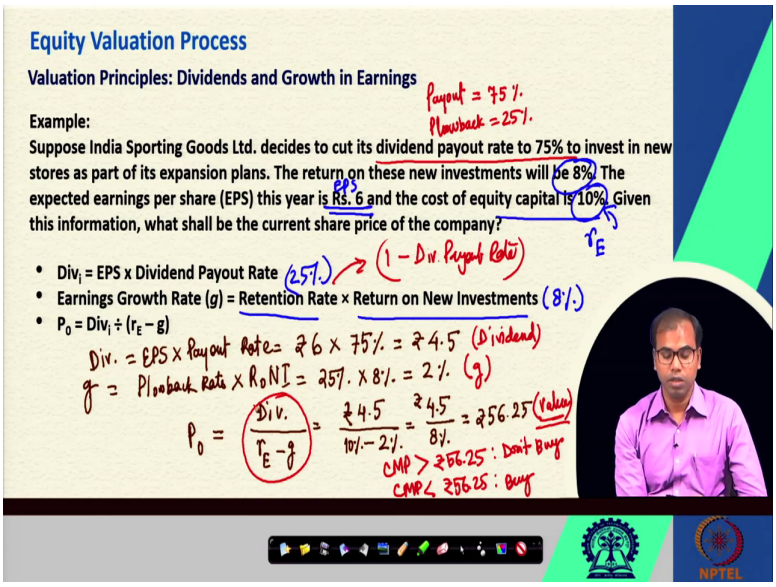


Now, here let us take a look at the example which will incorporate all these formula or all these approaches together. Let us take a look at this example here which says that a company decides to reduce it is dividend payout rate to 75 percent. So, the payout rate the company is trying to implement is 75 percent and this is done in order to retain some part of money which is 25 percent.

So, plowback rate is plowback rate is 25 percent which means for every 100 rupees 25 rupees is retained in the business for new investment or expansion plan and this new investment will generate a rate of return of 8 percent. So, return on new investment will be 8 percent and retention rate is 25 percent. The EPS for the year is given to be rupees 6, this is the EPS that the company is having currently and the cost of equity capital is 10 percent. So, r E or the discounting rate is 10 percent.

If these are the information given, then what should be the current price of the share for this particular case? So, if we try to start with calculating this dividend first, so, dividend for this company will be EPS multiplied with payout rate. So, dividend will be calculated to be dividend is 6 rupees and payout rate is 75 percent. So, basically 4 rupees 50 paisa is the dividend. This is the dividend that company is intending to pay.

Then we have earnings growth rate as plowback rate or retention rate multiplied with return on new investment. So, basically, we have 25 percent into 8 percent and here we can calculate this as 2 percent. So, we can find the value of g as 2 percent and finally, we can calculate the value of P 0 as dividend divided by r E minus g. So, dividend is rupees 4.5 divided by r E is 10 percent and g is 2 percent. So, 4.5 divided by 8 percent. This will give us approximately 56 rupees 25 paisa.

So, this is the intrinsic value of the share or it should be the current price. Again, decision criteria is if current market price is greater than 56.25 then do not buy and if current market price is less than 56.25, then you can buy this share. So, this is how we calculate the current value or present price of a stock given the dividend and growth in earnings. Using this these examples we can find the value of any stock if we have the information about their dividend payout ratio earnings per share.

There if earnings per share is not available then we can go to the earnings available for shareholders and divide it by the number of shares outstanding for the year and calculate the earnings per share. That is how we get EPS. If we know the dividend payout rate as a policy of the company, then we can use earnings per share multiplied with the dividend payout ratio to find the value of dividend to be paid.

Then we have earnings growth rate to be calculated as retention rate. So, retention rate is nothing, but 1 minus dividend payout rate. So, it is 1 minus dividend payout rate. So, we can find the retention rate. Return on new investment has to be found again with respect to the investment the kind of investment that the company intends to make in future.

And based on the those investment the company expect to earn certain return on new investments. And, that is how we can implement this formula of P 0 is equal to dividend divided by cost of equity or discounting rate minus growth rate to find the current mark to find the value or intrinsic value and based on that we can make a decision.

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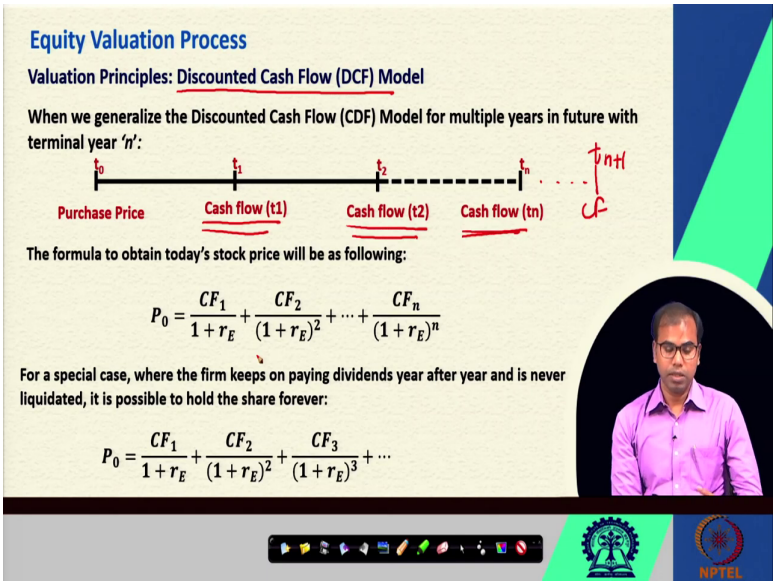


Now, an alternative approach where we do not depend largely on dividends because dividends is basically an accounting phenomena where we know that the company might pay dividend some year company might not pay dividend as well. So, in the situation where company might not pay dividend, how do we find the value of such a company's share?

So, to address this this sort of issues we implement dividend instead of dividend discount model we approach discounting discounted cash flow model. As the name suggests we

generalize the dividend discount model to formulate discounted cash flow model for multiple period. Instead of dividends, here we have cash flows.

So, for every year we have some cash flow that is coming in for the shareholders, for the company, for the firm, for the equity holders and based on those cash flows we can find the value by discounting those cash flows with the discounting rate and find the present value.

So, when we have to find the present value, we can just find the cash flow brought back to present time and then we calculate the present value of the entire business, entire firm or if we are able to find the present value cash flow to the equity holders. Then we can find the total value of equity and thereby we can calculate the present value of every unit of equity shares.

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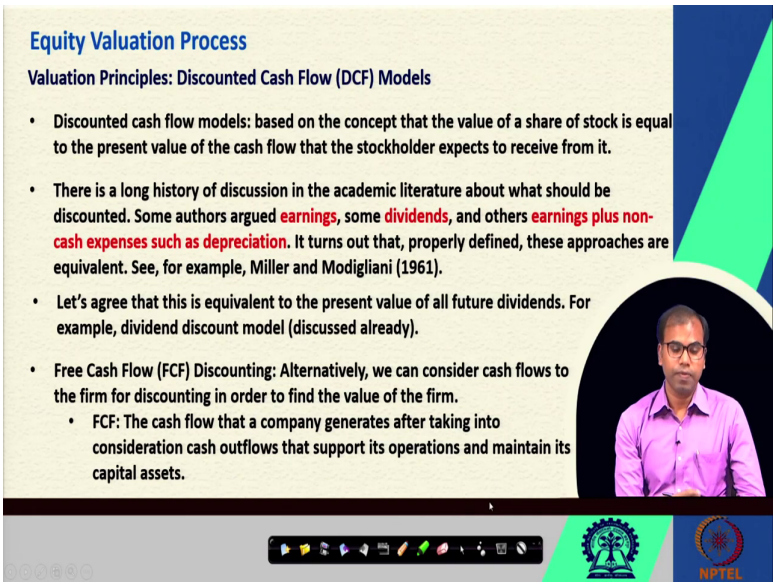

So, to highlight this example of discounted cash flow, we can simply take a look at this where discounted cash flow model is based on the concept that the value of a share of a stock or a share of a company is equal to the fundamental argument present value of the cash flow that the stock holder expects to receive from the company, right.

In case of dividend discount model, we know that dividend is something that is coming as cash flow to the investor in case of finding the value of the share of or a company we know that company is expecting to receive some cash flow in the form of net profit or net cash flow coming to the business.

And, if we look at the literature, we know that there have been debates, there have been discussions in the academic literature about what should be discounted. We have already seen that we can discount dividends; some people argue that we should discount earnings; some people argue that we should discount earnings plus other cash non-cash expenses such as depreciation.

And, if we boil down all these arguments to the root we know that these approaches are similar and it has been highlighted in several finance and economics literature. So, to start with we have already seen that present value of all future dividend is the current value of that share which we have discussed in dividend discount model for one period for multiple period with growth.

When it comes to free cash flow discounting which is basically a form of discounted cash flow models, here we can consider cash flow to the firm for discounting in order to find the value of the firm. Which means, here firm expects certain cash flows from the operations from the business and those cash flows can be discounted to the present time and then we can find the value of the firm.

And, if we are able to find the value of the firm then we can simply do the rest of the calculation; which means if we are able to find the value of the firm in entirety then we can

divide the total value of the firm with number of shareholders number of shares and we can find the value of each share.

So, the key here is free cash flow. What is free cash flow? So, when it comes to free cash flow then it is basically the cash flow that a company generates after considering all cash outflows that support its operations and maintain its capital assets.

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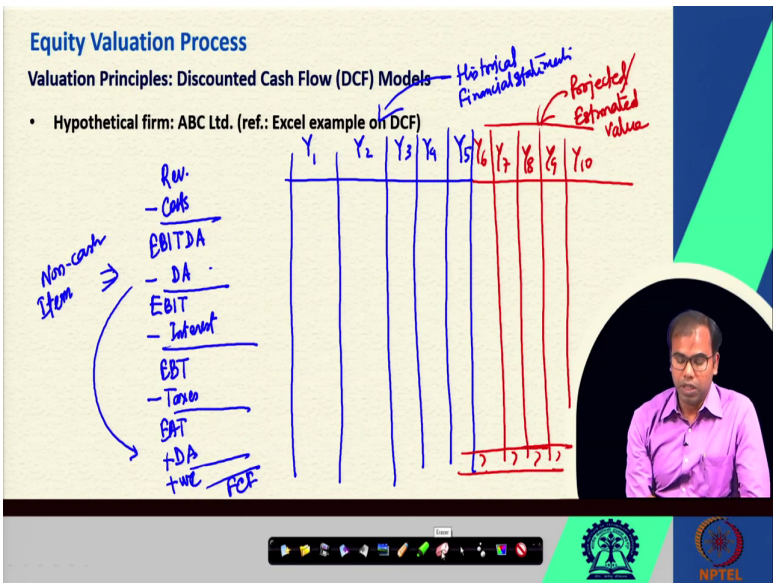


Let us take a look here. Suppose a company is having a source of revenue. So, let us say it has revenue and then it has costs all costs then we it will have earnings before interest tax, depreciation and amortization. Then it will have to adjust depreciation and amortization, then it will have earnings before interest and tax, then it will pay all interest on loans, then it will have earnings before tax. Then it will pay taxes, then it will have earnings after tax that is what we believe as earnings available for shareholders before appropriations.

Now, if we assume that this this is non-cash expenses this is non-cash item which means the company is not losing cash on this particular item, then we have to bring it back and we just add depreciation amortization to find the cash flow. And, in some cases there will be some sort of working capital that can be considered to find the free cash flow and once we are able to find the free cash flow for let us say year 1 then for year 2 let us say historically, we have data for year 3, year 4, year 5.

Let us say these are the historical value which means we have data from financial statements from previous years we can extrapolate these numbers for upcoming years let us say year 6, year 7, year 8, year 9, year 10 and these are projected or estimated value.

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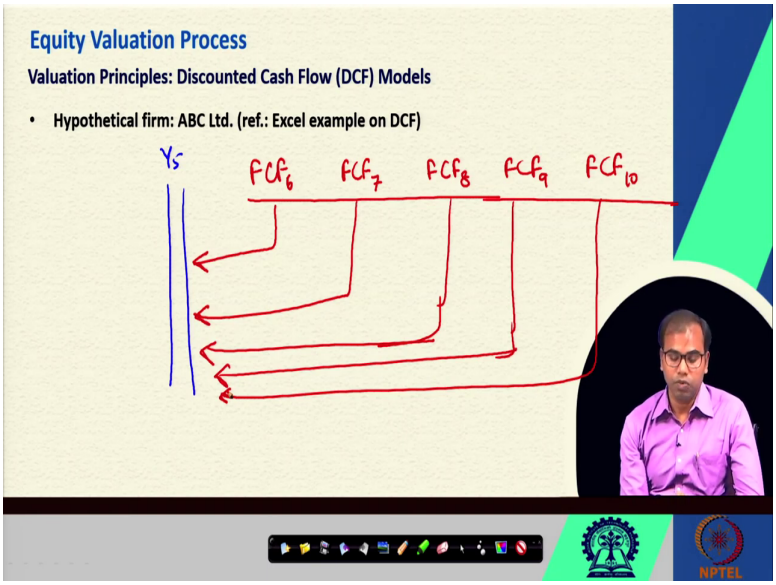


So, we can calculate the FCF for all these future years and then discount it, bring it back. Once we are able to find the projected cash flows; so, let us say cash flow FCF for year 1 or

rather year 6 FCF for year 7, FCF for year 8, FCF for year 9 and FCF for year 10. We can bring those free cash flow to the present time which is year 5. Let us assume that the present time is year 5, here we are trying to do the calculation.

So, all we have to do is we have to just bring all these future cash flows to a present time. Once we know the value of all these future cash flows, we have to just do certain adjustments and we should be able to know the present value of the firm because firm we are trying to find the value of present value of all the future cash flow that firm is expecting.

And, once we are able to find the present value of a firm, we can simply deduce it to the share level and find the present value of the stock by using discounted cash flow method. So, I will just quickly show an example through an Excel through which we will be able to explain this approach a little better.

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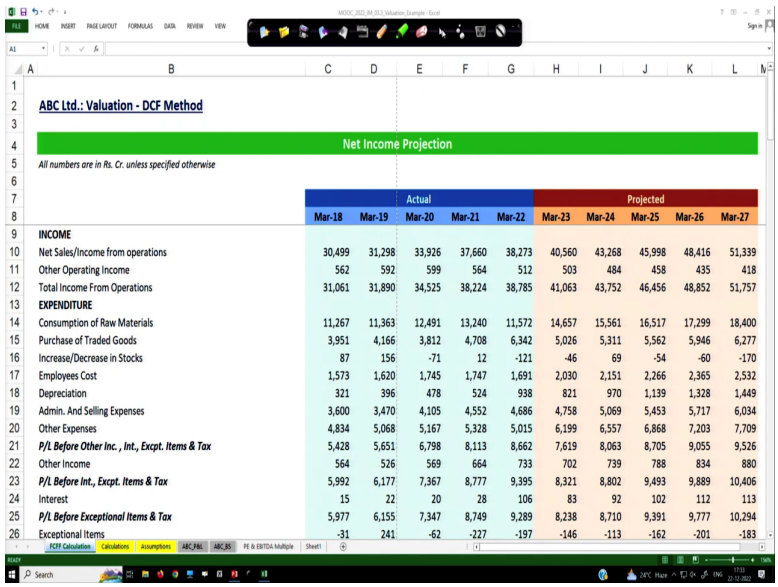

ABC Ltd.: Valuation - DCF Method

Net Income Projection

*All numbers are in Rs. Cr. unless specified otherwise*

| | | Actual | | | | | Projected | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Mar-18 | Mar-19 | Mar-20 | Mar-21 | Mar-22 | Mar-23 | Mar-24 | Mar-25 | Mar-26 | Mar-27 |
| | **INCOME** | | | | | | | | | | |
| | Net Sales/Income from operations | 30,499 | 31,298 | 33,926 | 37,660 | 38,273 | 40,560 | 43,268 | 45,998 | 48,416 | 51,339 |
| | Other Operating Income | 562 | 592 | 599 | 564 | 512 | 503 | 484 | 458 | 435 | 418 |
| | Total Income From Operations | 31,061 | 31,890 | 34,525 | 38,224 | 38,785 | 41,063 | 43,752 | 46,456 | 48,852 | 51,757 |
| | **EXPENDITURE** | | | | | | | | | | |
| | Consumption of Raw Materials | 11,267 | 11,363 | 12,491 | 13,240 | 11,572 | 14,657 | 15,561 | 16,517 | 17,299 | 18,400 |
| | Purchase of Traded Goods | 3,951 | 4,166 | 3,812 | 4,708 | 6,342 | 5,026 | 5,311 | 5,562 | 5,946 | 6,277 |
| | Increase/Decrease in Stocks | 87 | 156 | -71 | 12 | -121 | -46 | 69 | -54 | -60 | -170 |
| | Employees Cost | 1,573 | 1,620 | 1,745 | 1,747 | 1,691 | 2,030 | 2,151 | 2,266 | 2,365 | 2,532 |
| | Depreciation | 321 | 396 | 478 | 524 | 938 | 821 | 970 | 1,139 | 1,328 | 1,449 |
| | Admin. And Selling Expenses | 3,600 | 3,470 | 4,105 | 4,552 | 4,686 | 4,758 | 5,069 | 5,453 | 5,717 | 6,034 |
| | Other Expenses | 4,834 | 5,068 | 5,167 | 5,328 | 5,015 | 6,199 | 6,557 | 6,868 | 7,203 | 7,709 |
| | ***P/L Before Other Inc. , Int., Excpt. Items & Tax*** | 5,428 | 5,651 | 6,798 | 8,113 | 8,662 | 7,619 | 8,063 | 8,705 | 9,055 | 9,526 |
| | Other Income | 564 | 526 | 569 | 664 | 733 | 702 | 739 | 788 | 834 | 880 |
| | ***P/L Before Int., Excpt. Items & Tax*** | 5,992 | 6,177 | 7,367 | 8,777 | 9,395 | 8,321 | 8,802 | 9,493 | 9,889 | 10,406 |
| | Interest | 15 | 22 | 20 | 28 | 106 | 83 | 92 | 102 | 112 | 113 |
| | ***P/L Before Exceptional Items & Tax*** | 5,977 | 6,155 | 7,347 | 8,749 | 9,289 | 8,238 | 8,710 | 9,391 | 9,777 | 10,294 |
| | Exceptional Items | -31 | 241 | -62 | -227 | -197 | -146 | -113 | -162 | -201 | -183 |

So, if we just quickly go to this Excel Sheet here if we take a look, here we know that as explained earlier let us say this is the; this is the financial statement for a particular company. Let us assume that this is a hypothetical company of ABC Limited and we have the financial statement number for.

So, here I have one example in the spread sheet where I have some hypothetical company let us call it ABC Limited and to start with we always have financial statements from previous periods where we have a profit and loss statement and we have balance sheet.

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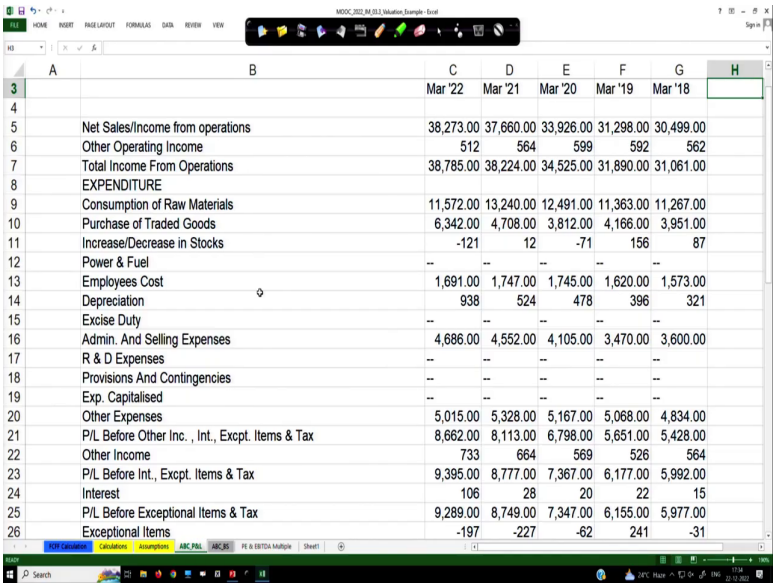

| | | Mar '22 | Mar '21 | Mar '20 | Mar '19 | Mar '18 |
|---|---|---|---|---|---|---|
| 5 | Net Sales/Income from operations | 38,273.00 | 37,660.00 | 33,926.00 | 31,298.00 | 30,499.00 |
| 6 | Other Operating Income | 512 | 564 | 599 | 592 | 562 |
| 7 | Total Income From Operations | 38,785.00 | 38,224.00 | 34,525.00 | 31,890.00 | 31,061.00 |
| 8 | EXPENDITURE | | | | | |
| 9 | Consumption of Raw Materials | 11,572.00 | 13,240.00 | 12,491.00 | 11,363.00 | 11,267.00 |
| 10 | Purchase of Traded Goods | 6,342.00 | 4,708.00 | 3,812.00 | 4,166.00 | 3,951.00 |
| 11 | Increase/Decrease in Stocks | -121 | 12 | -71 | 156 | 87 |
| 12 | Power & Fuel | -- | -- | -- | -- | -- |
| 13 | Employees Cost | 1,691.00 | 1,747.00 | 1,745.00 | 1,620.00 | 1,573.00 |
| 14 | Depreciation | 938 | 524 | 478 | 396 | 321 |
| 15 | Excise Duty | -- | -- | -- | -- | -- |
| 16 | Admin. And Selling Expenses | 4,686.00 | 4,552.00 | 4,105.00 | 3,470.00 | 3,600.00 |
| 17 | R & D Expenses | -- | -- | -- | -- | -- |
| 18 | Provisions And Contingencies | -- | -- | -- | -- | -- |
| 19 | Exp. Capitalised | -- | -- | -- | -- | -- |
| 20 | Other Expenses | 5,015.00 | 5,328.00 | 5,167.00 | 5,068.00 | 4,834.00 |
| 21 | P/L Before Other Inc. , Int., Excpt. Items & Tax | 8,662.00 | 8,113.00 | 6,798.00 | 5,651.00 | 5,428.00 |
| 22 | Other Income | 733 | 664 | 569 | 526 | 564 |
| 23 | P/L Before Int., Excpt. Items & Tax | 9,395.00 | 8,777.00 | 7,367.00 | 6,177.00 | 5,992.00 |
| 24 | Interest | 106 | 28 | 20 | 22 | 15 |
| 25 | P/L Before Exceptional Items & Tax | 9,289.00 | 8,749.00 | 7,347.00 | 6,155.00 | 5,977.00 |
| 26 | Exceptional Items | -197 | -227 | -62 | 241 | -31 |

So, here we can see that the we have the financial statement of the company for year 18, 19, 2020, 2021 and 2022.

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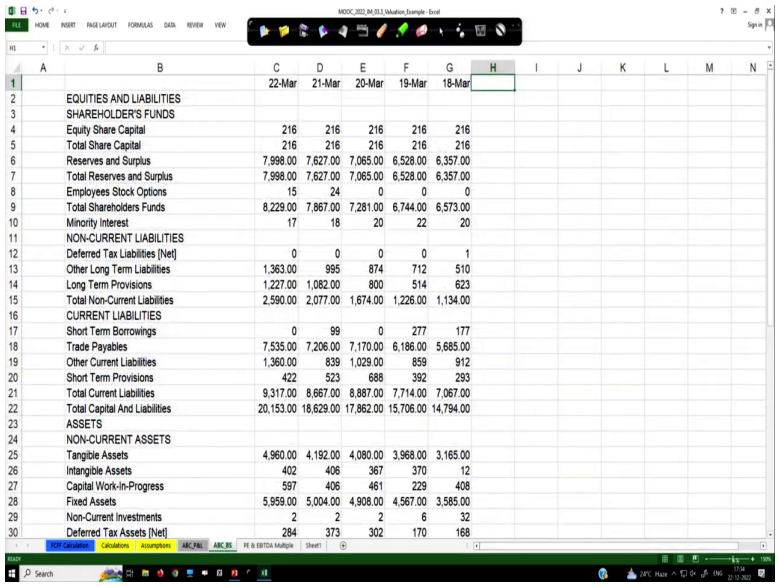

| | | 22-Mar | 21-Mar | 20-Mar | 19-Mar | 18-Mar |
|---|---|---|---|---|---|---|
| | EQUITIES AND LIABILITIES | | | | | |
| | SHAREHOLDER'S FUNDS | | | | | |
| | Equity Share Capital | 216 | 216 | 216 | 216 | 216 |
| | Total Share Capital | 216 | 216 | 216 | 216 | 216 |
| | Reserves and Surplus | 7,998.00 | 7,627.00 | 7,065.00 | 6,528.00 | 6,357.00 |
| | Total Reserves and Surplus | 7,998.00 | 7,627.00 | 7,065.00 | 6,528.00 | 6,357.00 |
| | Employees Stock Options | 15 | 24 | 0 | 0 | 0 |
| | Total Shareholders Funds | 8,229.00 | 7,867.00 | 7,281.00 | 6,744.00 | 6,573.00 |
| | Minority Interest | 17 | 18 | 20 | 22 | 20 |
| | NON-CURRENT LIABILITIES | | | | | |
| | Deferred Tax Liabilities [Net] | 0 | 0 | 0 | 0 | 1 |
| | Other Long Term Liabilities | 1,363.00 | 995 | 874 | 712 | 510 |
| | Long Term Provisions | 1,227.00 | 1,082.00 | 800 | 514 | 623 |
| | Total Non-Current Liabilities | 2,590.00 | 2,077.00 | 1,674.00 | 1,226.00 | 1,134.00 |
| | CURRENT LIABILITIES | | | | | |
| | Short Term Borrowings | 0 | 99 | 0 | 277 | 177 |
| | Trade Payables | 7,535.00 | 7,206.00 | 7,170.00 | 6,186.00 | 5,685.00 |
| | Other Current Liabilities | 1,360.00 | 839 | 1,029.00 | 859 | 912 |
| | Short Term Provisions | 422 | 523 | 688 | 392 | 293 |
| | Total Current Liabilities | 9,317.00 | 8,667.00 | 8,887.00 | 7,714.00 | 7,067.00 |
| | Total Capital And Liabilities | 20,153.00 | 18,629.00 | 17,862.00 | 15,706.00 | 14,794.00 |
| | ASSETS | | | | | |
| | NON-CURRENT ASSETS | | | | | |
| | Tangible Assets | 4,960.00 | 4,192.00 | 4,080.00 | 3,968.00 | 3,165.00 |
| | Intangible Assets | 402 | 406 | 367 | 370 | 12 |
| | Capital Work-In-Progress | 597 | 406 | 461 | 229 | 408 |
| | Fixed Assets | 5,959.00 | 5,004.00 | 4,908.00 | 4,567.00 | 3,585.00 |
| | Non-Current Investments | 2 | 2 | 2 | 6 | 32 |
| | Deferred Tax Assets [Net] | 284 | 373 | 302 | 170 | 168 |

So, all these years ending March 31st we have the numbers related to their of sales, operating income, expenditure, even we have in case of balance sheet we have these numbers for their assets and liabilities as well as shareholders fund. The same March ending 31st March for year 2018, 2019, 20, 21 and 22.

So, with these historical information and certain assumptions about the growth rate and the riskiness of the project to be used for calculation of return on new investment we have this free cash flow estimation where we have the value for previous year from March 18 to March 2022. So, these are the actual data which is coming from the financial statement of these 5 years and based on the growth rate we extrapolated these numbers for next 5 years.

So, these are the projected data for March 2023, March 2024, March 2025, March 2026 and March 2027. And, if you look at this calculation these calculations are simple because here

we have assumed that the value of let us say net sales for March 2023 is a function of the sales of March 2022 and certain growth rate. And, this is used for next extrapolation for March 2024, similarly for March 2025 and so on.

So, in this way we can extrapolate the numbers for all these items in the financial statements first for profit and loss account, and then subsequently for balance sheet.

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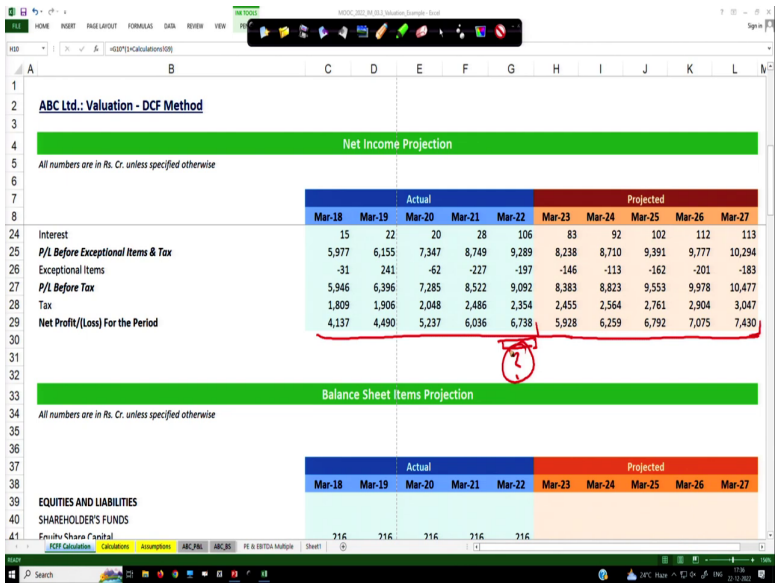

ABC Ltd.: Valuation - DCF Method

Net Income Projection

*All numbers are in Rs. Cr. unless specified otherwise*

| | Actual | | | | | Projected | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Mar-18 | Mar-19 | Mar-20 | Mar-21 | Mar-22 | Mar-23 | Mar-24 | Mar-25 | Mar-26 | Mar-27 |
| Interest | 15 | 22 | 20 | 28 | 106 | 83 | 92 | 102 | 112 | 113 |
| ***P/L Before Exceptional Items & Tax*** | 5,977 | 6,155 | 7,347 | 8,749 | 9,289 | 8,238 | 8,710 | 9,391 | 9,777 | 10,294 |
| Exceptional Items | -31 | 241 | -62 | -227 | -197 | -146 | -113 | -162 | -201 | -183 |
| ***P/L Before Tax*** | 5,946 | 6,396 | 7,285 | 8,522 | 9,092 | 8,383 | 8,823 | 9,553 | 9,978 | 10,477 |
| Tax | 1,809 | 1,906 | 2,048 | 2,486 | 2,354 | 2,455 | 2,564 | 2,761 | 2,904 | 3,047 |
| **Net Profit/(Loss) For the Period** | 4,137 | 4,490 | 5,237 | 6,036 | 6,738 | 5,928 | 6,259 | 6,792 | 7,075 | 7,430 |

Balance Sheet Items Projection

*All numbers are in Rs. Cr. unless specified otherwise*

| | Actual | | | | | Projected | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Mar-18 | Mar-19 | Mar-20 | Mar-21 | Mar-22 | Mar-23 | Mar-24 | Mar-25 | Mar-26 | Mar-27 |
| **EQUITIES AND LIABILITIES** | | | | | | | | | | |
| SHAREHOLDER'S FUNDS | | | | | | | | | | |
| Equity Share Capital | 216 | 216 | 216 | 216 | 216 | | | | | |

So, here we extrapolate for profit and loss account where we have extrapolated the or estimated the value of net profit or loss for the period starting first we have the actual or historical data, and then we have the estimated data. And, remember we are standing here in 2020. So, all we have to do is we have to find the value of the company based on the projected cash flow in the year 2022.

Let us consider it is December 2022 and we are trying to find the value of the company in December 2022 based on the expected value of financial statements or items in financial statements including profit and loss account as well as the balance sheet. So, these are the projection for income statement and similarly, these are the projection for balance sheet.

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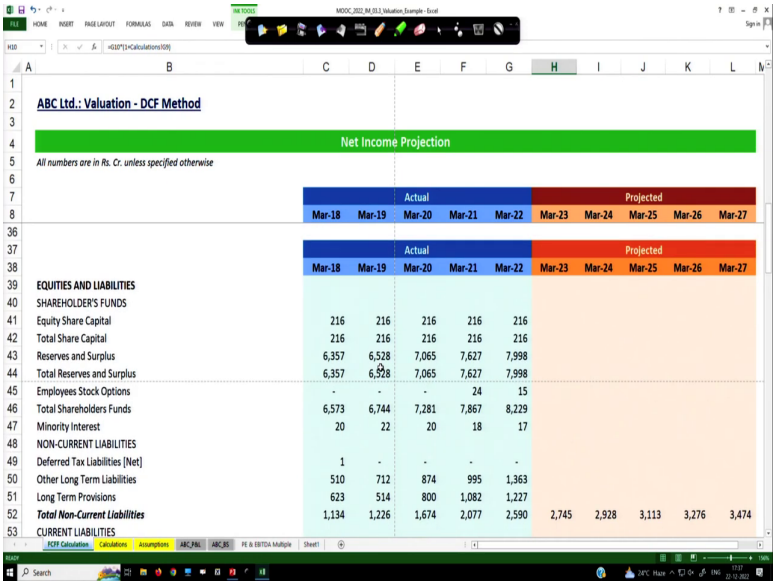

ABC Ltd.: Valuation - DCF Method

Net Income Projection

*All numbers are in Rs. Cr. unless specified otherwise*

| | Actual | | | | | Projected | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Mar-18 | Mar-19 | Mar-20 | Mar-21 | Mar-22 | Mar-23 | Mar-24 | Mar-25 | Mar-26 | Mar-27 |
| **EQUITIES AND LIABILITIES** | | | | | | | | | | |
| SHAREHOLDER'S FUNDS | | | | | | | | | | |
| Equity Share Capital | 216 | 216 | 216 | 216 | 216 | | | | | |
| Total Share Capital | 216 | 216 | 216 | 216 | 216 | | | | | |
| Reserves and Surplus | 6,357 | 6,528 | 7,065 | 7,627 | 7,998 | | | | | |
| Total Reserves and Surplus | 6,357 | 6,528 | 7,065 | 7,627 | 7,998 | | | | | |
| Employees Stock Options | - | - | - | 24 | 15 | | | | | |
| Total Shareholders Funds | 6,573 | 6,744 | 7,281 | 7,867 | 8,229 | | | | | |
| Minority Interest | 20 | 22 | 20 | 18 | 17 | | | | | |
| NON-CURRENT LIABILITIES | | | | | | | | | | |
| Deferred Tax Liabilities [Net] | 1 | - | - | - | - | | | | | |
| Other Long Term Liabilities | 510 | 712 | 874 | 995 | 1,363 | | | | | |
| Long Term Provisions | 623 | 514 | 800 | 1,082 | 1,227 | | | | | |
| ***Total Non-Current Liabilities*** | 1,134 | 1,226 | 1,674 | 2,077 | 2,590 | 2,745 | 2,928 | 3,113 | 3,276 | 3,474 |
| CURRENT LIABILITIES | | | | | | | | | | |

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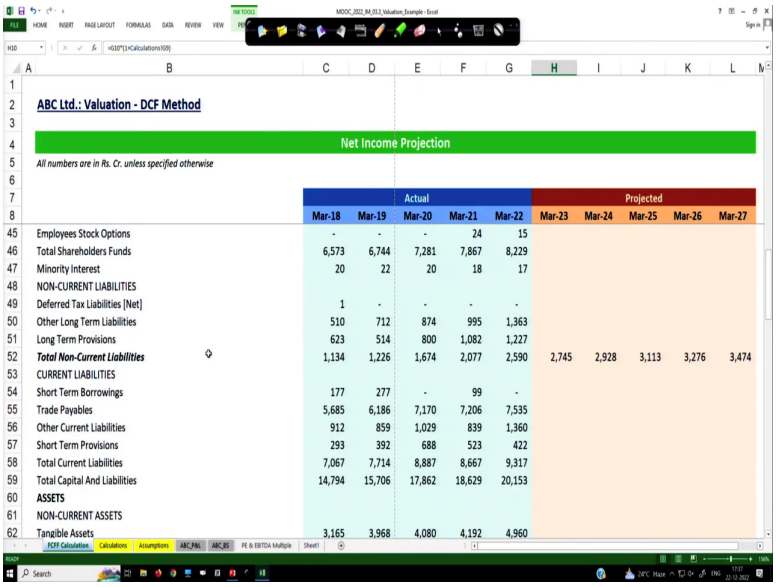

ABC Ltd.: Valuation - DCF Method

Net Income Projection

*All numbers are in Rs. Cr. unless specified otherwise*

| | | Actual | | | | | Projected | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Mar-18 | Mar-19 | Mar-20 | Mar-21 | Mar-22 | Mar-23 | Mar-24 | Mar-25 | Mar-26 | Mar-27 |
| 45 | Employees Stock Options | - | - | - | 24 | 15 | | | | | |
| 46 | Total Shareholders Funds | 6,573 | 6,744 | 7,281 | 7,867 | 8,229 | | | | | |
| 47 | Minority Interest | 20 | 22 | 20 | 18 | 17 | | | | | |
| 48 | NON-CURRENT LIABILITIES | | | | | | | | | | |
| 49 | Deferred Tax Liabilities [Net] | 1 | - | - | - | - | | | | | |
| 50 | Other Long Term Liabilities | 510 | 712 | 874 | 995 | 1,363 | | | | | |
| 51 | Long Term Provisions | 623 | 514 | 800 | 1,082 | 1,227 | | | | | |
| 52 | ***Total Non-Current Liabilities*** | 1,134 | 1,226 | 1,674 | 2,077 | 2,590 | 2,745 | 2,928 | 3,113 | 3,276 | 3,474 |
| 53 | CURRENT LIABILITIES | | | | | | | | | | |
| 54 | Short Term Borrowings | 177 | 277 | - | 99 | - | | | | | |
| 55 | Trade Payables | 5,685 | 6,186 | 7,170 | 7,206 | 7,535 | | | | | |
| 56 | Other Current Liabilities | 912 | 859 | 1,029 | 839 | 1,360 | | | | | |
| 57 | Short Term Provisions | 293 | 392 | 688 | 523 | 422 | | | | | |
| 58 | Total Current Liabilities | 7,067 | 7,714 | 8,887 | 8,667 | 9,317 | | | | | |
| 59 | Total Capital And Liabilities | 14,794 | 15,706 | 17,862 | 18,629 | 20,153 | | | | | |
| 60 | **ASSETS** | | | | | | | | | | |
| 61 | NON-CURRENT ASSETS | | | | | | | | | | |
| 62 | Tangible Assets | 3,165 | 3,968 | 4,080 | 4,192 | 4,960 | | | | | |

Now, we do not need all the items the value for all the items in the balance sheet for projection rather we just calculated the value for non current liabilities for next five years.

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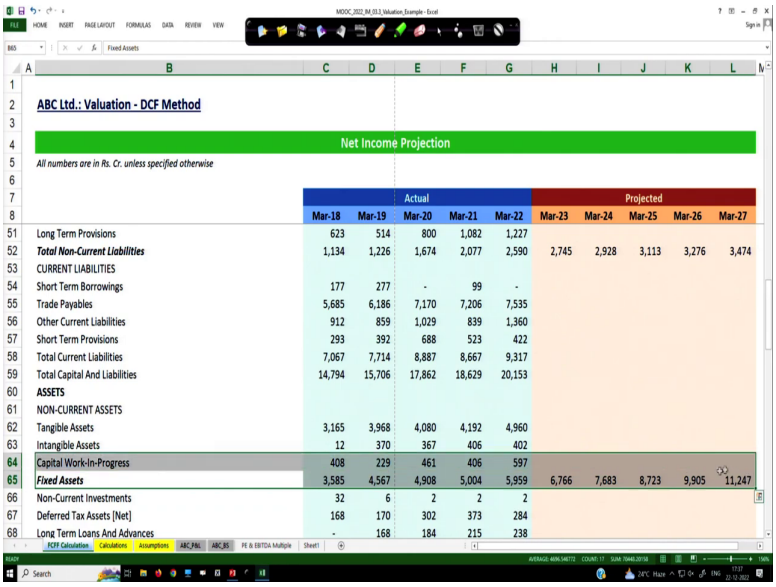

ABC Ltd.: Valuation - DCF Method

Net Income Projection

*All numbers are in Rs. Cr. unless specified otherwise*

| | | Actual | | | | | Projected | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Mar-18 | Mar-19 | Mar-20 | Mar-21 | Mar-22 | Mar-23 | Mar-24 | Mar-25 | Mar-26 | Mar-27 |
| 51 | Long Term Provisions | 623 | 514 | 800 | 1,082 | 1,227 | | | | | |
| 52 | ***Total Non-Current Liabilities*** | 1,134 | 1,226 | 1,674 | 2,077 | 2,590 | 2,745 | 2,928 | 3,113 | 3,276 | 3,474 |
| 53 | CURRENT LIABILITIES | | | | | | | | | | |
| 54 | Short Term Borrowings | 177 | 277 | - | 99 | - | | | | | |
| 55 | Trade Payables | 5,685 | 6,186 | 7,170 | 7,206 | 7,535 | | | | | |
| 56 | Other Current Liabilities | 912 | 859 | 1,029 | 839 | 1,360 | | | | | |
| 57 | Short Term Provisions | 293 | 392 | 688 | 523 | 422 | | | | | |
| 58 | Total Current Liabilities | 7,067 | 7,714 | 8,887 | 8,667 | 9,317 | | | | | |
| 59 | Total Capital And Liabilities | 14,794 | 15,706 | 17,862 | 18,629 | 20,153 | | | | | |
| 60 | **ASSETS** | | | | | | | | | | |
| 61 | NON-CURRENT ASSETS | | | | | | | | | | |
| 62 | Tangible Assets | 3,165 | 3,968 | 4,080 | 4,192 | 4,960 | | | | | |
| 63 | Intangible Assets | 12 | 370 | 367 | 406 | 402 | | | | | |
| 64 | Capital Work-In-Progress | 408 | 229 | 461 | 406 | 597 | | | | | |
| 65 | ***Fixed Assets*** | 3,585 | 4,567 | 4,908 | 5,004 | 5,959 | 6,766 | 7,683 | 8,723 | 9,905 | 11,247 |
| 66 | Non-Current Investments | 32 | 6 | 2 | 2 | 2 | | | | | |
| 67 | Deferred Tax Assets [Net] | 168 | 170 | 302 | 373 | 284 | | | | | |
| 68 | Long Term Loans And Advances | - | 168 | 184 | 215 | 238 | | | | | |

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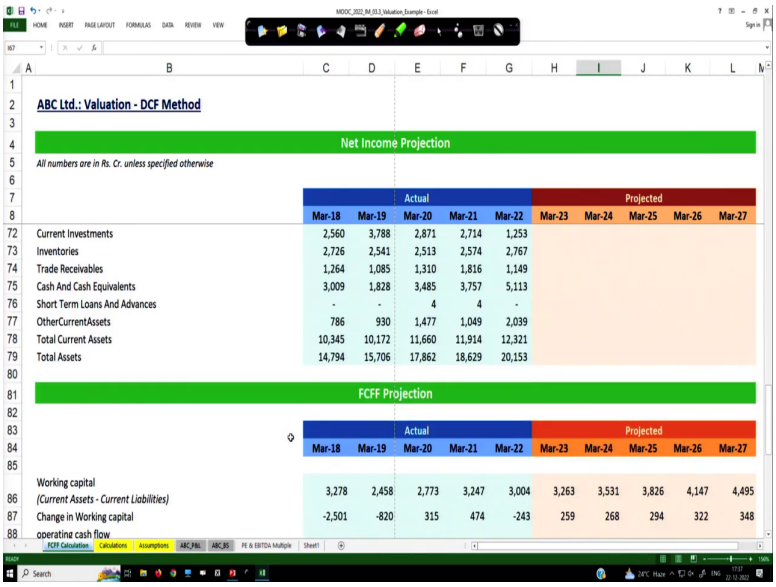

ABC Ltd.: Valuation - DCF Method

Net Income Projection

*All numbers are in Rs. Cr. unless specified otherwise*

| | Actual | | | | | Projected | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Mar-18 | Mar-19 | Mar-20 | Mar-21 | Mar-22 | Mar-23 | Mar-24 | Mar-25 | Mar-26 | Mar-27 |
| Current Investments | 2,560 | 3,788 | 2,871 | 2,714 | 1,253 | | | | | |
| Inventories | 2,726 | 2,541 | 2,513 | 2,574 | 2,767 | | | | | |
| Trade Receivables | 1,264 | 1,085 | 1,310 | 1,816 | 1,149 | | | | | |
| Cash And Cash Equivalents | 3,009 | 1,828 | 3,485 | 3,757 | 5,113 | | | | | |
| Short Term Loans And Advances | - | - | 4 | 4 | - | | | | | |
| OtherCurrentAssets | 786 | 930 | 1,477 | 1,049 | 2,039 | | | | | |
| Total Current Assets | 10,345 | 10,172 | 11,660 | 11,914 | 12,321 | | | | | |
| Total Assets | 14,794 | 15,706 | 17,862 | 18,629 | 20,153 | | | | | |

FCFF Projection

| | Actual | | | | | Projected | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Mar-18 | Mar-19 | Mar-20 | Mar-21 | Mar-22 | Mar-23 | Mar-24 | Mar-25 | Mar-26 | Mar-27 |
| Working capital *(Current Assets - Current Liabilities)* | 3,278 | 2,458 | 2,773 | 3,247 | 3,004 | 3,263 | 3,531 | 3,826 | 4,147 | 4,495 |
| Change in Working capital | -2,501 | -820 | 315 | 474 | -243 | 259 | 268 | 294 | 322 | 348 |
| operating cash flow | | | | | | | | | | |

We also calculated the total value of fixed asset for next five years and similarly, we calculated the working capital requirement.

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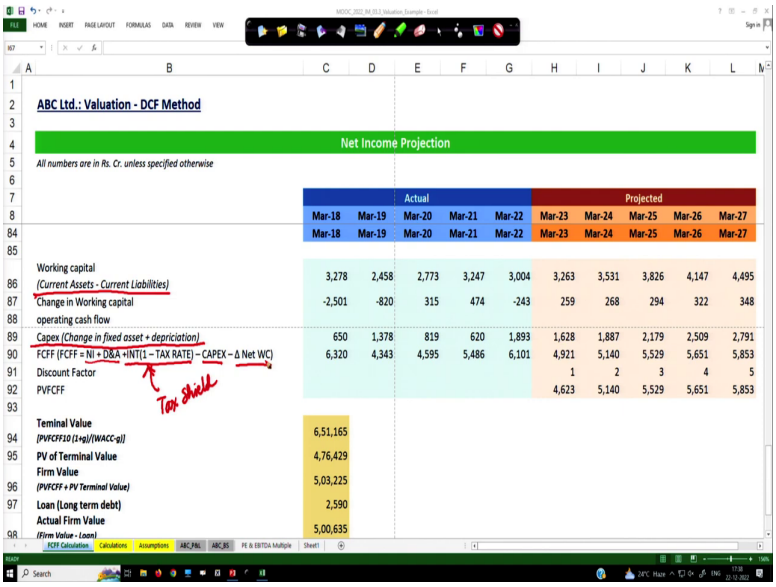

ABC Ltd.: Valuation - DCF Method

Net Income Projection

All numbers are in Rs. Cr. unless specified otherwise

| | | Actual | | | | | Projected | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Mar-18 | Mar-19 | Mar-20 | Mar-21 | Mar-22 | Mar-23 | Mar-24 | Mar-25 | Mar-26 | Mar-27 |
| 84 | | Mar-18 | Mar-19 | Mar-20 | Mar-21 | Mar-22 | Mar-23 | Mar-24 | Mar-25 | Mar-26 | Mar-27 |
| 85 | | | | | | | | | | | |
| 86 | Working capital (Current Assets - Current Liabilities) | 3,278 | 2,458 | 2,773 | 3,247 | 3,004 | 3,263 | 3,531 | 3,826 | 4,147 | 4,495 |
| 87 | Change in Working capital | -2,501 | -820 | 315 | 474 | -243 | 259 | 268 | 294 | 322 | 348 |
| 88 | operating cash flow | | | | | | | | | | |
| 89 | Capex (Change in fixed asset + depriciation) | 650 | 1,378 | 819 | 620 | 1,893 | 1,628 | 1,887 | 2,179 | 2,509 | 2,791 |
| 90 | FCFF (FCFF = NI + D&A +INT(1 – TAX RATE) – CAPEX – Δ Net WC) | 6,320 | 4,343 | 4,595 | 5,486 | 6,101 | 4,921 | 5,140 | 5,529 | 5,651 | 5,853 |
| 91 | Discount Factor | | | | | | 1 | 2 | 3 | 4 | 5 |
| 92 | PVFCFF | | | | | | 4,623 | 5,140 | 5,529 | 5,651 | 5,853 |
| 93 | | | | | | | | | | | |
| 94 | Teminal Value [PVFCFF10 (1+g)/(WACC-g)] | 6,51,165 | | | | | | | | | |
| 95 | PV of Terminal Value | 4,76,429 | | | | | | | | | |
| 96 | Firm Value (PVFCFF + PV Terminal Value) | 5,03,225 | | | | | | | | | |
| 97 | Loan (Long term debt) | 2,590 | | | | | | | | | |
| 98 | Actual Firm Value (Firm Value - Loan) | 5,00,635 | | | | | | | | | |

Tax shield

So, as we understand working capital requirement is basically the difference between asset current assets and current liability. So, we estimated the working capital requirement which gives us the change in working capital and then we also calculated the Capex which is basically change in fixed asset plus depreciation the capital expenditure component and this way we calculate the free cash flow.

So, as I was discussing earlier free cash flow is net income plus depreciation and amortization and then a tax shield which is nothing, but calculated using interest into 1 minus tax rate. So, tax shield in accounting is basically the advantage coming to the company because of lower tax payment and then we have the CAPEX and change in net working capital.

With all these numbers we are able to find the free cash flow to the firm FCFF that is for next five years from 2023 March till 2027 March. And, with these numbers we use the discount factor and we find the present value of all these free cash flow to the firm for next five years.

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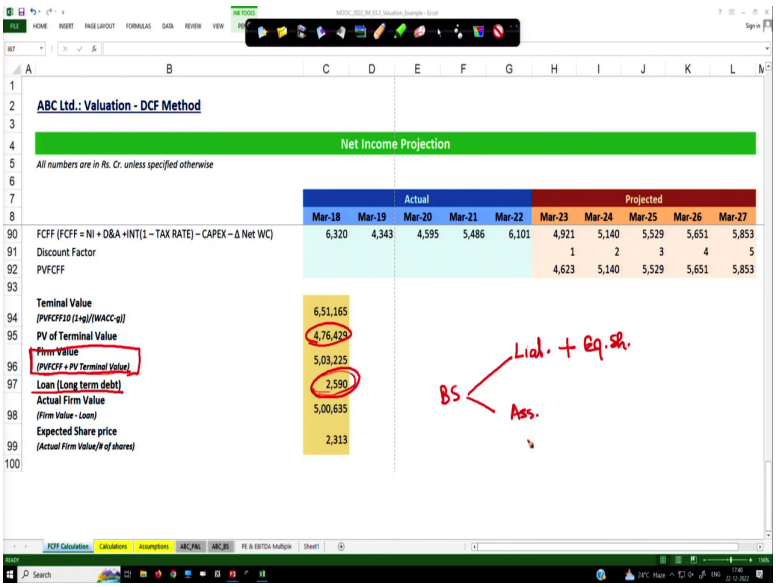


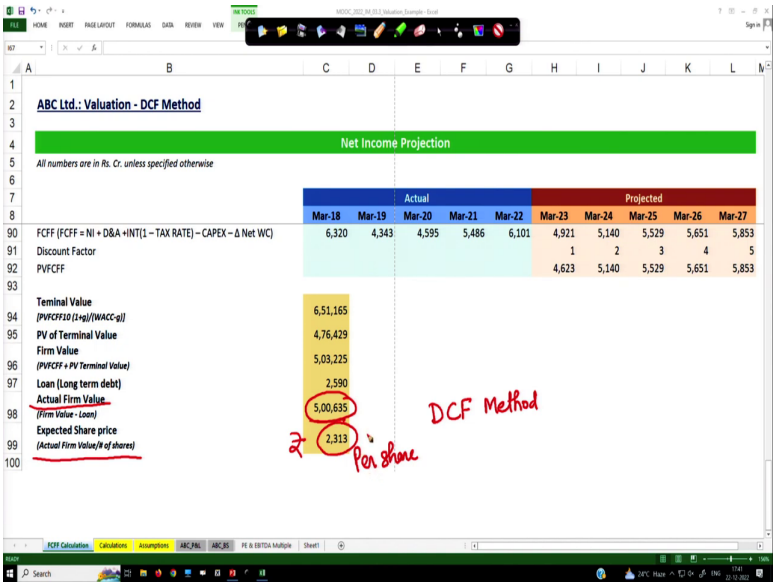

So, the next task is to calculate the present value. So, all we have to do is we have to use this present value of future cash flow to the firm and we have to also find the present value of terminal value. So, terminal value is basically at the end of five year that is ending 31st March 2027 we will have some terminal value.

And we will have the firm value in terms of the sum of present value of free cash flow to the firm and present value of terminal value as the firm value. And, once we have the firm value, we adjust this firm value for long term debt which means the company will have might have

some debt in the year and that debt has to be adjusted. So, after the debt is paid, it is assumed that after the debt is paid the remaining value is for the equity holders, right.

So, because typically when we look at the balance sheet, we know that it is liability and assets, where liability might have loans and other liabilities and equity shareholders. So, if we have the value of the firm derived and we pay all the liabilities, then the remaining value is left over for the value for shareholders. So, the actual value of the firm is this much in rupees crore and then we divide it by the number of shareholders to find the present value of each share.

(Refer Slide Time: 37:17)




Now, how do we know whether these this number of present value of the cash free cash flow or as we have discussed about discounted cash flow method. So, where we have discounted

the cash free cash flow to the firm and arrive at a per share value. So, per share value on this date is calculated to be rupees 2,313.

Now, this should be the as I share this should be the price of the share for this particular company and we can validate it or we can compare it with the price current price of the company in the market.

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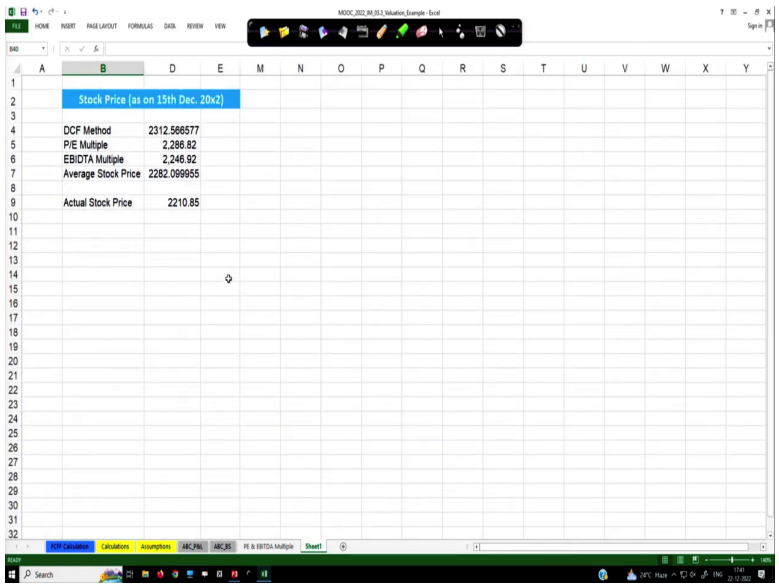
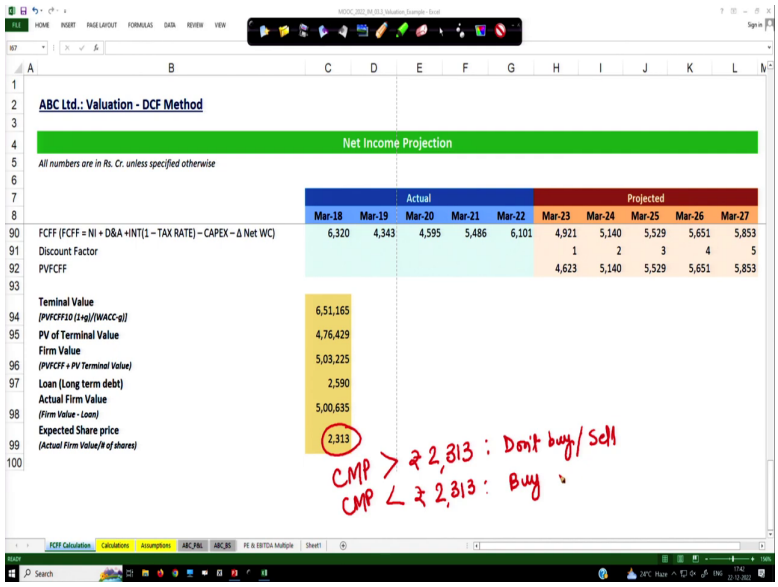



Let us assume that this is the current price of the company in the market and, we can then compare whether it is higher or lower than the value that we have calculated.

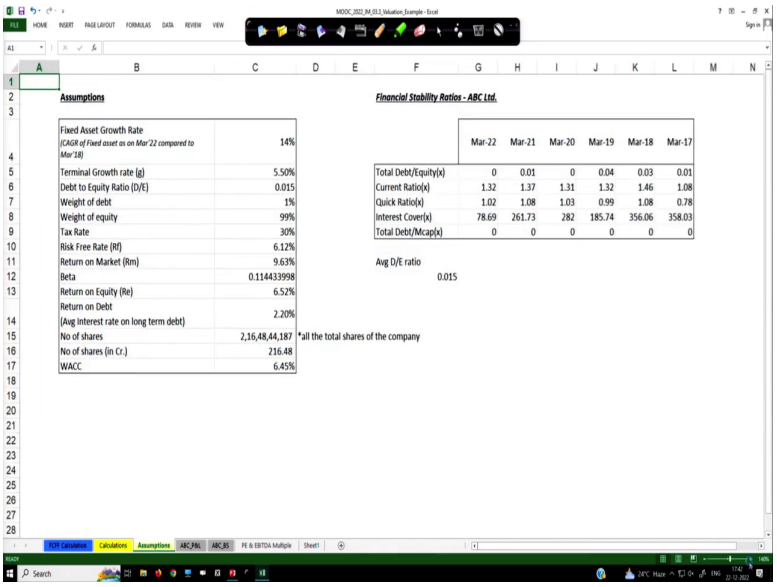
(Refer Slide Time: 38:10)




And, if it is if the current price of the share as I say if the current market price of the share is greater than rupees 2,313, then do not buy and if current market price is lesser than the value that we have arrived by calculating this value then buy. Well, here we can assume that if you are holding the share already, you should sell or if you are a smart investor and you have the scale to short sell the short selling strategy can be implemented as well.

And that is how we use the discounted cash flow approach or DCF approach to find the value of the shares using projected income statement and balance sheet. With this example, I must highlight that this example is based on certain assumptions, particularly with respect to the calculation of growth rate and cost of capital.

(Refer Slide Time: 39:12)



**Assumptions**

| | |
|---|---|
| Fixed Asset Growth Rate *(CAGR of Fixed asset as on Mar'22 compared to Mar'18)* | 14% |
| Terminal Growth rate (g) | 5.50% |
| Debt to Equity Ratio (D/E) | 0.015 |
| Weight of debt | 1% |
| Weight of equity | 99% |
| Tax Rate | 30% |
| Risk Free Rate (Rf) | 6.12% |
| Return on Market (Rm) | 9.63% |
| Beta | 0.114433998 |
| Return on Equity (Re) | 6.52% |
| Return on Debt (Avg Interest rate on long term debt) | 2.20% |
| No of shares | 2,16,48,44,187 |
| No of shares (in Cr.) | 216.48 |
| WACC | 6.45% |

*all the total shares of the company

***Financial Stability Ratios - ABC Ltd.***

| | Mar-22 | Mar-21 | Mar-20 | Mar-19 | Mar-18 | Mar-17 |
|---|---|---|---|---|---|---|
| Total Debt/Equity(x) | 0 | 0.01 | 0 | 0.04 | 0.03 | 0.01 |
| Current Ratio(x) | 1.32 | 1.37 | 1.31 | 1.32 | 1.46 | 1.08 |
| Quick Ratio(x) | 1.02 | 1.08 | 1.03 | 0.99 | 1.08 | 0.78 |
| Interest Cover(x) | 78.69 | 261.73 | 282 | 185.74 | 356.06 | 358.03 |
| Total Debt/Mcap(x) | 0 | 0 | 0 | 0 | 0 | 0 |

Avg D/E ratio

0.015

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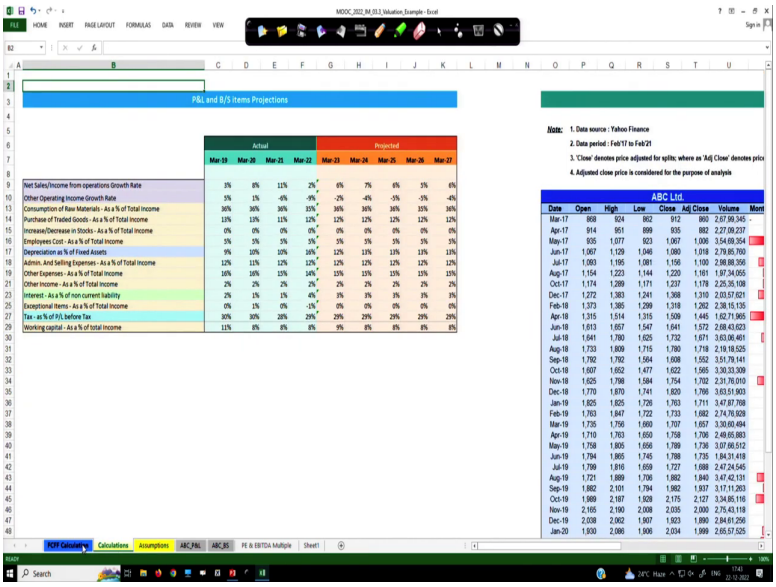


These assumptions are to be first calculated in terms of the growth rate and the proportion of debt to equity ratio. These are certain technical requirement that are to be calculated first before we go to calculate this free cash flow to the firm and subsequently the actual value of the firm using this discounting discounted cash flow approach.

So, with this example, I think we have understood the approach of discounted cash flow method DCF method for understanding the value of a firm.

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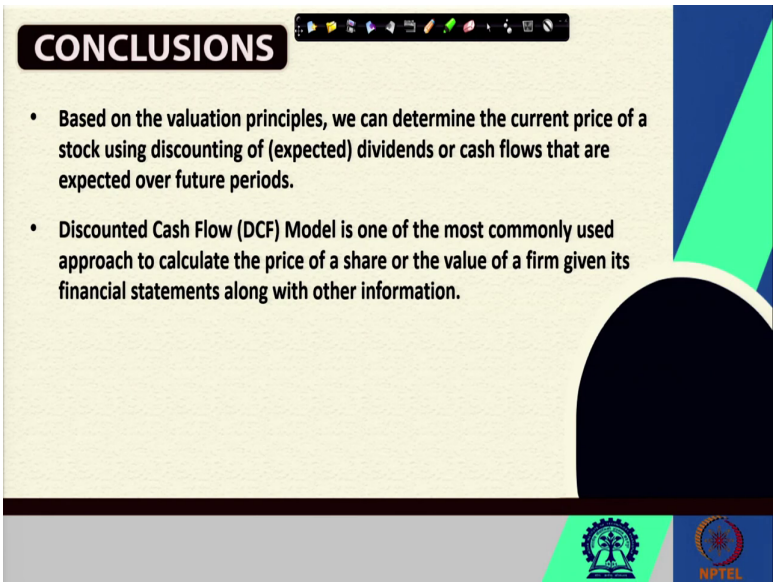


And, with this I would like to sum up here and as we have seen earlier that in order to value equity share we need to determine either the present value of all the future dividends that the company or the investor is, company is intending to pay to the investor and investor is expecting to receive.

Or we can also find the expected cash flows to the firm or to the equity holders in order to arrive at the present value of all those future cash flows by applying the discounted cash flow approach, which is one of the most commonly used approaches for calculating the price of a share or the value of a firm given its financial statement and other information.

As I already pointed out, other information might be required and that will help an investor to make a decision whether the value is higher or lower than the current market price. That is all.

Thank you very much.