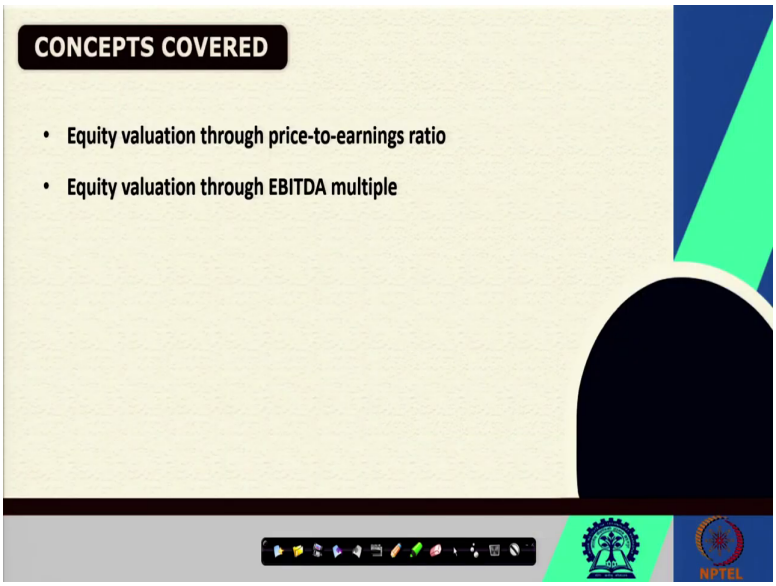
Investment Management
Prof. Abhijeet Chandra
Vinod Gupta School of Management
Indian Institute of Technology, Kharagpur

Lecture - 14
Equity Valuation Ratios

Hi there, welcome back to the course Investment Management and we are discussing about Equity Valuation approaches this week.

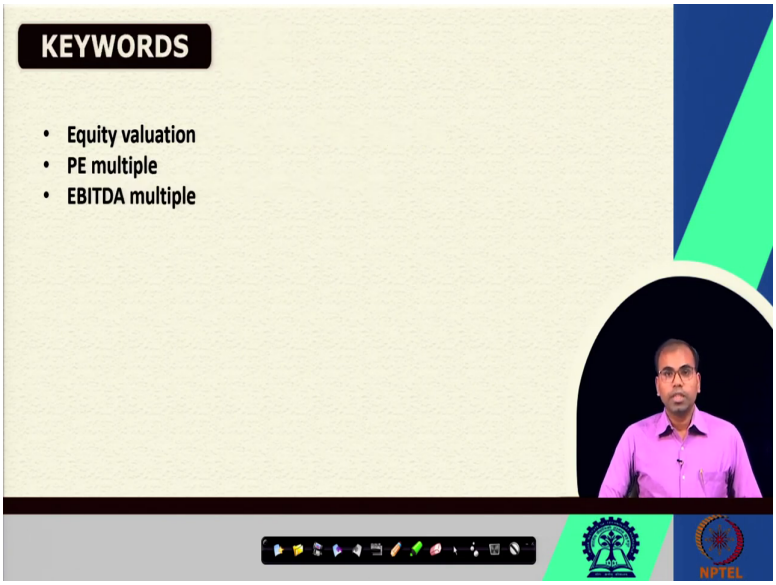
(Refer Slide Time: 00:36)



In this particular session, we will talk about two indicators which are mostly used for valuing equity assets. Basically, we are going to talk about price-to-earnings ratio as one of the indicators and another indicator that are commonly used for finding the value of equity assets

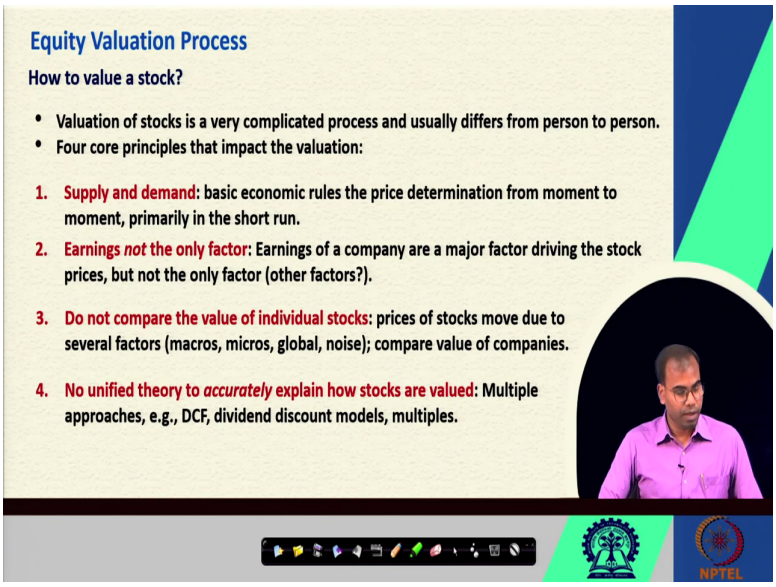
is EBITDA multiple or we also know it as earnings before interest, tax, depreciation and amortization multiple.

(Refer Slide Time: 01:05)



What base what these twp indicators or ratio serve as the tool for finding the right value of asset.

(Refer Slide Time: 01:11)



And, basically it serves a significant useful tool for an investor to decide whether an asset whether a stock is accurately valued or not. So, earlier we have discussed about discounted cash flow approach that is DCF approach where we try to forecast future cash flows generated through business and bring those future cash flows to present time by discounting them and to figure out the current value of the company or current value of the equity and using it for decision making.

We have also discussed about dividend discounting approach where we consider dividend as the only cash flow coming to the investor and discounting future dividend to the present time, we try to find the current value of the stock and based on that suggested some decisions.

Now, when we go to the basic of valuation approach for any equity asset, we know that it is a very important step or very important process where investors has to decide whether to invest

in a stock or not whether to buy or hold or sell a particular equity asset. We understand theoretically there are four core principles that basically impact the valuation process for an equity asset.

As it happens in most of the economics and finance theories, supply and demand serves the first tool or first principle that basically rules the price determination from one moment to another moment particularly in the short run. Which means, if there are more demand for a particular stock and supply being constrained the price is going to rise and vice versa.

So, whenever it so happens that because of some reason the demand for a particular stock from the investor side rises, the price of that particular stock rise as well because in short run supply cannot be increased. 2nd principle that basically rule the price determination approach is the fact that earnings are not the only factor that drive prices.

Typically, we expect that the price of a stock should be a reflection of future earnings for that of that company. However, earnings of a particular company are a major factor driving the stock prices, but they are not the only factor that are going to drive prices of a particular company's stock.

There are some other factors including external factors that can drive the prices of a stock in the market. Noise being one, economic factors particularly, macroeconomic factors being other set of factors which can drive the prices up or down. Sometimes global factors such as geopolitical situations including wars, famine and other situations can also create some sort of uncertainties in the market that might reflect in the prices of the asset.

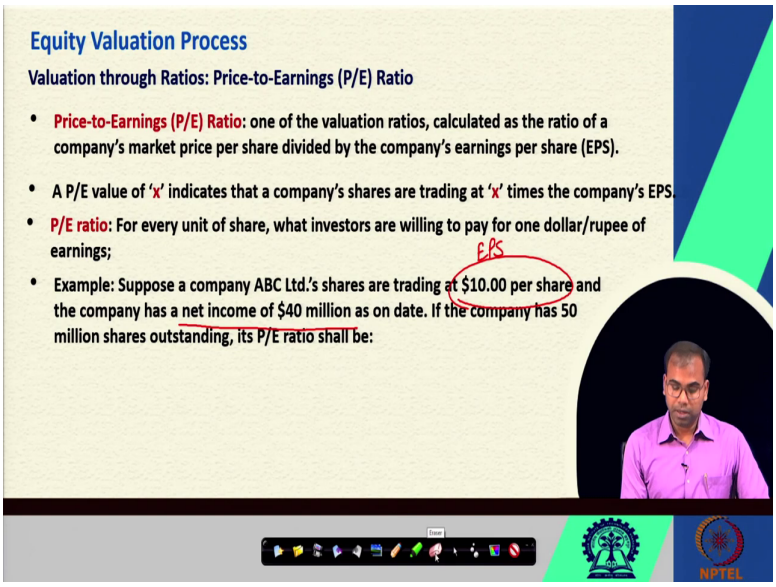
3rd principle that govern the price determination mechanism is the approach that suggest not to compare the value of individual stocks. We know that we cannot compare apples with an orange. Price of stocks of a particular company move due to certain factors, but price of stock of a different company can move because of some other factors.

For example, if there is a company that is more export driven which means its major portion of revenue come through exports, global factors might be of more interest or more importance for determining or for affecting the prices of the stock of this company.

However, if a company that operates mostly locally, domestic factors could be of more significant interest for the investors because those are the factors that might be driving the prices up or down. So, it is recommended that investors should compare value of companies rather than value of individual stocks across sectors and domains.

And, finally, the we should understand that there is no unified theory that can accurately explain how stocks are valued. There are different approaches which we can use ranging from dividend discount method to discounted cash flow approach and to the points that we are going to discuss here about multiples or ratios that can be used for valuing the stocks. There are multiple approaches and these approaches operate under certain constraints or assumptions and we have to be mindful of that.

(Refer Slide Time: 06:30)



With this background, if we start discussing about the first ratio in this session that is price-to-earnings ratio. As the name itself suggests price-to-earnings ratio or P by E ratio is one of the one of the majorly used valuation ratios and we can calculate price-to-earnings ratio or P E ratio as the ratio of a company's market price per share divided by the company's earnings per share.

Which means, we are trying to find a relationship between the market price of a company's share, and the earnings that are available for each shareholder from the business that the company operates in.

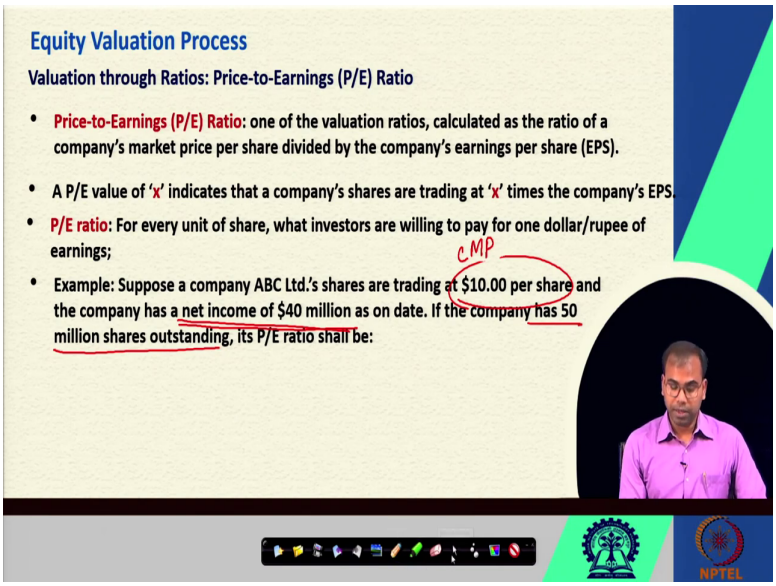
If we have a value of PE ratio or PE by multiple as x, it indicates that the company's shares are trading at x times the company's earnings per share which means for every rupee of

earnings per share the price is x times that earnings. For every unit of share it also shows what an investor is willing to pay for 1 dollar or 1 rupee of earnings in the company.

And, if we try to understand it through some hypothetical example, suppose that a company ABC Limited share are trading at 10 dollar per share which means every share is available for 10 dollar currently and the company has a net income of 40 million as on date, if the company has 50 million shares outstanding, what should be the price-to-earnings ratio in this case? We go to the numbers.

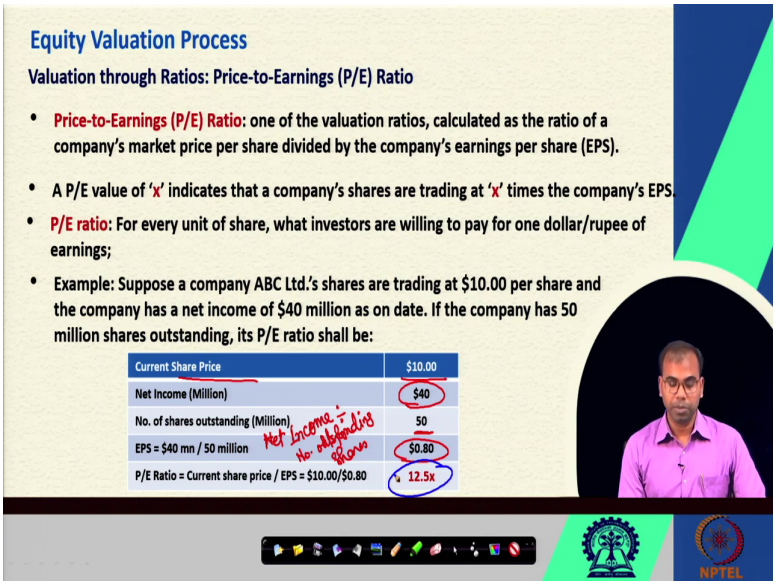
The number suggest there is earnings per share of 10 dollar per share. So, we have earnings per share of 10 dollars and a net income of 40 million the that can be as on date.

(Refer Slide Time: 08:51)



Basically, this is current market price and this is the total earning for the shareholders and company has 50 million share shares outstanding. So, the price-to-earnings ratio of this particular company can be calculated in the following way.

(Refer Slide Time: 09:09)



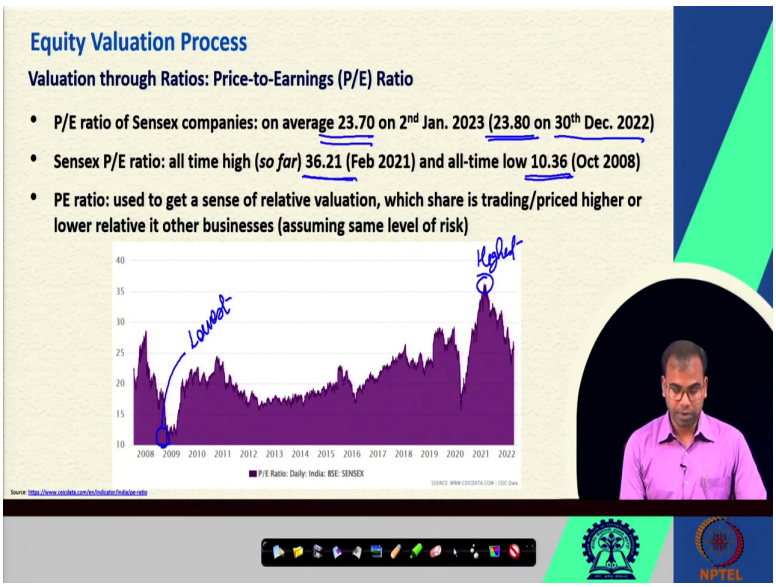
So, if we try to use these numbers, we know that net income for this company is 40 million, current share price of this company is 10 dollar per share and number of shares outstanding which means number of shareholders holding each share is 50 million here. So, earnings per share can be calculated by total earnings.

So, basically, we consider net income divided by number of outstanding shares. If we use that relationship between earnings and number of outstanding shares, we find an earnings per

share of 0.8 dollar. So, we will simply calculate price-to-earnings ratio or P E ratio as the ratio of current share price divided by earnings per share. So, it gives us a value of 12.5 times.

So, we can say that this company shares are trading at 12.5 times of it is earnings per share, which means for every rupee or every dollar of earnings, you are paying 12.5 rupees in terms of price. So, this is the simplest approach or simplest way to explain P E ratio or P E multiple.

(Refer Slide Time: 10:47)



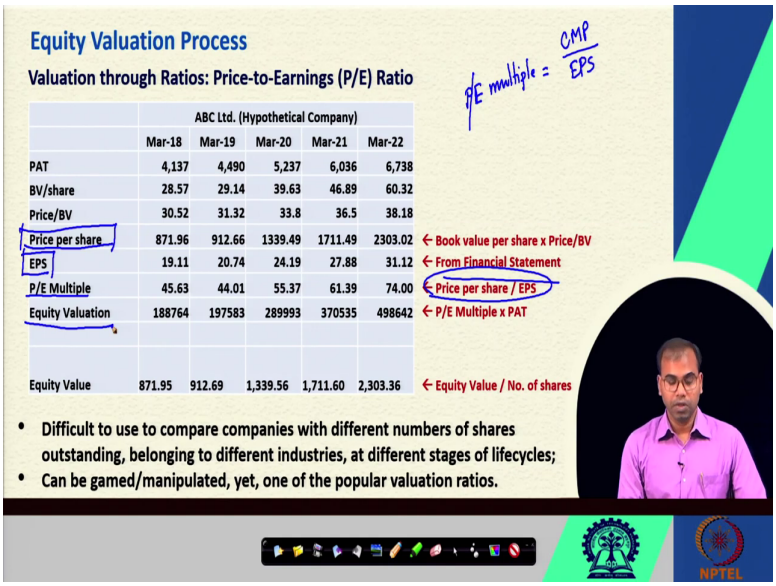
If we try to understand more detail about it, we know that looking at Indian stock market, if we take the historical data as on 2nd January 2023, price to earnings, multiple price-to-earnings ratio of all the companies included in the Sensex on an average was 23.7 which means on an average they are trading at 23.7 times their average earnings which is basically lower than the P E ratio on the previous trading day that is 30th December 2022.

Similarly, if we look at the historical trend of price-to-earnings multiple on the Sensex companies on in February 2021, the price-to-earnings multiple of all the Sensex companies on an average was all time high to be 36.21 times and in October 2008, it was an all time low to the level of 10.36. So, what can we infer from these numbers?

Basically, we can make inference from these numbers or P E multiples of any individual company or a set of companies which could be clubbed together for some or the other reason. We can suggest that P E ratio can be used to get a sense of relative valuation which means which share is trading or which share is priced higher or lower relative to other businesses. Under the assumption that all these businesses have similar types of risk or belong to the same sector so, we can compare them together.

This graph essentially shows the historical trend of price-to-earnings ratio for BSE Sensex companies. On an average 50 companies included in the BSE Sensex will show this has shown this kind of trend of P E multiple and as pointed out earlier, you can see in sometime in February 2021, it was the highest and in October 2008, it was the lowest year. So, it shows basically the relative valuation of a company or a set of companies and their valuation in terms of prices reflected as a proportion of their earnings or as a multiple of their earnings.

(Refer Slide Time: 13:40)



If we take some more hypothetical example here, let us take a look at this hypothetical company ABC Limited where which have 5 years data. We look at the data from for March 2018, March 2019, March 2020, 21 and 22 and we can see how we can arrive at the value or the price using P E multiple or how we can find the relationship between PE multiple and other factors.

So, here if we look at this data set for a particular company, we know that book value per share into price by book value can be giving us price per share. So, we can find the price per share of the company from the historical data, from their financial statements, from the stock exchange. We can also find earnings per share from the financial statement.

So, as we understand earnings per share is essentially the earnings left after meeting all the expenses for shareholders, it is the last value that is available for them. Using these two

numbers, we can calculate price-to-earnings multiple which is basically calculated by using this formula. So, PE multiple is price-to-earnings multiple is typically calculated as current market price or price per share divided by earnings per share.

So, when we have this price-to-earnings ratio or PE multiple, we can find the equity valuation for the entire business for the entire company. So, the approach will be we have PE multiple, we have profit after tax. So, we can see the value of the company is equity as the function of PE multiple and profit after tax and this will give us the value of this company.

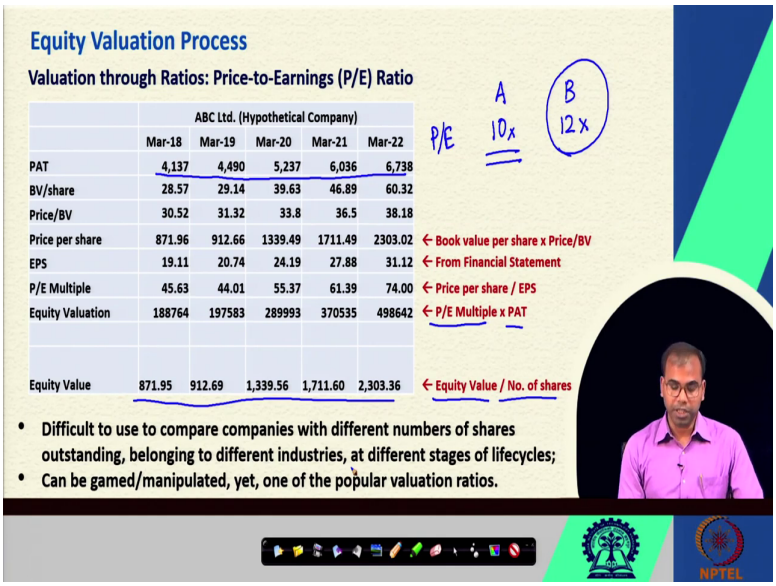
And, subsequently we can also calculate the equity value using the simple approach of equity value, total equity value divided by number of shares outstanding. So, this gives us the price of every equity share in terms of value derived from their earnings or basically price-to-earnings multiple.

Here we can see that the company's earnings have been significantly increasing in recent years and so, are the prices or the value of equity because of the direct relationship with price-to-earnings price-to-earnings ratio or earnings per share. As we can figure out from this example or from the approach that it is difficult to compare different companies using this method, using this approach.

Because different companies might have different number of share outstanding, they might belong to different industries, different sectors, they might be at different stages of business life cycle and that is why we cannot simply compare price-to-earnings ratio of different companies.

However, we can if we have two companies or more companies belonging to same sector, those two or more companies having same scale of business, they are more or less comparable. Then we can use price-to-earnings multiple as the indicator of higher or lower valuation.

(Refer Slide Time: 17:42)

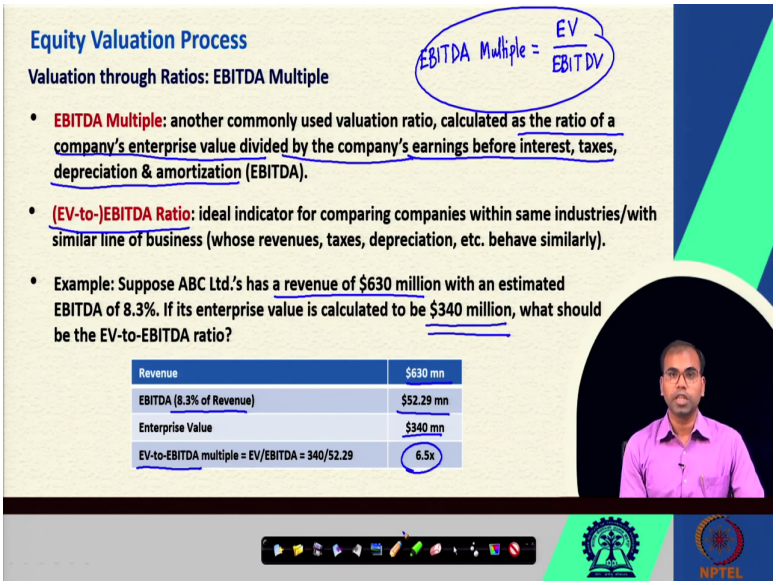


So, for example, we if we have two companies, let say A and B if we have company A and company B and for company A and B, we have let say P E multiple as 10 times and 12 times. We can see that this company is trading at relatively lower P E multiple which means it is less expensive when we compare it with compare the price with the earnings which means for every 1 rupee of earnings in company A, I am paying 10 times price, in case of company B for every one rupee of earnings, I am paying 12 times the price.

So, basically when we have similar companies belonging to same sector, we can use price-to-earnings multiple as a as an indicator of relative valuation. One negative aspect of price-to-earnings multiple is that it can be gamed or manipulated because then it is a function of certain numbers and those numbers could be manipulated in short run. However, this is

one of the most popular valuation ratios commonly used by investors and analysts in their decision making.

(Refer Slide Time: 19:03)



Another indicator that I am going to talk about in this particular session is EBITDA multiple or as suggested earlier it is earnings before interest, taxes, depreciation and amortization. So, basically what a EBITDA multiple suggest is it is an indicator for comparing companies that belong to same sector or same industry that are in similar line of businesses and we can find the revenues, taxes, depreciation, etcetera on a comparable level.

So, if there are two or more companies belonging to similar sector, similar lines of business having similar revenues, paying similar taxes, having similar sort of assets on which they are creating depreciation and they behave different in a similar fashion, then we can use EBITDA multiple as an indicator for relative valuation.

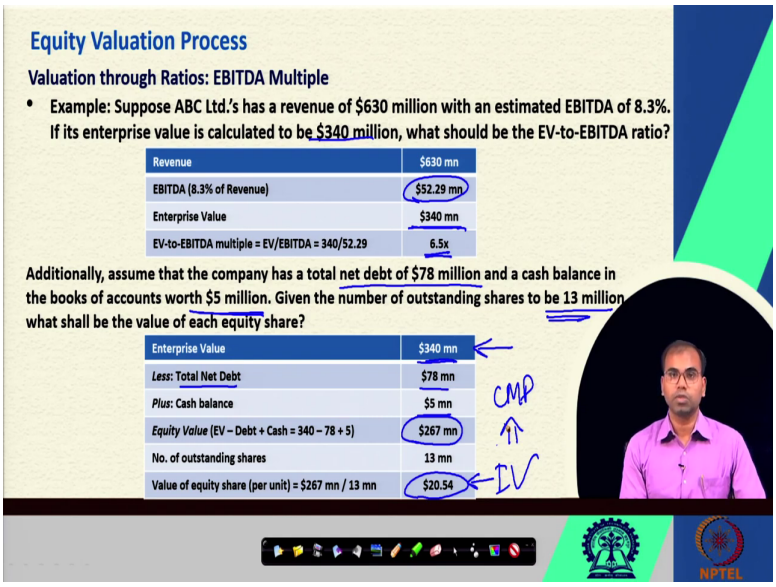
So, to calculate the EBITDA multiple or as it is also known popularly as EV-to-EBITDA ratio which is enterprise value to EBITDA ratio, we calculate this as the ratio of a company's enterprise value divided by companies EBITDA. Which means, when we try to find the EBITDA multiple, we should use enterprise value and divide it by EBITDA.

We will look at one example where we will calculate enterprise value or we will use the enterprise value as given and we will try to calculate EBITDA multiple. So, when we take some hypothetical numbers in an example, we see here that suppose there is a company that has a revenue of 630 million dollar with an estimated EBITDA of 8.3 percent which means of for every 100 rupees or 100 dollar of revenue EBITDA stands at 8.3 dollars.

So, if we are given the enterprise value as 340 million, what should be the EV to EBITDA ratio and it is as simple as that. We have already highlighted, it is as simple as that if we use these numbers where we have revenue to be 630 million, EBITDA is 8.3 percent of revenue which means EBITDA for this company in this particular period is 52.29 million and enterprise value is also given to be 340 million.

So, we know the enterprise value and if we use this formula for calculating EV to EBITDA ratio as 340 divided by 52.29, then we find EBITDA multiple or EV to EBITDA ratio to be 6.5 times, which means the company has EBITDA or earnings before interest, tax, depreciation and amortization as this much fraction of total enterprise value.

(Refer Slide Time: 22:44)



So, if we try to see this concept in the context of the previous example of the hypothetical company we can calculate these numbers. So, here are this the approach through which we can calculate EV to EBITDA ratio. Suppose the company has 630 million of revenue and an estimated EBITDA of 8.3 percent.

So, we can find the value of EBITDA to be 52.29 million as we have seen and companies enterprise value is calculated to be 340 million and we found that EBITDA multiple is 6.5 times. Now, assume that the company has a total net debt of 78 million and a cash balance of cash balance basically in the books of account is worth 5 million. So, there are some additional information.

So, net debt of 78 million and cash of 5 million. If the company has a number of shares outstanding to be 30 million, what how we can translate this into the value of each equity

share. So, here is the approach we know the enterprise value, we note that when we have to find the value of the equity. So, enterprise value is basically the value of the entire business, but we have to find the value of the equity.

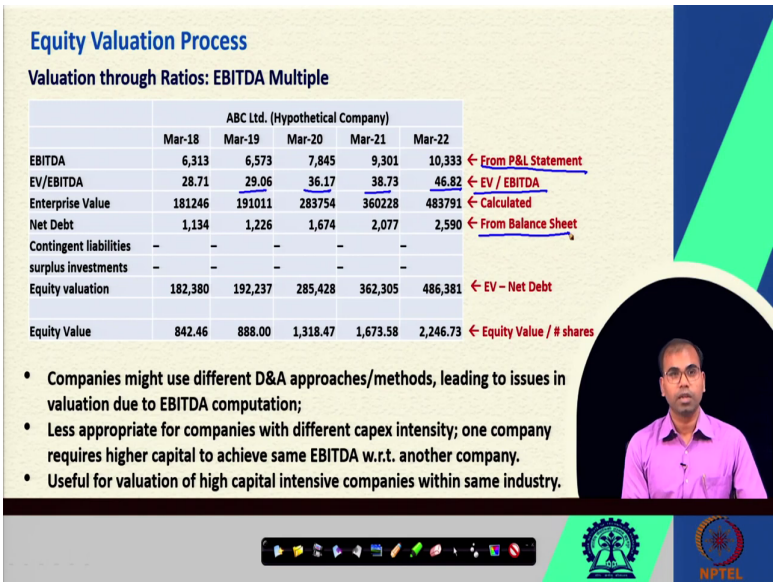
So, when we try to find the value of the equity inferred from enterprise value, then what we have to do is we have to deduct debt which means the debt obligations have to be taken out from the enterprise value and we need to add the cash because this is the liquid asset that has to be added back to the enterprise value in this case.

So, we deduct total debt, we added cash balance. So, we find equity value of 267 millions and we now we know that number of outstanding share is 13 million. So, we can simply calculate the value of equity share per unit is going to be 267 million divided by 13 million. So, this is the value of equity share.

Now, this is the way we can use these numbers for finding the value of share and as it goes and we have discussed earlier also in practice, that if this is the value that we find in terms of let say intrinsic value which means then we can use this for comparing it with current market price and make a decision.

So, if intrinsic value is higher than the current market price, then typically it is a by decision or a typically it is also considered to be taking a long decision from investor's point of view and if intrinsic value is less than current market price, then we can consider selling if we are holding it or we not entering the market or not buying the asset because the value is current market price is higher than what the value should be.

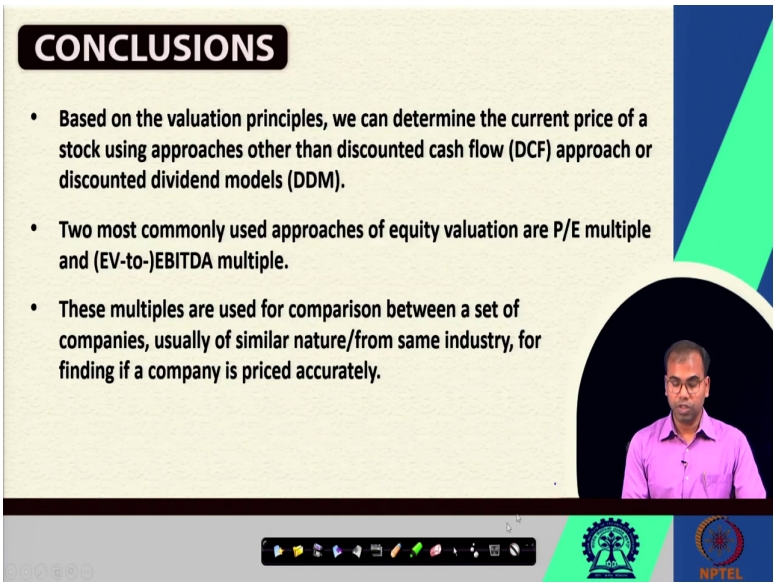
(Refer Slide Time: 26:23)



So, with this example, we can just look at the previous hypothetical company ABC Limited where we have all the numbers given. We have EBITDA which is coming from profit and loss statement; we have EV to EBITDA multiple or EV to EBITDA ratio calculated as 28 in 2000 28.71 in 2018, it is moving to 29 then 36, 38, 46. So, we can see here EV to EBITDA multiple or EBITDA multiple is increasing significantly and we can calculate the enterprise value using the numbers given.

Here we are able to fetch data on net debt from the balance sheet. So, we can find the equity valuation by deducting net debt from the enterprise value and we can find the value of company and we can use this for deriving the value of every equity share.

(Refer Slide Time: 27:31)



And, some that is how we typically take a decision as discussed earlier, we have discussed in previous sessions while talking about investment approaches that when we have intrinsic value or the value that we calculate on the basis of one or the other approaches.

If we have an asset for which we have calculated some value, if that value stands to be higher than the current price, we typically hope to typically should buy that particular asset because it is undervalued in the market, that is why it is selling at a lower price than what it should be and vice versa.

So, the same principle goes here also. If we have value derived or calculated using PE ratio or EBITDA multiple to be higher than the current market price, we can as an investor, we can buy that share otherwise we should refrain from buying. So, so far we know that we have

discussed about different approaches including dividend discount method or discounted cash flow method.

In these two methods what we see is we need to forecast expected value of dividend as cash flow to the investors or we have to also find the cash flow coming to the business using financial statements. And, then discount those cash flows to the present time in order to find the present value of the entire business or present value of the equity.

In addition to these two models, we also we can also use other commonly used approaches such as PE multiple or EBITDA multiple and these multiple these indicators are commonly used for comparison between a set of companies two or more companies that are typically of similar nature or belonging to the same industry. In order to find whether a company is priced accurately more or less than it is peers having similar nature similar characteristics. With this I stop here.

(Refer Slide Time: 29:47)

Thank you very much.