Security Analysis & Portfolio Management
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Lecture 32
Equity Valuation – IX

Welcome back. So, before the break I was discussing, we had discussed the equivalence of the dividend discount model and the RI model for an infinite summation for a firm within finite life in line with the going concern concept. Let us look at how we can arrive at the same equivalence for a finite life case. So, we proved its result by the use of mathematical induction.

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EQUIVALENCE OF THE DDM & RI MODEL (FIRM WITH FINITE LIFE CASE)

We prove the result by mathematical induction.

For one year :

$$\frac{D(1)}{1+k_e} = \frac{E(0)+I(1)-E(1)}{1+k_e} = \frac{E(0)(1+k_e)-k_eE(0)+I(1)}{1+k_e} - \frac{E(1)}{1+k_e}$$

$$= E(0) + \frac{I(1)-k_eE(0)}{1+k_e} - \frac{E(1)}{1+k_e} = E(0) + \frac{RI(1)}{1+k_e} - \frac{E(1)}{1+k_e}$$

For one year what we have is, the dividend for the first year, which I represent on the extreme left-hand side of this equation D1 and the present value of this would be D1 divided by 1 plus Ke where k is the levered cost of equity.

Now, using the clean surplus relation I can write D1 as E0 plus I1, I1 is the income for the net income for the year 1 minus E1, which is the closing balance of equity. This expression arises or comes from the clean surplus relation. I can modify this or I can simplify this by writing E0 into 1 plus Ke and then deducting Ke into E0, as the second term in this equation, this is the first term this is the second term.

So, what I do is, I write the, I multiply E0 by 1 plus Ke, and because I want E0 I deduct Ke into E0. I write I1 as it is, and when I simplify this what I get is, so, what we end up with is E0 plus residual income divided by 1 plus Ke minus E1 divided by 1 plus Ke.

Let us quickly go through the steps again. We start with the left-hand side which is for one year a company for a company with a life of one year we get only one dividend at the end of the first year and the value of the company would be equal to T1 divided by 1 plus E, that is the Ke is the livered cost of equity.

Using the clean surplus relation I can write D1 as E0 plus I1 minus E1. I multiply E0 by 1 plus Ke and I deduct Ke into E0. I1 remains as it is, and E1 divided by 1 plus Ke is taken as a separate term. Now, what we have here is, I1 minus Ke into E0 which is equal to RI for the first year, RI is the residual income.

So, this expression becomes E0 1 plus Ke divided by 1 plus Ke which is E0 plus RI divided by 1 plus Ke minus E1 divided by 1 plus Ke. So, this is what we get for the one-year period. D1 upon 1 plus Ke is equal to E0 plus RI 1 upon 1 plus Ke minus E1 upon 1 plus Ke.

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For two years

$$\frac{D(1)}{1+k_e}+\frac{D(2)}{(1+k_e)^2}=E(0)+\frac{RI(1)}{1+k_e}-\frac{E(1)}{1+k_e}+\frac{D(2)}{(1+k_e)^2}$$

$$=E(0)+\frac{RI(1)}{1+k_e}+\frac{D(2)-E(1)-k_e E(1)}{(1+k_e)^2}$$

$$=E(0)+\frac{RI(1)}{1+k_e}+\frac{I(2)-E(2)-k_e E(1)}{(1+k_e)^2}$$

$$=E(0)+\frac{RI(1)}{1+k_e}+\frac{RI(2)}{(1+k_e)^2}\left(-\frac{E(2)}{(1+k_e)^2}\right)\qquad\text{———(2)}$$

EQUIVALENCE OF THE DDM & RI MODEL (FIRM WITH FINITE LIFE CASE)

We prove the result by mathematical induction.

For one year:

$$\frac{D(1)}{1+k_e} = \frac{E(0)+I(1)-E(1)}{1+k_e} = \frac{E(0)(1+k_e)-k_eE(0)+I(1)}{1+k_e} - \frac{E(1)}{1+k_e}$$

$$= E(0) + \frac{I(1)-k_eE(0)}{1+k_e} - \frac{E(1)}{1+k_e} = E(0) + \frac{RI(1)}{1+k_e} - \frac{E(1)}{1+k_e} \quad -(\text{V})$$

For two years, suppose I add the term D2 upon 1 plus Ke whole square. Now, suppose the firm has a life of two years, then its value by the dividend discount model will be equal to the present value of dividends D1 and D2 which therefore, which is equal to D1 upon 1 plus Ke plus D2 upon 1 plus Ke square. Now, D1 upon 1 plus Ke we have already established D is equal to E0 plus RI 1 upon 1 plus Ke minus E1 upon 1 plus Ke. So, we add D2 upon 1 plus Ke square to this particular expression.

Again, we do a bit of algebraic simplification in the same manner as we had done earlier. And what we end up with is E0 plus RI 1 upon 1 plus Ke plus RI 2 upon 1 plus Ke square minus E 2 upon 1 plus Ke square. This is equation one. If you look at the equation 1 and equation 2, you can see that the relationship is pretty much the same. The present value of dividends is equal to E0 plus the present value of residual income minus the term this is the extra term E2 to upon 1 plus Ke whole square. This is the extra term.

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In general, we have

$$\frac{D(1)}{1+k_e}+...+\frac{D(n)}{(1+k_e)^n}=E(0)+\frac{RI(1)}{1+k_e}+...+\frac{RI(n)}{(1+k_e)^n}-\frac{E(n)}{(1+k_e)^n}, \text{ then}$$

$$\frac{D(1)}{1+k_e}+...+\frac{D(n)}{(1+k_e)^n}+\frac{D(n+1)}{(1+k_e)^{n+1}}=E(0)+\frac{RI(1)}{1+k_e}+...+\frac{RI(n)}{(1+k_e)^n}-\frac{E(n)}{(1+k_e)^n}+\frac{D(n+1)}{(1+k_e)^{n+1}}$$

$$\frac{D(1)}{1+k_e}+...+\frac{D(n)}{(1+k_e)^n}+\frac{D(n+1)}{(1+k_e)^{n+1}}=E(0)+\frac{RI(1)}{1+k_e}+...+\frac{RI(n)}{(1+k_e)^n}+\frac{I(n+1)-k_eE(n)}{(1+k_e)^{n+1}}-\frac{E(n+1)}{(1+k_e)^{n+1}}$$

$$=E(0)+\frac{RI(1)}{1+k_e}+...+\frac{RI(n)}{(1+k_e)^n}+\frac{RI(n+1)}{(1+k_e)^{n+1}}-\frac{E(n+1)}{(1+k_e)^{n+1}} \qquad (3)$$

Now, let us assume that this is true for n. So, what we have is D1 upon 1 plus Ke plus up to Dn and upon 1 plus Ke to the power n the present value of all futured dividends for n year firm is equal to this expression. We assume this to be true in line with the usual methodology of mathematical induction, and then we add a term Dn plus 1 upon 1 plus Ke to the power n plus 1 on the left-hand side.

We assume that it is true for t equal to n years, it is true for a firm with a life of T equal to n years, and we prove that if it is true for a firm with a life of T equal to n years, then it is also true for a firm of life n plus 1 years, which is done on this slide, and we arrive at this relationship here right at the bottom which is which establishes that the relation that we had obtained in the previous slides holds for T equal to 1 year it was for T equal to 2 years. And if it holds for T equal to n years, then it also holds for T equal to n plus 1 years. So, that means, it holds for any all-positive integers n. In other words, whatever be the life of the firm this relationship withhold.

Now, the problem here is, we are having difficulty in arriving at the equivalence of the two relations of the dividend discount model and the residual income discount model because of this extra term, which I have put within a box here.

Now, if you look at this carefully, if n is the life of the firm, then the value of equity at the end of the life of the firm has necessarily got to be 0. Because whatever happens at the end of the life of the firm, whatever would remain in terms of the residual assets or residual resources available with the company would naturally be distributed to the equity shareholders and would partake the corrector of the final dividend that is to be paid to the company.

In other words, the entire value of En would be captured by Dn. So, therefore, the residual value of En after paying of everything as dividend, everything as dividend to the shareholders of the company would be 0. Therefore, in other words, if n is the life of the firm, and if you do the summation over the entire life of the firm, then this expression En upon 1 plus Ke to the power n will give you 0 contribution to the right-hand side. And therefore, we arrive at the equivalence of the dividend discount model and the residual income model, for the case of a finite firm, as it is shown here in this slide.

DETERMINANTS OF RESIDUAL INCOME

$$RI_t = (ROE_t - k_e)E_{t-1}$$
$$RI_1 = (ROE_1 - k_e)E_0$$

Now, what are the determinants of residual income? How do we define residual income? It is defined as the net income minus the equity charge. And what is the equity charge? It is Ke into the opening balance of equity. And what is net income? Net income is equal to the return on equity into the opening balance of equity.

So, we can write the residual income, as return on equity minus Ke, that is, the return that the firm is generating on its equity shareholding or for the benefit of equity shareholders minus the required return of equity shareholders the surplus thereof the excess of the return generated over the required return gives value to the firm and that is captured by the residual income.

SINGLE STAGE GROWTH MODEL

$$V_0 = E_0 + \sum_{t=1}^{\infty} \frac{RI_t}{(1+k_e)^t} = E_0 + \sum_{t=1}^{\infty} \frac{RI_1(1+g)^{t-1}}{(1+k_e)^t}$$

$$= E_0 + \frac{RI_1}{(k_e - g)} = E_0 + \frac{ROE_1 - k_e}{(k_e - g)}E_0$$

This is the single-stage growth model. The methodology of arriving at the formula is pretty much standard we get. What do we get? V0 is equal to E0, E0 is the current book value of equity, the valuation at t equal to 0 plus ROE minus Ke into E0 which is nothing, but the value of the residual income for the first year divided by Ke minus E which is where g is the growth rate and Ke is the levered cost of equity is the levered cost of equity.

So, let me repeat, ROE minus Ke, as I mentioned just now into E0 gives you the residual income. So, this expression, the numerator of the last term here on this slide is nothing but the residual income for year 1. You can easily check that this formula is absolutely parallel to the dividend discount model or the quadrants dividend discount model except for the fact that instead of the stream of dividends, we are using residual income. For the first year there we use dividend for the first year in the in the equation. And of course, there is this extra term of the current book value of equity.

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Residual income and the price to book value ratio, this is quite straightforward. You bring this E0 to the left-hand side and you get the price to book ratio or the justified price to book value ratio, as the expression that is given on the right-hand side of the last equation here. 1 plus ROE minus Ke upon Ke minus g. This is simple, you simply bring it to the E0 to the left-hand side. So, this is the justified price to book value ratio which you can arrive at using the residual income approach.

Now, we talk about asset-based valuation. What is asset-based valuation? Well, let us try to understand it. The intrinsic valuation we value a business based on the cash flows that we expect that business to generate over time. So, intrinsic value is usually belief to is usually done by the DCF model that we have discussed in a lot of detail in the case of fixed income as well as equity securities.

In relative valuation, which we shall talk about later, immediately after this. In relative valuation, we value a business based on how similar businesses are priced. We pick up a particular issue and we talk about the metallurgy in a lot of detail like the PE ratio, and we compared PE ratios across companies to arrive at relative valuations. In asset-based

valuation, we value a business by valuing its individual assets. These individual assets can be tangible or intangible.
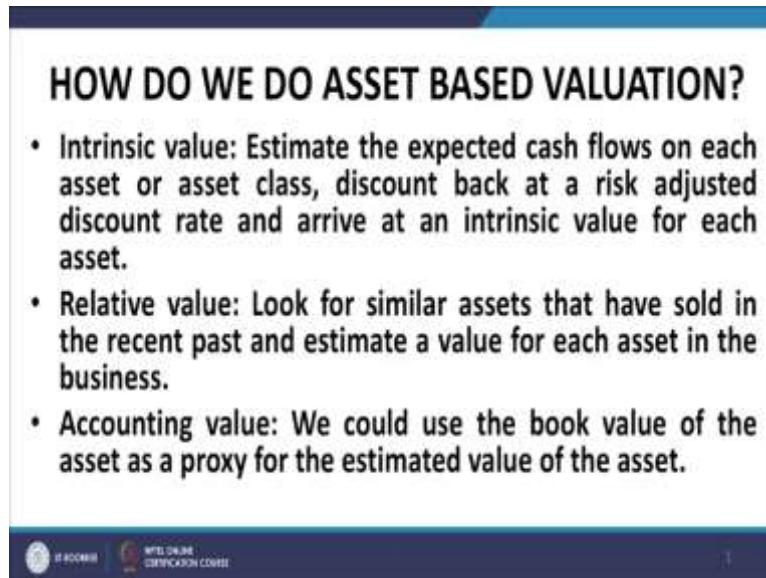
So, the important thing is, when we do asset-based valuation, we are required not only, to do at piecemeal valuation or item by item valuation, asset by asset valuation of the tangible assets, but if there are copyrights, patents or even goodwill, then we need to value these items which are intangible assets as well, because they contribute as well to the value of the enterprise.

Why would you do asset-based valuation? Well, one reason is pretty obvious, if the company is going to cease operations, if the company has to go into liquidation or winding up, then it is the appropriate mode of valuation. Because at the end of the day, these assets will need to be liquidated, the assets will need to be sold in the market and the claims of various stakeholders would need to be met out of the proceeds, out of the resources that would be realized by the liquidation of these assets. And therefore, it is important that we do a valuation piecemeal on the basis of each asset of the firm, what these assets are individually going to realize when they are going to be sold in the market.

Accounting value. Now, as we know, there has been a paradigm shift from historical cost accounting to fair value accounting over the last few years last decade or so, and this has increased the necessity of doing a fair valuation of certain assets for reporting in the balance sheet and the income statements. And this may necessitate an asset-based valuation to arrive at the fair value of the assets.

Then we have a sum of the parts valuation. If a business is made up of individual divisions or assets, we may want to value these parts individually for one of the two groups a potential acquirer may want to do this as a precursor to restructuring operations, restructuring the business or even an investor may do this to see, if the sum of the parts value is higher is more than what the enterprise DCF or some other equivalent model is giving us what the intrinsic valuation is giving us of the business as a whole. It may seem to the investor that this company is selling cheap.

How do we do asset-based valuation? Well, there are again different approaches. We may do an intrinsic value of an asset-to-asset basis, we may estimate the expected cash flows arising from each asset class, and then discount them at the appropriate risk adjusted rate to arrive at the intrinsic value of each of these assets. Instead of valuing the business as a whole, instead of valuing the entity as a whole or we may take up the relative value, the kind of value that a particular assets command in the market and have sold have been traded in the recent past.

And on that basis, estimate a value of each of these assets or may use the accounting value which is the book value, which is the value or the carrying value of the asset in the balance sheet. When is the asset-based valuation appropriate as easy as to do? Well, the one obvious thing is when the assets are separable, the assets depend on or assets generate standalone earnings or there is an active market for similar assets. So, in each of these cases or at separately obvious situation that we can do asset-based valuation with reasonable accuracy and convenience.

Now liquidation valuation. As I mentioned, we are trying to assess how much you would get from selling the asset of the business today rather than the business as a going concern. And consequently, it makes more sense to price these assets to relative valuation than it does to do an intrinsic valuation thereof.

Accounting valuation, fair value. Now, this is important. I will take it up again in a later section of this course. But for the moment, the definition focuses on the price that would be realized if I sell the asset or paid if I transfer the liability that is an exit price rather than the

entry price or the price that would be paid to acquire the asset or receive to assume the liability.

So, the emphasis in of the accounting standards and so far as estimation of fair value is concerned is to value those assets on an exit price base rather than the entry price basis. The pricing hierarchy there is a three-tier hierarchy which has been advocated, which has been recommended by the accounting standards for arriving at the fair value of an asset.

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The Three-Tier hierarchy that I am talking about is, what are the inputs that go into the estimation of fair value of assets? Well, level 1 inputs are in the context of assets, which have an active markets, and these inputs represent quoted prices, in active market for identical assets or liabilities, that the entity can access certain measurement date.

So, in this case, or this particular level, relates to those assets for which there exists active markets, and as a result of which one can take recourse to the prices that are prevailing in those markets for arriving at an estimate of fair value of those assets. Level 2 inputs relate to those assets, which are not actively traded in the market, and therefore, we have to take recourse to relative valuation, if assets of approximately similar nature are traded in the market.

We make use of the inputs relating to those approximately similar assets for pricing of our own assets. So, these are inputs other than quoted market prices included in the level 1 that are observable for the asset or liability either directly or indirectly in a sense they are relative valuations. So, quoted price was similar or identical assets are liabilities in an active market, not the same asset with similar, similar in terms of risk, growth and cash flows or pattern of cash flows would be the relevant assets, when we do a valuation on level 2 basis.

Level 3 inputs are unobservable inputs for the asset or liability. These are companies-specific inputs. So, this in essence level 3 inputs are to be used when both level 1 and level 2 inputs are not available for in relation to a particular asset. If you see the hierarchies provides the structure of a calculation of fair value. First of all, we have to invoke level 1, if the asset can be evaluated on the basis of level 1 input we should do that if level 1 inputs are not available, we should, we may take recourse to level 2 inputs for the valuation of the assets. And where level 2 inputs are also not available, we need to take recourse to level 3 inputs.

So, in a nutshell, level 1 gives you market valuation, level 2 healthy relative valuation, and level 3 carries you to the intrinsic valuation. Some of the parts valuation as I mentioned, can be used in certain cases. And what we do here is, we value a company in pieces using either relative or intrinsic value.

So, if you are a long-term passive investor you would prefer the intrinsic valuation of the relevant assets, if you are an active investor, you would prefer the relative valuation of the relevant assets. So, that is all about asset-based valuation. Now we move to relative valuation.

What is relative valuation? In relative valuation, the value of an asset is compared to the value assessed by the market for similar or comparable assets. What is relative valuation? In relative valuation the value of an asset is compared to the values assessed by the market or similar or comparable assets. So, it is relative. An asset is valued relative to another asset. How do we value an asset? With reference to another asset, which serves as the benchmark or the yardstick or the valuation of the given asset.

So, what are the steps in relative valuation? Identify a collection of comparable assets, obtain market values of these assets and number 3 is very important, convert these market values into standardized values since the absolute prices cannot be compared. This process of standardizing creates price multiples.

For example, you may have a set of comparable firms, you may have the prices, the current prices at which the stock of each of these comparable firms is traded, but that does not enable you to work out the price of the share or the potential price of the share of your company. You have to standardize that particular price with reference to something, for example, the earnings.

In other words, you have to work out the price earnings ratio of each of these companies take some kind of an average and then use that average for the valuation of your own firm, and to assess whether your firm is underpriced or whether your target firm is underpriced or overpriced.
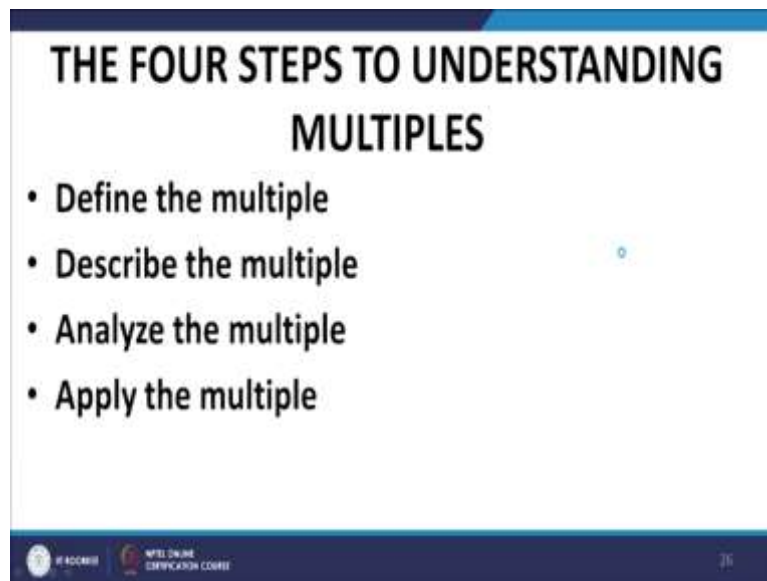
So, let us recall. Identify a collection of comparable assets, obtain market values of these assets. For example, prices of shares, convert them into standardized values or multiples rather of some standard benchmark, some standard denominator like the earnings in the context of prices. It could be book value as well, but anyway, we will talk about that.

Take some kind of average of these standardized, for example, the set of PE ratios of all comparable companies, take some kind of an average of this, and then compare the standardized value or multiple with the multiple corresponding to the company that you are trying to value and then identify.

But before you arrive at conclusions, you need to look carefully, very carefully, if there are any significant differences between the companies that you have considered in the comparable set and the target company which you are trying to value. If there are significant differences, then those differences have to be accounted for the multiples need to be adjusted or your company's multiple needs to be adjusted for the standard practices in the industry.

And only then, you can use that multiple or the average multiple and compare it with a multiple of your target company arrive and arrive at certain conclusions as to pricing, under-pricing or overpricing.

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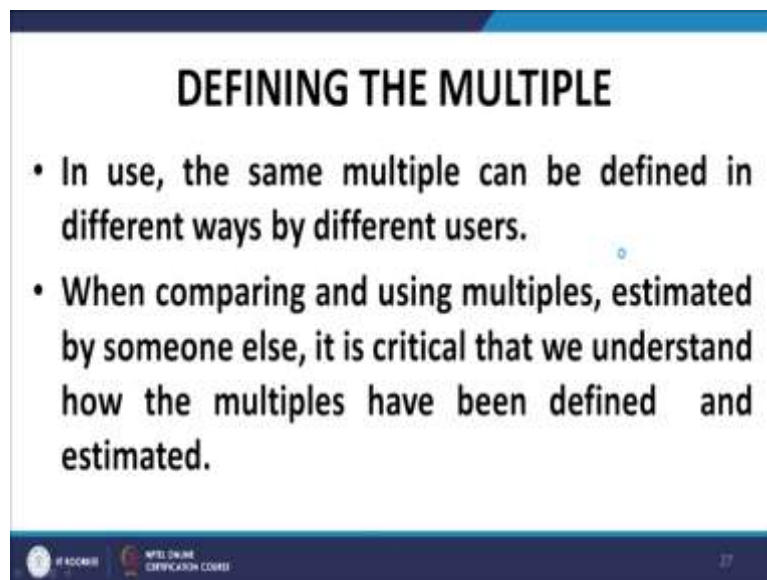
So, what are the four steps to understand multiples? What are the four important things that you need to take account when you are doing this relative valuation using multiples. Number 1, define the multiple, number 2, describe the multiple, number 3, analyze the multiple and number 4, apply the multiple. So, let us look at each of them.

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Define the multiple. Now, it is important here for me to emphasize that the same multiple can have different definitions in the context of different sources from which the multiples are being realized. To take a very obvious example, when we talk about the PE ratio, we can work out the PE ratio with reference to the current earnings with reference to the earnings of

the previous year that is the trailing PE ratio or we can calculate the PE ratio with respect to the earnings of the immediately forecasted period.

The next period that is the leading PE ratio or you can calculate the PE ratio with respect to earnings of some future period, which is the forward-looking PE ratio. So, the same PE ratio can be calculated with respect to different denominations. And that makes it very important that we should look at the definition, the defining of that ratio very carefully. If we are talking about the PE ratio, we need to know how that PE ratio has been arrived at.

Well, the market price maybe the current market price, no problem with that, provided the information of the market price on that or the point at which the market price is arrived at is given. But it is more important that we know from at what point in time or which earnings are being used number 1 and number 2, not only that, how the earnings have been calculated.

What are the accounting conventions? What are the accounting policies that have been followed to arrive at these earnings when we use at a particular when we arrive at a particular PE ratio? So, it is very fundamental to study to the definition of that PE ratio or any multiple for that matter. If it is a price book value ratio, the, how that book value has been arrived at or what kind of valuations have been done of the assets to arrive at the book value.

Whether book value is based on the replacement cost or the accounting values. So, these are important things that we need to consider when we do relative valuation. I repeat, it is fundamental that we must be defining the ratio in the same manner in order that we make any kind of justifiable inference from the use of these multiples.

So, when comparing and using multiples estimated by someone else, it is critical that we understand how the multiples have been defined and estimated. What is the definition? How they have been arrived at and how they have been estimated as well. All these things need to be studied carefully, before we look at a multiple or use a multiple.

The second step is to describe the multiple. It is better, it is very useful, if we do a study of the cross-sectional distribution of a multiple using a histogram or some other statistical approach. That enables us to judge the appropriate range in which the multiple would lie. So, a little bit of statistical analysis would help us a long way in looking at the or identifying the outliers that have contributed to this multiple, and locating reasons for the existence of such outliers. It would convey us very significant information about the relevance of the multiple,

the relevance of the range in which multiple should lie, the appropriate range in which multiple show lie.

Then analyze the multiple, identify the relationship between the multiple in each variable. You see, it is very important that we know, what are the fundamentals that are driving that multiple? What are the fundamentals that go into that multiple? For example, when we talk about the PE ratio, the PE ratio is driven by what? It is driven by the reinvestment rate, it is driven by growth rates, it is driven by the risk and the return on equity.

These are the four fundamentals that go into the valuation or the value of the PE ratio of a firm. So, we need to know the relationship between each of these variables and the PE ratio, that is also very important. Because it is only then that we can incorporate adjustments for any singularities, which may relate to your company. The company that we are valuing with respect to the other companies in the industry.

Then final, is the apply for the PE ratio while controlling for differences. So, that is what I mentioned. You must know, that what are the difference that will contribute to the competition of the PE ratio, and therefore, adjust for those differences when you are going to apply that ratio for a particular valuation.

So, I again, come back to that one particular point that I have emphasized again and again, compatibility and consistency. The ratios or the relative valuation that we are talking about also will give you consistent results only when the multiples that you are using are compatible and consistent. In other words, if the ratios that we are using for valuation, the numerator and the denominator must be compatible, must be consistent.

For example, what is compatibility in the numerator, we normally put the price or what we are paying for the asset. In the denominator what we are using? What we are getting in return. Now, if we are talking about the price of equity shares, we need to look in the denominator the earnings as they relate to equity shares or the book value of equity. So, that is important.

Their mutual relationship, mutual association of the numerator and denominator. There should be a nexus, clear cut nexus between the numerator and the denominator. It is not that on the numerator, we are talking about the share price and in the denominator we will start using EBIT or EBDIT so that will give you a totally wrong picture of the valuation.

So, what is important is it has to be consistent. In the numerator, if you are using equity-based pricing, the denominator should also represent equity-based returns on the, of the company.

So, that is fundamental. So, that is what is again highlighted in this slide here, compatibility and consistency is the multiple, is the ratio consistently defined. Number 1 proposition.

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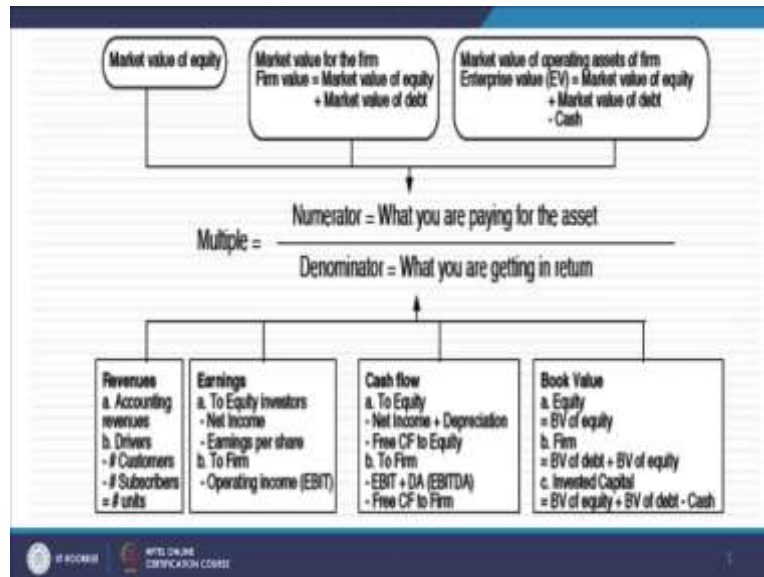
Both the value, the numerator and the standardizing variable, the denominator should be to the same claim hold in the firm. So, that is what I said that if you are talking about the market price of equity, you must return the denominator, the normalizer or the standardizing variable must also relate to the equity shareholders.

Income available to equity, book value of equity, whatever the case may be, but it must relate to the equity shareholders. So that is the first proposition when we do relative valuation. Both the value, the numerator and the standardizing variable, the denominator should be to the same claim holders of the firm. In other words, the value of equity should be divided by equity earnings or equity book value and firm value should be divided by firm earnings or firm book value.

Second is the multiple uniformly estimated. The variables used in defining the multiple should be estimated uniformly across assets in the comparable functions. This also emphasized a few minutes back that the estimation of the multiples the defining, the calculation and the estimation, all the three things that go into a multiple should be consistent in the comparable set. If earnings-based multiples are used, the accounting rules to measure earnings should be applied consistently across assets. The same rule applies to book value-based multiples.

So, if earnings-based multiples are used, the accounting rules to measure earnings should be applied consistently that is the, consistent is the foremost word when we talk about any kind of relative valuation. Then you can take recourse to certain statistical tests. You can take recourse to certain statistical tests to get, to extract more information about the reliability of the multiple sets we are using for arriving at a relative valuation of your asset.

For example, you could work out the average and standard deviation of the multiple across the universe, then you can see how asymmetric is the distribution of those particular multiples. And what is the effect of the asymmetry, on the moments of the distribution. Now you could also identify the outliers, how large are the outliers to the distribution? And how do you deal by the, deal with these outliers?

Do the outliers lie on one side of the distribution? Then eliminating these outliers would bias the distribution would give you a biased estimate on the E? On the other hand the other approach that you could use is the capping of these outliers, but then, that would depend on the point at which you are doing the cap or you are setting the cap, and that may be arbitrary, and that may introduce arbitrariness into the estimate of the multiple.

So, are there cases where the multiple cannot be estimated? Then will ignoring these cases lead to a biased estimate of this multiple? And then you need to look at how the pattern of change of this multiple has happened over the period of time? The analytical test as I mentioned, again, you have to identify the fundamentals that drive the multiple embedded in each multiple.

This is proposition number 2. Embedded in each multiple are all of the variables that drive every discounted cash flow valuation, growth, risk and cash flow pattern. So, in each multiple, these are implicitly embedded. And we need to know, the relationship between the multiple and these fundamental variables.

Because this will enable us to account for or to manage the deviations and differences between the multiples of comparable companies, and the company being compared or the entity being compared when we are doing relative valuation. So let me repeat, embedded in every multiple, are all the variables that drive every discounted cash flow valuation, growth, risk, and cash flow patterns.

How do these changes in these fundamental variables change the multiple? Then there is another point. It is impossible to properly compare firms on a multiple, if we do not know the

relationship between the fundamentals and the multiple, if it is impossible to properly compare firms on a multiple if we do not know the relationship between the fundamentals and the multiple.

Why? Because, we need to make certain adjustments to the multiple. We may need to make certain adjustments to the multiple. It is impossible that you get an exactly comparable company with reference to a certain target company it is just a realistic. Given the firm that we are valuing, what is a comparable firm?

A comparable firm this is an important point. A comparable firm need not necessarily be from the same industry, it need not necessarily be from the same industry. A comparable firm is a firm, which is similar to the one being analyzed in terms of fundamentals. So, the emphasis should be on fundamentals rather than the industry.

If a firm has same drivers of the multiple like the cash flow pattern, the risk and the growth rates, then that could be comparable, notwithstanding the fact that, that firm belongs to a different industry. Proposition 4, there is no reason why a firm cannot be compared with another firm in a very different business in a very different industry. If the two firms are have the same risk growth and cash flow characteristics.

Given the comparable firms, we need to account for the differences across firms on the fundamental. So, this is why we need to know the relationship between the fundamentals and the multiples. Because it is impossible, as I mentioned, to find an exactly identical firm to the one that is being valued. So, it is here, that I conclude today's lecture. In the next lecture we will start talking about fundamental analysis. Thank you.