Security Analysis and Portfolio Management

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Lecture No. # 03

Risk and Return

Hello, in this particular session of security analysis and portfolio management, we are going to discuss about a fundamental concept of risk and return in the investment context. Investors usually invest in the market for an expected rate of return, and if the return is incommensurate with the expected return, then they feel happy about it. However, the returns that is expected from different investments need not be one and same. It all depends upon the type of investments made by the investor, and also the profile of the investor as such some of the investors may be willing to take some risks for a high rate of return, whereas some of the investors like senior citizens may not like to take any risk for investments made by them. They will always like to have an assured rate of return of let us say 8 percent or 10 percent for as many years to come for that matter. So in this context, we are going to discuss about the basic concept risk and return.

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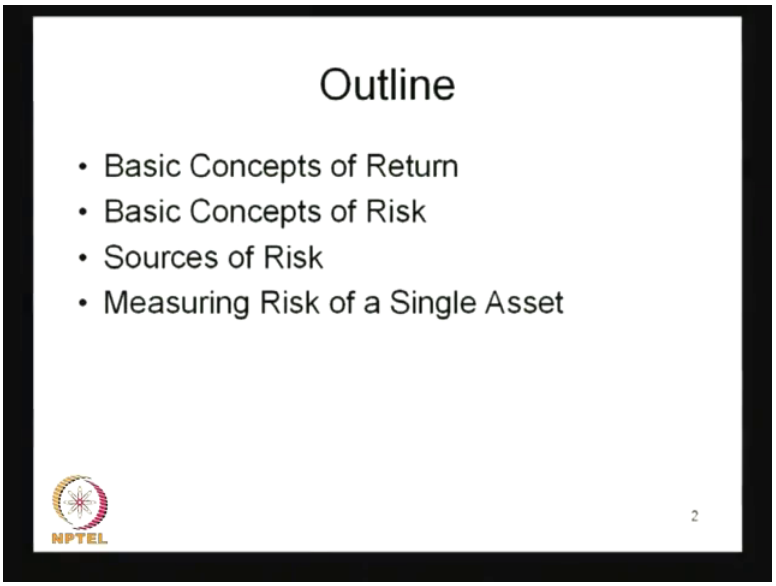

And as we proceed, we are going to discuss about the basic concept return, how do we measure it, basic concepts of risk, then we are going to talk about sources of risk from where this risk arises and we are also going to talk about how do we measure the risk of a particular asset, single asset. When we say asset we mean only financial asset, it could be a equity share, it could be a preference share, it could be a bond, it could be debenture, it could be a short term instrument or long term instrument, whatever for that matter, as discussion different types of financial instruments; for all the financial assets, we can measure risk as well as return.

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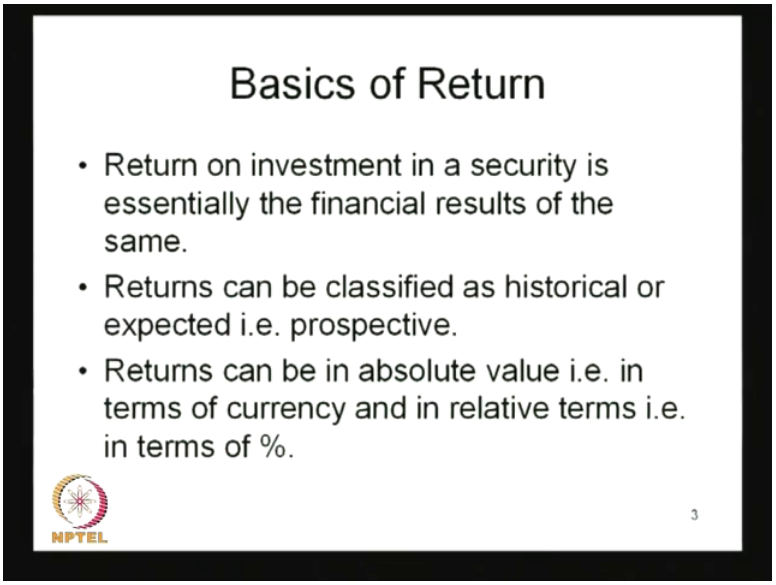

So, coming to the basics of return as such; usually, when the investor is expecting or investing in the particular market, he or she is expecting certain return as such, and the return is also known as something like a finance results of the same. So suppose somebody, invest in a particular share, and at the end of the year, the share may give something in terms of dividend or in terms of the change in the price of the investment as such. So those combinations, these two can be taken as a return as such.

Even once, if somebody looks at the market, then one can find some of the assets offer a very high rate of return, some of the assets may offer a very low rate of return, some of the assets may offer a constant rate of dividend like you know, equity shares can offer a constant rate of dividend for this share or some of the assets like equity shares may have different dividends for that matter. So, depending on the dividends on, on the asset or

interest on on the investment like debentures, bonds and also the change in the market price in the investment that amounts of the investment return for the investor as such.

So if you look at, so returns can be classified as historical or expected that is your prospective return. Returns also can be classified in the terms of absolute as well as, percentage term. When we say historical return, historical return talks about the return that has been there based on the past data. So, past dividend or past interest and past market price change. So combination of these two will give you the return as such. However, the investment market is more of futuristic in nature. The past information can only give an indication that how it is going to happen in future.

So at the end of the day, the investor likes to know how much return is going to come from the investment in future. So in that context, that will be taken as expected rate of return. Another way one can also classify the return is that return is from a single asset, return is from a group of assets, which is known as a portfolio assets. So when somebody is investing only in single asset obviously the portfolio is only one asset; whereas, some of the investors may like to put some money into real estate, some money into financial asset.

In the financial asset, then you will have the assets like bonds, debenture, equity shares, a preference shares, short term instrument, long term instrument, treasury bills commercial papers, something like that. So, when the investor is going to have different returns from different assets like this, and when you taken an average, and based on the weights of investments made in single asset that is called return from the portfolio. So the return from portfolio is essentially, a function of the return from the single assets that the individual asset is holding.

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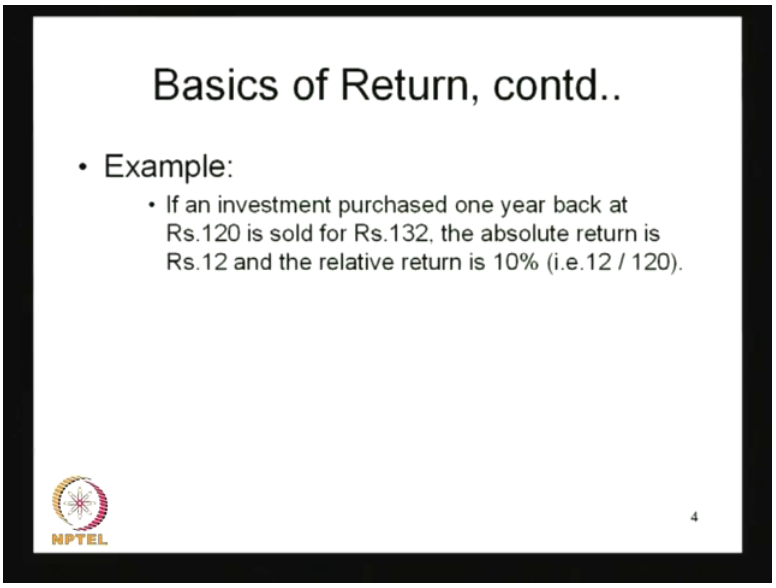

So, coming back taking a simple example of investment, if one investment was purchased let us say somebody has invested and purchased, somebody has purchased and investment on the share could be Reliance Company or Infosys or Ranbaxy or any any particular stock for that matter. So in that stock or share you have typically, two things that is coming from that is one is the distribution of profit in terms of dividend to the equity share holders, and second is the change in the market price of the share as such. So, when you come to the equity share in this example, so this particular investment or purchase at 120 rupees, and it has been sold for rupees 132 at the end of one year.

So if you look at in this case, we have only a return given as the change in the market price. So there is a 132 rupees minus 120 that is 12 is the change in the market price. So somebody has invested 120 rupees in the market, and he or she has got 12 rupees extra by selling it after one year. In that case 12 upon 120 appears to be 10 percent of the return that we have.

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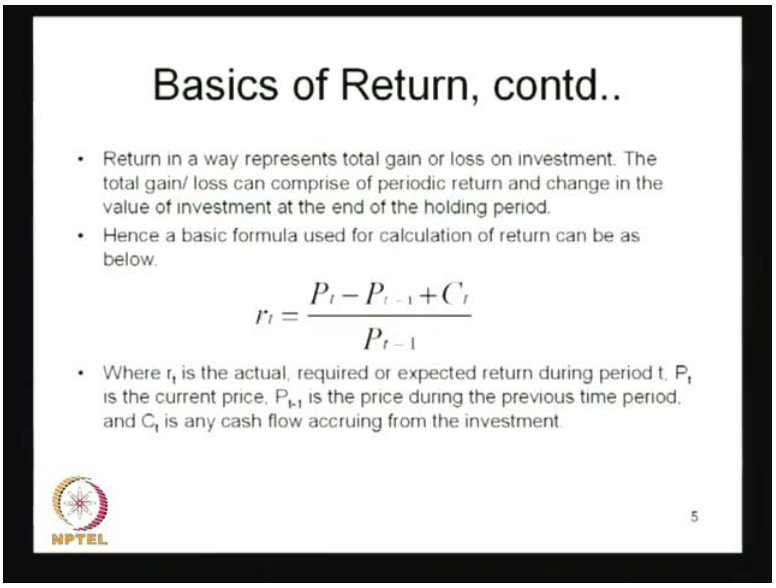

So, next time that you have another example can be taken, another formula for that matter taken as we discussed earlier. So we talk about the return, in a way that represents total gain or loss on the investment. When you say total gain as you discussed earlier, it is a change in the price plus any periodic payment that has come from the investment. So periodic payment can be as you discussed earlier, it could be interest or it could be dividend.

Suppose, we are investing in a bond or debenture in that case, we will have periodic terms of interest and bonds and debentures can be held for a longer maturity or it can can also be sold in the market in future. When the sales of the bond takes place in that case, the investor may have something more than what he has invested earlier or may get something less than what he he or she has invested earlier. So, the interest component and the change, in the price of the bond will be taken as the combined return on the investment that is made in bond.

Similarly, in case of instrument like equity share at for that matter instead of interest, we will have something called dividend. So, in this particular formula, we talk about the return as the r for the time period t and the price t is the t today and price t minus 1 P t minus 1 is the price of the investment or the the purchase price of the investment that you bought this investment, before one period; the period could be one year, the period could be one quarter, the period could be one month that is immaterial here, because we are

going to find out the return for the period. Say the period is the annum annual year that becomes period per annum; if it is a month, it becomes a period, this return per month or for quarter for the for that as the case may be.

So so in that case, so we have the denominator as the original investment, and the numerator you have the difference between the investments price today minus the original investment that is P t minus 1 plus this C t as we discussed this C t could be a dividend C t could be interest on the investments and combination, these two that gives us the total gain that is made on the investment, so that upon the price P t minus 1 that gives us the return during a particular period. The same return that we are talking about in the numerator denominator that can also be classified as, expected rate of return in that case we are talking the P t minus 1 as the expected, as the P t minus 1 is the price today and or a particular period before one year.

And P t could be taken as the expected market price, after the particular period and the C t that is the cash flow that is coming in terms of interest or dividend that is the expect of return, in terms of dividend interest that is for a particular period that is going to come in future as such. So the same formula can be applied for calculate return, for historical return as well as expect rate of return, for any asset for the there is no change in the formula. Only thing the only difference is that in case of historical return, we have the data already from the market whereas, in case of expected rate of return, we have to forecast the market price one year hence or one month hence or one quarter hence.

And also what is going to be expected from in terms of interest or dividend in during this next year and next period for that matter. So that is the only difference as far as, the historical return and expect return is concerned. So usually in the market people, talk about the future only people invests today anticipating something in future. So, expected rate of return has a lot of lot of relevance in the context of security analysis and portfolio management. Past information can only be an indicator, nothing beyond that from the indicator applies certain techniques statistical techniques. We can forecast the expected price of the share or expected return in terms of dividend or interest from the particular investment by applying certain sophisticated or simpler techniques for that matter.

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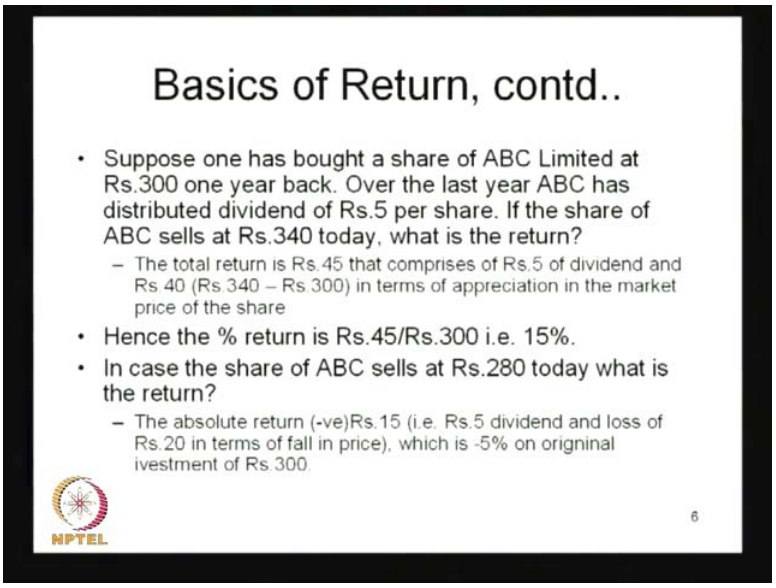

So going ahead, we have another example here, suppose there is a company called ABC limited; and as we know the share and somebody has invested a share of that particular ABC limited, and the share was purchased at rupees 300; and the last year what has happened? The company has declared, some amount of dividend and dividend per share comes to rupees 5. So, if the share of the ABC sells at rupees 340 today, in that case very simple here, you are one is going to get the 5 rupees of dividend; at the same time one is also going to get the difference between the market price today, and the market price one year earlier that comes here 40 rupees. So, 40 plus 5 rupees total return from the investor is now 45 rupees; and these 45 rupees of return is on the investment of rupees 300.So that comes a simple calculation comes to 15 percent.

Now the question arises, what is the relevance of this particular figure called 15 percent. This 15 percent also could have been something less, as discussed in the subsequent lines, so in case the particular share is selling at 280 rupees that means this investor actually has made a loss of 20 rupees. Whereas the gain in terms of dividend is rupees 5, so total that net gain or loss appears to be now it is only 15 rupees that is a loss of 15 rupees. So loss of 15 rupees upon 300 is come to something like, 5 percent of the investment that is loss. So there is a loss of 5 percent on the investment made by this.

So whether it is a 15 percent or 5 percent depends upon the income that we have. It could be, because of dividend and the so this return is a function of now the change in the price; when the price was up obviously return was more, and the price is down obviously the return is less.

And and there is only a dividend of only 5 as such. So, in that case, so coming to the point that what is the relevance of this 5 percent or 15 percent for that matter; in that case how is going to relevant that means, what is the relevance of this particular figure called 15 percent. So based on this return of 15percent or whatever the percents may be we have got that tomorrow and the next year is going to be more than 16 or 17. So this15 can be only indicator, nothing beyond that. So, based on this, and moreover based on this 15 also, some of the potential investors can think of investing in it or not.

So, assuming that this particular return is going to continue in the next accounting period or next investment holding period for that matter; so somebody, who is expecting return of up to 15 percent or less than that, that is historical return then one can think of investing, this particular instrument. So this 15 percent can be taken as a benchmark or a comparative framework that this is this particular investment is offering 15 percent. Since my expect return is 12 percent, then I can as well go for this return and I can go for a making a buy decision that if I have got a money and I like to buy the share. Since this particular investment is giving 15 percent and my expectation is 12 percent, then obviously, I can go for that.

But if it is going to be less than 12 percent that is a that is a historical rate of return, then I will be thinking twice, before putting money into that, because the what I am going to get is less than12, but expecting is 12. So this becomes an indicator that whether should some investor, invest in this market or in this particular stock for that matter. And this particular return can also be extent to the concept of index. So instead of saying that the return on the, a particular share one can also talk about the return on the particular index. So instead of saying that what is the return typically we talk about the census has gone up by 5 percent 2 percent it has gone down, nifty has gone up by some percentage there is a boom in the market.

So, in that cases what you essentially do, we compare the today's index value with the previous day's index or previous year end's index and find out the difference between

these two index value and find out what is the change in terms of up change in increase increase or is decrease in the in indexes. So that gives an indicator of the market yes market is going up. So if the census was let us say, 17000, one year back and it has become now 19000. So 2000 rupees, 2000 points is the gain at the census and 2000 upon 17000 that something less, little less than 10 percent is the return on the index. So same concept of return on its individual asset, can be extended to an return on the index as such.

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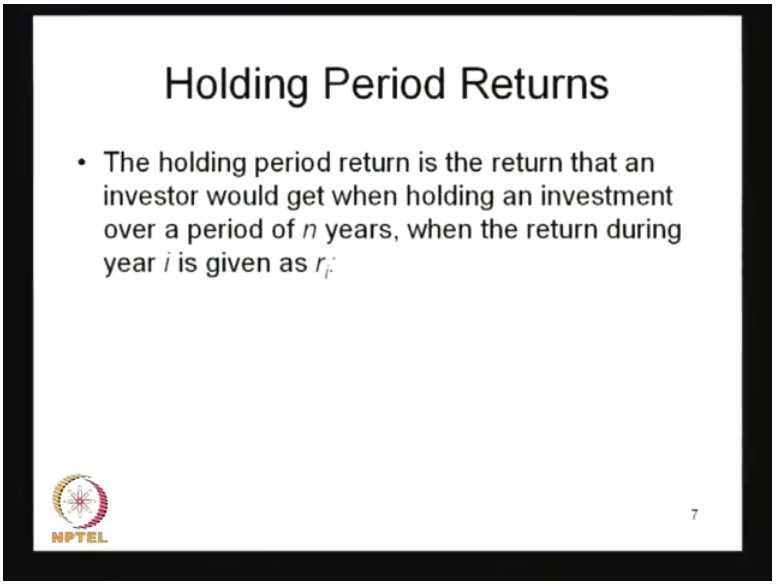

So, going moving further we have got something called a holding period return. So holding period is something like this, you do not have to have a return for only one year. So somebody can or one period for that matter. Somebody can invest this stock and hold on to the for more than one one investment, holding period. So let us the investment holding period is 1year, then we can also have more multiple of 3or 4 years something like that. So in that case the investor continues to receive, the periodic interest or dividend over the years 1 year 1, 2 and 3; at the same time, there is also a change in the price of the investment, over from one period to another period. If that is the case so what is the holding period return, for that matter. So in this case, we are saying the holding period is obviously more than one year, and we are applying a simpler formula to find it out.

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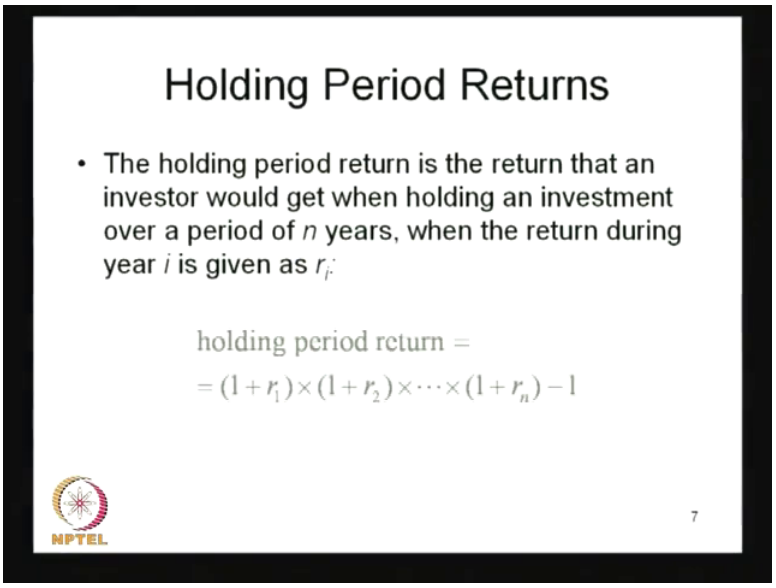

So the holding period return if you can look at, so we what you do here we just take 1 plus r 1 and r 1, r 2 and up to r n; n is the number of periods as such these if it is 5 by r n because r 5. And from the first year if you have got a 12 percent return and second year let us say you have got 13 percent return, then the first component in this becomes 1.12 and the second component becomes 1.13. So what you are doing here you are just multiplying this all these 1 plus r 1,1 plus r 2and taking 1 minus then doing minus1.

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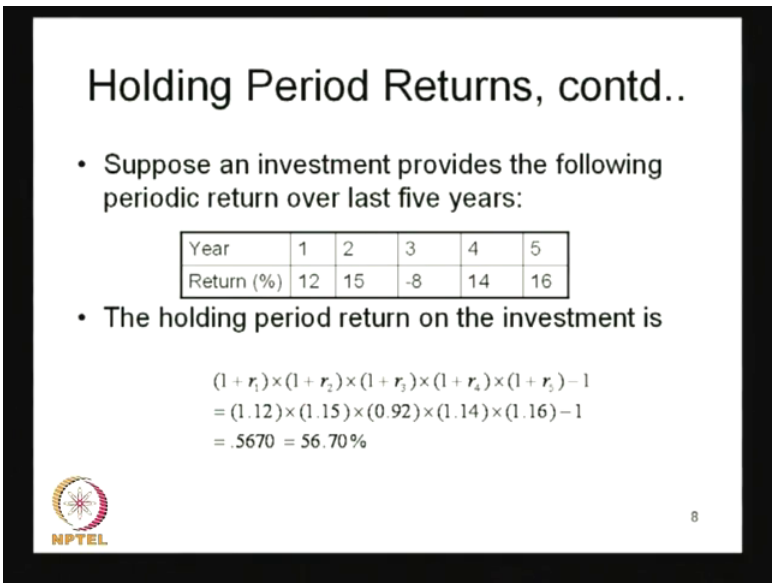

So if you take, if you look at example in that case. Let us say there is one investment which has given us: in year 1 - 12 percent, in year 2, it has given 15 percent, year 3 it instead of giving something return, it has given, it has eroded the value of the investment and the return is actually negative that is minus 8 percent and year 4 and 5 respectively, 14 and 16 percent. In that case, we simply multiply 1.12 to the into 1.15 like that and find out what is the holding period return for that matter.

So the holding period return in this case that comes to 1.12 multiply, the individual figures and if you notice here, in the year 3 for the 1 plus r 3 we have taken 1 minus 0.08. So return has been given in terms of percent, but for this calculation we have to convert into decimal and become 0.92.So that into 1.14 and 1.16 minus 1 that is called 56.70 percent. So, in this case, instead of taking a 4 year change in the market, so 5 year change in the price as it is a 5 year holding period. We have taken the change in the price that is happening, over a period of time every year as in the.

So, all the years of return has been combined and with a suitable formula, the holding period returns of 4 years have come. So it is not simply the addition of 12,15, minus 8,14 and16.So in that case it becomes how much 30, minus 8, 22, plus 12, 34, plus 15, it is 49 percent. So in the 49 percent the actual return is something like 56.70 percent. So what is the reason for this, particular difference is that so since what you are assuming the there is an assumption, fundamental assumption in the return context is that whenever this investor is getting something back in terms of dividend or something like that it is suppose to be reinvested, in the market at the same rate of return at the expected rate of return. So that return gives us something in something back in the future.So that is why the difference of 46.7 percent vis a vis the combination simple addition of this 5 return say 49 percent has arised here.

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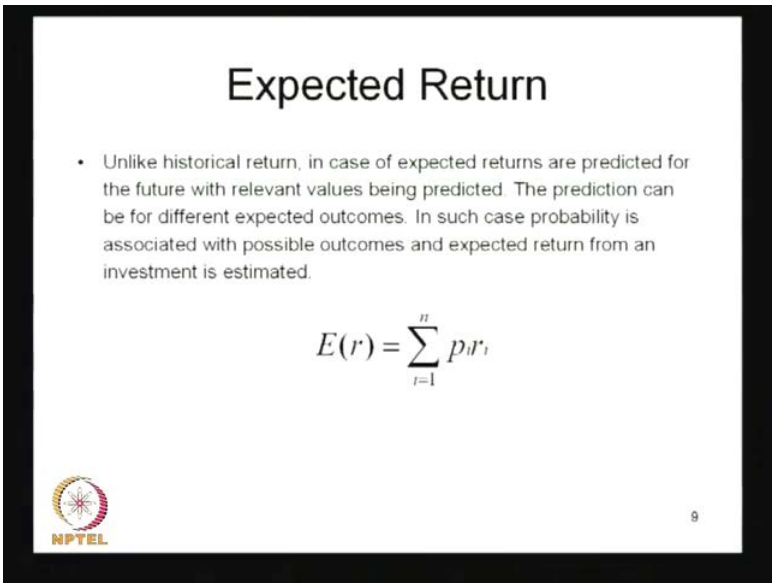

So, moving on to the next one that we talk about the expected return as such, so unlike the historical return as we discussed sometime back. In case of expected return, what you are talking is that we are predicting for the future with your relevant values being predicted. So the prediction can be there for different expected outcomes. So let us say, I like to forecast the return for next year, so in a particular stock called let us say IT sector stock and IT sector stock it is a performance, in terms of return can depend upon the overall market condition and also the industry condition, IT and some other industry condition, because IT particular IT industries condition can depend upon the requirement of IT facilities of different other non IT sector as such.

So, looking at that, if I am expecting this condition the market is going to very good, then I will say these are the outcomes going to come the review will be going up, profit will be more thus the so because of that good condition the investors like to buy the share at a higher price in sometime hence. But, if I am expecting the particular market is going to be down, then in that case these sales and profit everything all those relevant financial figures will going to be less in that case, I will be having a less return expected as is. So one is not sure about, what is going to come in future; so at the end of the day, an investor has to forecast, what are the possible outcomes; then zero on certain fixed outcome of a, these are the four possible five possible outcomes will be there.

And under different outcomes, these expect return is going to be there and what is expect return as you discussed in the previous slides. We have got the same thing expected change in the price and expected dividend or expected interest that is C in the C t in the form of the formula that we discussed sometime back. So that r i is found out, for each possible outcome and for each possible outcome for a particular period we forecast this r i and we also have to forecast, what is the chance of that particular outcome taking place.

So if it is going to recession, how much chance 20 percent, 30percent something like that. So we will have to have forecast the as many outcomes, as possible with the time and efforts whatever, and the resources available with us and technique available with us and in that we have to also have the outcomes, then associated probability of accuracy in that particular outcome, then we have something like the return expect in each possible outcome.

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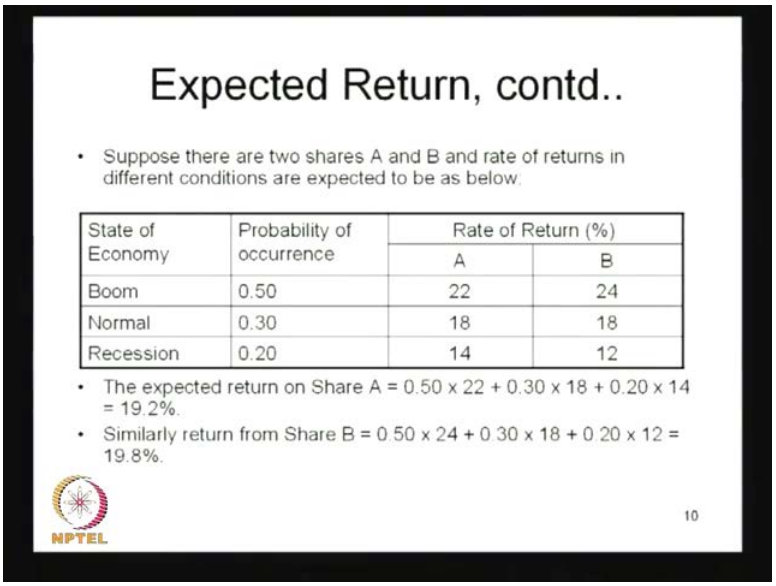

So if you look at the particular stock here. So there are two shares A and B, and there are three possible conditions are expected one is a boom condition, where the things are going to be very bright for the companies, demand is going to be good for the product, sales is going to very high. Another is a normal condition normal condition means that the whatever condition is there now it is going to repeat and another is a recession condition where the bottom line, the top line of the company. In terms of sales bottom

line in terms of profit profit operating profit or net profit all those things are going to be lesser in that case.

So in that condition, from the investment A, we are having in the expectation like 22 percent in boom condition, 18 in the normal and recession condition 14 percent. Accordingly, we have these three different figures for this investment in B company share. So when you do the calculation we multiply the respective probability. So in that case we are finding that 19.2 percent is the expect return from the stock A whereas, 19.8 percent is the expect return from the stock B.

So just to emphasize here, the expect return is a function of the probability of occurrence say particular event or economy in this case and the rate of return actually, estimated in that condition of boom, normal or recession. So unless, we have these two sets of figures, we cannot find out what is expected rate of return. So if somebody is going to put a money into this market and we will choose between A and B obviously looking at, if it is rely on this set of figures obviously investor is going to go for a return of 19.8 percent.

But if one we have make a close observation, this particular data that is 22, 18, 14 in one series and 24, 18 and 12 in another series. You will once, you can see that under the best circumstances the boom condition gives 24 percent return in B and 22 percent in A; so it gives the little higher return in case of b. In normal condition, both the investors investments options are giving same rate of return where as recessionary condition, the company B which was giving high rate of return in boom condition is giving less than less return compared to company A. That means this appears that in a recessionary condition, company B does bad compared to the company A whereas in boom condition company, B does better in case of company A.

So instead of looking, at the absolute value of 19.8 percent versus 19.2 percent deciding the 19.8 percent the better i should always go for investing that one may say that no, there is a possibility that this particular there can be 12, the the downside could be 12 percent in case of company B, and it could be 14 percent in case of company A. So keeping that in mind, somebody may change his opinion no, I will go for company A though the companies expected return is something less. So here we are talking about the particular person, may not be willing to take the risk of losing something, which we will discuss in this subsequent slides for that matter.

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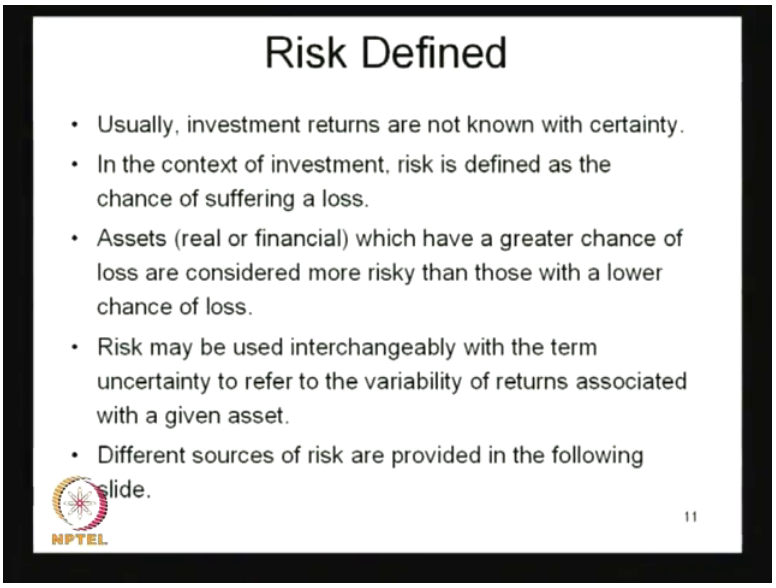

Now moving ahead in the discussion, defined return as such let us now talk about what is the risk as such as we discussed risk is something very much inherent in the market, though investors always will find out, what is a risk involved investing that if the investor cannot bear the particular risk, then he may avoid the investment also. The best method of avoiding the risk, in the business or in investment is that not to invest as such. So when you do not invest anything and do not do the business as such, so there is no risk. Though we are not talking about any expectation because there is no investment as such

But ,that is not the situation in the country, in the world for that matter people do invest expecting something and that expectation can go haywire and you may get very high, you may get very less but, the measurement of the risk and anticipating, what is the risk involved will help? take help the invest take an inform decision that yes, when the investors invest in the particular market he or she, he knows that I am subject to this particular fluctuation, this particular change in the expectation in the market in future as such so that has to be there and what is the we are going to discuss where what is the how this, why this risk arises, why this 12 can be 14 or 16 or 18 for that matter and why cannot be something more or something less.

And how it is affected by who, what affect this particular risk as such. So if you go to the definition risk as such, it is what happens as you discuss, there is nothing certain in the in

the world everything is actually uncertain. And only uncertainty actually drives the market, if the everything becomes certain in the market, then all the investors come to know about that particular stock or investment is same information. Then they are going to price the particular investment, at a same price if the investor A and B or you and me price the particular asset, at let us say x rupees in that case I am not going to buy or sell that share, because you are not going to buy or sell buy from me so I can say, because you are expecting it is to be x, I am also expecting x.

So, in that case, the since there is no difference in the price that is perceived by two investors, so there will not be any trading that taking place buying or selling and there is no buying or selling, because we are now certain about the share price and since, we are certain about the share price, i will have price at x means, you also price at x. In that case no trading takes place and there is no trading takes place then you are.

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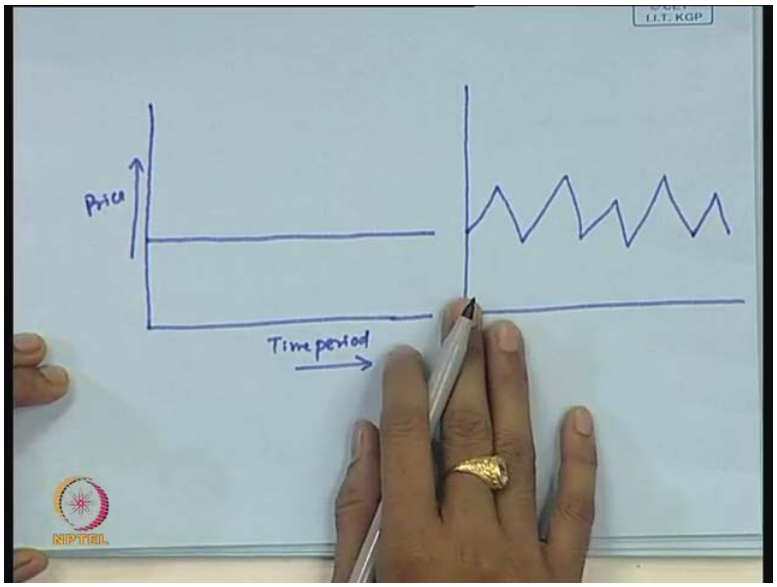

If you plot the particular graph for this particular investment, then if you have a graph like this and where, you have got the time period in the x axis and you have got the price of a particular security in the y axis; then if you everybody is expecting same price it is x then the price will the line will look like this, because there is no investment, there is no buy and selling of this share, so the price remains constant. Whereas, typically in a market any investor will always like that the price of the particular thing fluctuating.

So when there is a fluctuating like this, something like that that means there could be uncertainty involved and this type of graph of fluctuation is only appreciated whereas, a straight line of graph when there is no buying and selling price ,is one and same there is no possible to gain or loss, is not accepted as such. So that is why uncertainties, involved and uncertainty leads to this price of the particular share or the market fluctuating over a period of time as such ,certainty means it becomes a straight line parallel to x axis which is never liked by any ordinary investor for that matter.

So moving ahead, so investment is always associated with the certainty as a it is uncertain then it is different. If it is certain it is something different if it is certain our investment profile is going different, if it is uncertain it is going to be again something different. So in the context of investment risk is defined as chance of suffering a loss. So what is chance that my money will be lost to some extent? So that is the risk as risk, need not be that what I am going to get so this ultimately, how much I want loose by investing in this.

So, if I am willing to lose something and can bear that then only I am willing to take a risk, your risk cannot be only that I am going to take a risk to gain something in the market. Risk is in very simpler term in a financial market, any investment parlance is that I am likely to lose this much under worst circumstances, it is going to happen. So coming to the next, so anything that you have at a greater chance of loss, then that is taken to be more riskier than a any investment that has got a lower chance of risk.

So if there is a 10 percent chance of losing by x percent and there is another company where you have got 30 percent chance of losing by x percent then obviously, second company which has got 30 percent chance of losing is taken as a more riskier and the 10 percent chance of losing is taken as a less riskier And risk also can be interchangeably used with the term called uncertainty. Uncertainty is as you discuss in the previous graph for that matter in this case, we have the fluctuation here.

So, because its uncertain you do not know it is going to go up or it is going to come down or say, again go up or again come down. So what is going to be expected environment so, because of uncertainty only this particular investment is price is going up or coming down. So risk is also uncertainty involved in this particular trained in the price, in the given asset. Now, how is the what is the region for the risk. What makes this

particular graph fluctuate it is going up or coming going to be straight line for that matter.

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There are different types of risk in the market context, in the firms context for that matter. some of the risk can be specific to the investment made in the particular company. So the company specific also known as firm specific risk. So firm specific risk can be again classified as two way that is: one is your business risk and second one is your financial risk. So, business risk is something that what is the chance that my the sales will take place or sales will not take place. The chance that sales will go up by 30 percent or the sales will come down 20 percent and what is the chance that my expenses will go up or expense will come down.

So something essentially, related with the operating environment that is the internal environment operating, condition of the particular company as such. So that is the cost structure will change, there will be more fixed cost, there may more variable cost something like that. The more revenue or less revenue one particular product, may be hyped up or new products may be introduced ,which will lead to higher sales ,will lead to higher margin, all those things can come and there is an uncertainty involved with that.

And that and nobody can say that how much is going to sales, taking place in future by 20 percent, 30percent for all certainty. So there is a chance that sales may go up by 20 percent sales, may go up also by 30 percent sales may eventually come down depending

on the market condition. So if the particular company is selling something like a, regular day to day item like grocery items for that matter in that case vis a vis a company which is selling a consumer durable goods.

So company which selling a grocery item for that matter or for a small [fl] store or small store obviously, in those case the demand, for the item sold by this particular store is not be fluctuating much, because the basic necessity is taken care by this particular store. So all the people are going to consume, almost the same quantity as such; so in that case, this risk that the sales will not go up or something like that is very less, compared to a FMCG or compared to for that matter here consumer durable goods, white goods for that matter. So more number of TV is may not be sold more number refrigerator may not be sold.

So, in those consumer electronics company, so that can be subject to be vagaries of the market, more than a company which is selling day to day consumption items. So the business risk is essential related to the, type of business this company is into depending on that the businesses could be high or low. Next thing is that and the business risk also talks about something, there could be something like the companies having a huge establishment, like your big market, big bazaars, big shopping complexes for that matter. So there is a lot of space hired by this particular entity and this space has got a lot of rent to pay.

So whether there is a good footfall is there or a less footfall is there less people visiting or good number of people visiting this particular establishment, you will always have the fixed cost like rent the minimum AC condition that electricity charge for that the floor minimum staff ,it is always going to be there. So in worst condition in the market or best condition market, this quotation could be fixed. So having the presence of high fixed or fixed cost in the structure of the cost of this particular company or the unit or a product can live to more risk, because in a very bad condition, they can recover the fixed cost and that itself can lead to a loss making proposition for the business whereas, if the revenue is more and more your fixed cost is not going up, only variable cost is going up.

So the fixed cost gets spread among number of units and the bottom line of the company can improve. So that is also another source of business risk in any company, another thing that you have is called the financial risk. Say financial risk it is in the terms of the

obligation the financial obligation of the particular company. So, financial obligation something like financial cost, like we have got something that that typically that two different sources of finance for a business: one is the source through date that is the loan the borrowing and second one the source through the owners money or equity assets. So as far as the borrowing is concern compared to the equity assets, in case of borrowing we have a interest payment to be made .So the company makes profit or company makes losses, interest has to be paid. So there is a fixed obligation in terms of interest the company has to honor.

At the same time the company also has to honor the principle, repayment if it is due in certain point of time whereas, in any case equity you do not have any compulsory tag that the equity share must get, a particular amount of dividend. In that case the dividend can be there dividend is optional for the component declare or not subject certain legal restrictions and the company; may feel like decline dividend, may not feel like decline divided, because the money there care could be high in case of for their internal requirement or expensive. So they may choose not to declare in dividend at the same time they know obligation, for the company that the company is going to give the money back to the equity holders.

So in that case there is no obligation in case of equity share holder, to give back something to the investor but, there is an obligation for the company towards date holders to the creditors, who are supplying loan to bankers, who are giving loan that they must pay an interest. So, what happens in that case if there is a bad condition in the market and the profit of the company declines, then if there is an interest component which is fixed and the interest component has always to be taken care. So in a worst condition bad, good condition the interest has to be taken from the profit, then you find profit before tax and then find the profit after tax whereas, in equity you do not have reduction of the interest.

At the same time presence of date can also be good for the company if the company is doing well, because having paid the interest component then there is no compulsion that the you have to pay something more if you are making more profit. So in a very good condition, the having date in the particular company is actually good for the company but, bad condition having date is actually not a good thing for the company. But it is there is no luxury for the company or the management which you change the capital

structure or the date equity component and then say that because the market condition is bad .so I will reduce the date and market condition is good, I will go for more date. So the company has to very careful, when you go for more date or less date for that matter and in that case. So the financial risk is going to be higher with the company, which has got date in the capital structure, which leads to something like interest obligation for the company.

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Then coming to the next type of risk is called investor specific risk. In a investor specific risk you have got something called: interest rate risk, liquidity risk and market risk as far as interest rate risk is concern say interest rate risk something like the so the investor expected rate of return is a function of the interest rate environment in the market. So, if the overall interest rate of the in the market is going up, then your expectation from the investment in the interest in a bond, debenture is also going to be higher

And since you are going to expect more interest in the investment like, bond or debenture and if you are investing in equity share for that matter. You will always expect a little high return that you expect from the debenture. So underlying condition is that overall market interest condition, changes the expect return of the investor as such.

So the interest rate is go up or go down accordingly, it is going to the the expect return of the company is also going to change. So the risk and at the same time the interest rate fluctuation can also lead to the, change in the interest paid by the company. So, because

of that there is a risk involved for the investor and investor may expect more or less depending on the overall interest rate environment.

Next in that you have is called liquidity risk. Liquidity is something in the market is that how well I can sell the share and get the money back that is the liquidity. Liquidity means converting or investment into cash or converting or financial assets in the cash. There may some category of shares which are highly liquid, you always have a market there is a always a buy or sell quote or there is a readymade market you enter the market through the broker and whenever you want; you can buy or you can sell. That is called the liquidity in the market the share is quite liquid. If you have the share you can sale for cash or if you have the cash you can convert into a share.

But there may be shares where there is no trading taking place, trading does not take place means for some reason the share is not attractive, may be lot not a lot number of shares are available the market for buying and selling .So in that case there is a liquidity risk. So the liquidity risk is going to be higher, when the company is going to invest in this particular market. In that particular share obviously, its return is going to be expected to be higher, because the risk involved in this particular instrument is high, because he cannot easily liquidate his or her investment and get the cash back.

Then next that you talk is the market risk. Market risk is something which is not in the hand of the investor, overall market index like census or nifty, CNX nifty for that matter will go up or come down based on different circumstances, overall government condition whatever that happens in that case there is a market risk involved and the overall market risk is up, people everybody in the investment market they feel that the market is going to be more volatile obviously, the all investors are likely to feel in that way. So and that is something which is not in the hand of the investor.

Then coming to the next category that is called firm and investor specific risk; so in firm and investor specific risk, you have got something called which is affecting both the firm as well as the investor as such. So there is something called event risk. Event risk means there is let us say ,there is some big accident that takes place, likely to happen or it is a taking place ,a fire that takes place or the top management of the company is running into some legal trouble as such.

So this particular risk is some event specific and this event specific risk is not related to any other company or any other share for that matter. This is only specific to this particular company where the expectation of the investor is affected as well as, the performance of the company is also accepted. So that is called the event risk and if for any region there is likelihood of this, because this is very difficult to predict such things is going to be happen but, if somebody can also capture based on the past history can say such are the things which can happen in the case, of this particular company then one can actually account for that.

The next that you have is called the exchange rate risk. So exchange rate risk is something which is nothing but, the fluctuation in the for x rate let say and for which type of company, it is going to be affecting more the companies, which are having in their cost structure something which is: dollar denominated or a euro denominated or as a pound sterling denominated items as such. So, the if the companies depending on the foreign currency, whether for the incurring of expenses or for the revenue for that matter. There could be so many companies where there is no expense in terms of foreign currency but, there is only revenue in terms of foreign currency.

So, if you look at look back, we will find that some of the IT sector companies they showed less amount of profit and sales, because the overall the rupee has be rupee Indian rupee in the compared to dollar had become stronger and the realization from each dollar was actually less. So though the attribute of the company had not declined, there is no in decrease in the volume sold but, the value of the sales or value of the revenue for that matter, was lesser because of the reduction in the forex rate for the matter.

So, if the company's revenue depends more on such revenues like: export sales or export of services, export of products for that matter, and those companies are subject to obviously high financial risk. At the same time, there could be some companies which may source their raw material critical raw material or whatever raw material from outside. In that case the cost structure of the company can change, because of the change in the forex rate as such. So those companies which depend upon, certain critical resources or the regular consumption of resources and they depend on the outsiders outside the country where there has to be a forex payment; in terms of payment, in terms of dollar or something like that then in those case also the forex risk is going to be higher.

Next thing that you have is called the purchasing power risk. The purchasing power risk is nothing but, the risk in the price label of the in the economy, as such something like inflation risk as such. So if the companies can change their revenue and everything can change commensurate with the price label then nothing like it. So the price label risk or purchasing power risk is actually arrested, because you could change the market price or product based on the inflation or whatever, is taking place if the companies cannot do that then it becomes a bigger problem as such. The companies ability to change its sales to change the cost in relation with the general moment of the price label. If that is there that company becomes actually little riskier otherwise, it company becomes more riskier.

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Then next thing that you have is called the tax risk. Tax risk means they the government may suddenly, declare that a particular sector of the economy is going to be taxed at this particular rate, possibly this particular company may be in a sunrise sector or in a export processing zone or export undertaking which was not subject to any tax, or there is an incentive for that company that there is no tax to be charged. Corporate tax is going to be charged and in that case if the company is going to be subject to tax, because of new law or new notification of the government of the country as such then in that case the risk is actually higher, because the now the company is going to pay tax or even if the tax was there there is a there there is a possibility that the overall tax rate ,corporate tax may change what is now let us say around 30 percent it may become 35 percent or it may become 25 percent.

So the expected change typically in this case upward change, in the tax rate can be if there is something like that is expected then more riskier, for the company as such and then having said, that these are the different sources of risk for any company, for that matter. In the context of investments we do classify the risk into two types that is called: systematic risk and non-systematic risk. When you say systematic risk that risk is something which you cannot diversify or which you cannot reduce whereas, unsystematic risk is something called unique risk otherwise known as unique risk or the diversifiable risk.

This unique risk is something which is unique to the particular investment, the investment- the share or bond whatever, that may be that means I can aware this particular unique risk by possibly, not investing in that so I do not have any unique risk, whereas in case of systematic risk or diversifiable, non-diversifiable risk in that case you have got something, which you cannot diverse when you say diversification. Diversification is something like reducing the risk, by having more financial assets in the portfolio you have.

So if you have got a more riskier asset, then instead of putting all 100 rupees in the riskier asset. You can put may be 60 rupees in riskier asset and 40 rupees in the non-riskier asset. So in that case, the overall risk of the portfolio of 100 rupees going to come down. But there may be some risk which is non-diversifiable; which is a function market; which is not in the hand of the investor. However, diversification you make that risk cannot be reduced. It is specific to the market, if the market is up then your share price may be up, because share price could be fluctuation of the market index as such.

So you cannot do anything about, because that is not in the hand of the company as such. Whereas like, something like we talked in the previous in the first point that is your business risk and financial risk in that talked about, those business risk and financial risk of a particular company is something like a non-systematic or diversifiable risk. So possibly, the company itself can change or I can change from one company to other company. Even if I change from one company to another company my investment my systematic risk is not going to reduce as such

So when you discuss in the contrasted portfolio. The portfolio theory that you are going to discuss it will be discussed in the subsequent sessions of security analysis and

portfolio management. We essentially talk about reduction of the risk through having a portfolio and the reduction risk is something like reduction of the non-systematic risk, systematic risk is not being reduced, So these are the common sources of risk which we have discussed.

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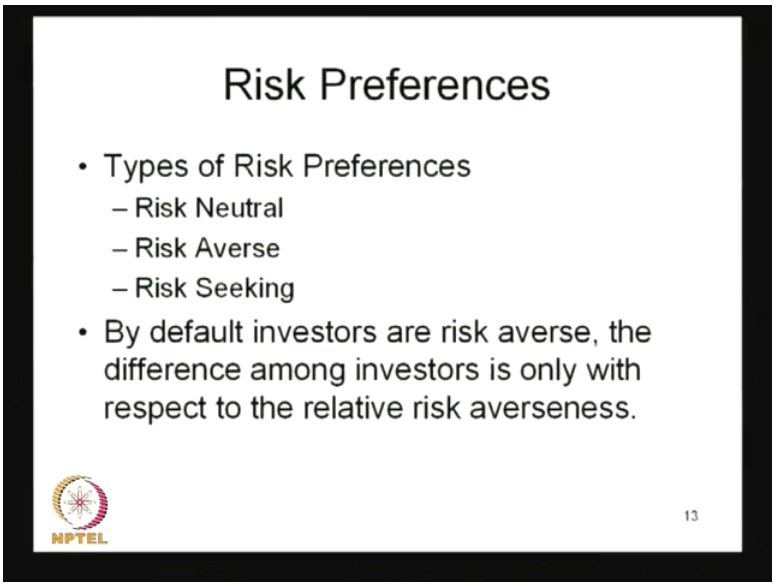

Now moving on to the next part, as an investor is concern there are different types of investors that is you in a theoretically: you have a risk neutral investor ,you have a risk averse investor and you also have about risk seeking investor. Risk neutral investor is somebody who does not bother about the fluctuation, he does not bother about the risk involved in that quite unlikely, we will find some people who does not bother about risk. Risk averse is somebody; who is actually not will not will take that much risk relatively this risk. He actually try try to avoid the risk .So in that case he will always, look for a higher return from the investment for any risk taken.

So the per unit risk taken, the return that is expected by risk averse investor is going to be higher as such whereas, risk seeking investor he is the person; who is always going to take risk though the return expect could be less but, he still willing to take the risk as such. But, having said that it is a risk neutral risk, averse risk seeking people by differed investor risk averse. Only the relativity of risk averseness, can be differing from: you to me or you to someone else but, by differed will always be risk averse, we may be we may become a risk taker up to certain level of investments a beyond that particular

investment, it can become more risk or less risky depending on the investor as such. So coming to that so relatively, we say that risk averseness: one person can be more risk averseness, one can be less risk averse for that matter.

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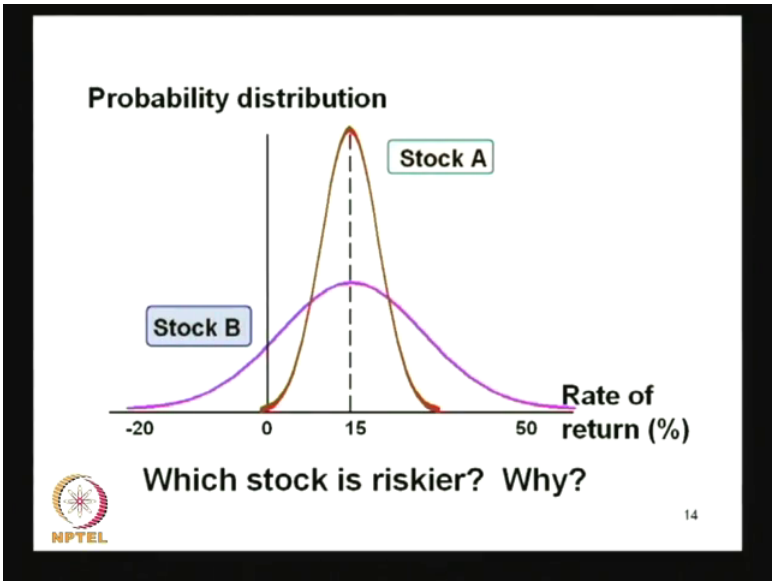

Moving on to the next one, if you look at a particular this graph, here you have a two stock called stock A and stock B and in this case ,you see the return that you have the ranging from minus 22 plus 50.So and the return variation, this if you look at normal curve that is plotted here. You have something that is more flat. So obviously compared to stock A compare to stock stock B is more risky of flat. It is more flat the stock A is actually less riskier, because the variation can be from zero to something, like may be possibly 20 or 30thirty percent but, not like 50percent.

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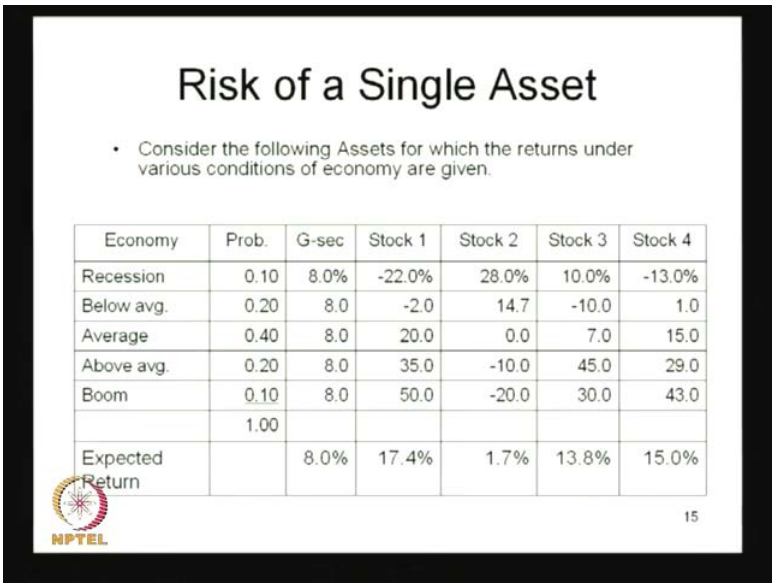

And if you look at risk of that you come to risk of a single asset, we have in this let us look at this particular example. This example, has got economy of condition like recession; below average condition, average condition, above average and boom condition. And each condition has their respective probability and you have got a government security investment. You have got a stock 1 to stock 4 and if you look at that you have got expect return that this particular, return expectation has been found out by applying the formula that we discuss in the previous slides, as such and in that we see here, the expect return for different investment like: 8 percent in case of G-sec, 17.4 percent for stock n and like that15 percent in case of stock 4. So depending on the expect return for different conditions. We have got the expect return for the different stocks that is expect we applying the particular formula.

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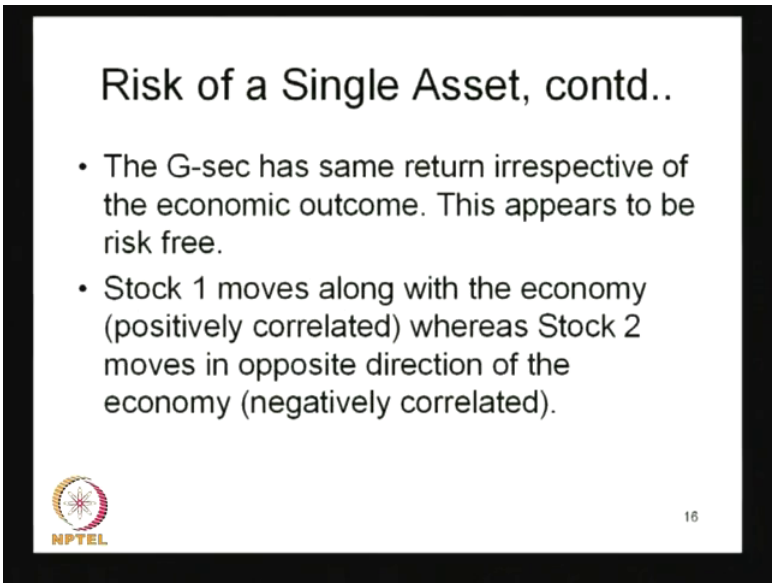

So, if you look at that particular chart, in that you find that the recession the recession condition or a good condition or a bad condition, the government security has got the same rate of return expected. So, there is no risk involved irrespective condition, the return is same whereas, in stock 1 to till 4 we find the stocks which has got different returns based on different circumstances, it is not constant like your treasury bill for that matter.

So, stock 1 if you look at it moves more or less along with the economy: the economy is down the stock return is less, economy is up the stock market stock return is actually higher. Stock 2 it is something it is opposite direction, where the return is good in the condition is good in the market, the return is bad whereas, the condition is bad in the market stock gives more return. So the 2nd stock is called negatively correlate the market or the 1st stock is called positively correlate to the market.

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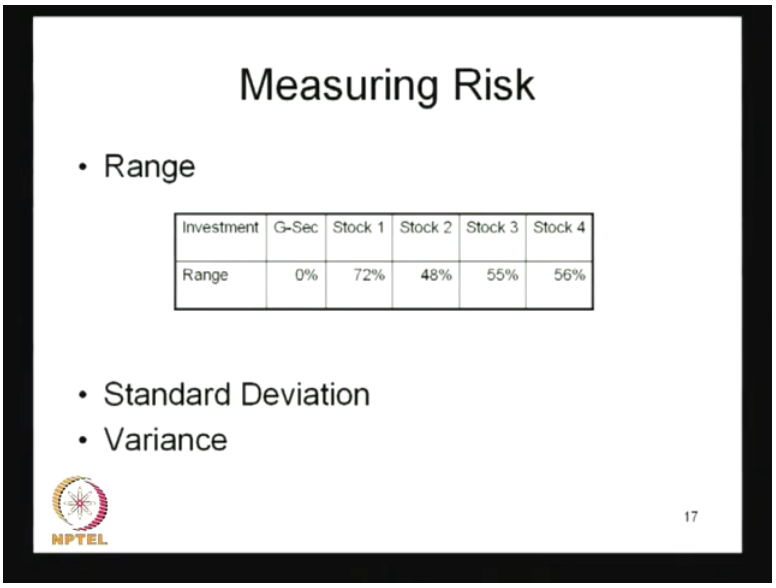

Then the coming to measuring the risk of a particular instrument, if you look at a G-sec the first the first measurement, is simpler measurement risk of the range. Range is something like if you have got expected return like in the case, of the previous table the expect return for stock 1 is: minus 22 in one extreme and plus 50 in another extreme. So the difference between minus 22 and plus 50 that is around 72 percent that is the range that means the return, it can fluctuates from minus 22 to plus 50percent; so that way the range between the x to extreme item the the lowest one and the highest one, in the expected outcome. So there is 72 percent, 48percent, 55percent and 56 percent.

So looking at this particular table we feel this stock 1 is the highest risky for the G -sec has no difference, in the return it has got 0 percent range, because the highest is 8 and lowest is also 8 percent. So relatively, you can say the stock 2 is little less, riskier than stock 1 and obviously the stock 3 and stock 4. The category will be first one is 72 percent stock 1 then then stock 4 then stock 3, stock 2. But this is a very crude or simpler measure for that matter. It is not a very scientific or mathematically sound measure. So for the mathematically sound measure, we do apply in technique called standard deviation or variance. So variance as we know variance is nothing but, the square of the standard deviation or standard deviation square root of variance.

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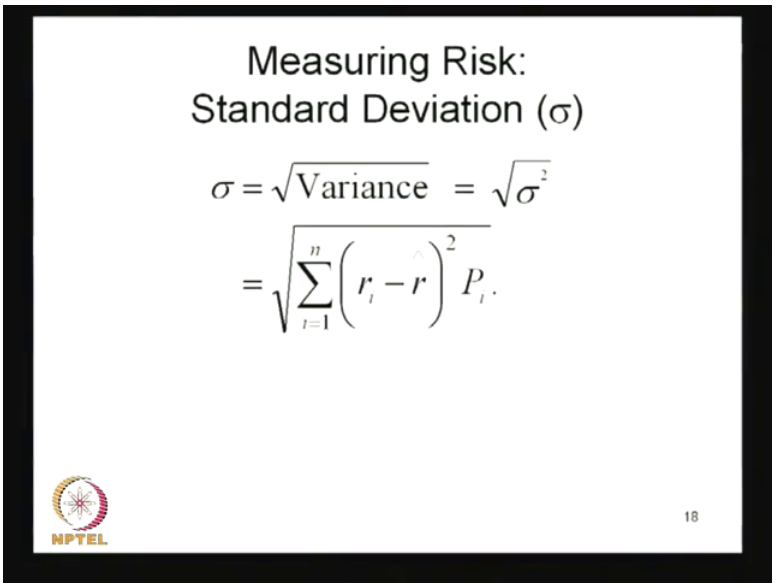

So how do you find that the variance; in that case the standard deviation of variance for that matter. It is what we are doing here, we are taking the difference between the expected return that we calculated in the table, at the end of the table as such. Like for that you have got 17.4 percent in the stock 1, and then you did and found out the difference, and then square that, and multiply the expected probability, this particular thing happening. Then summations of these all those items gives us, the variance, and when you take the square root of that that gives you now the standard deviation.

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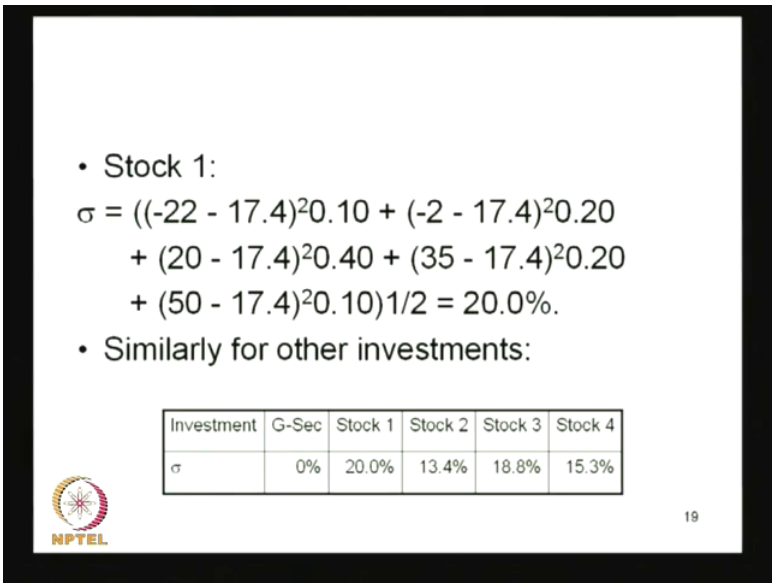

So if you look at in this stock 1, what do you do in the first possible case, you have minus 22 percent whereas, the expect return is 17.4 percent. So, take the difference between minus 22 in 17.4, square it and multiply the 0.10 and do that for all possible outcomes, and the standard deviation of this, when adding all these figures and taking the square root of this, particular thing that is doing that 1 by 2 is the power there that is called 20.0 percent.

Similarly, when you look at the standard deviation is coming to 0 percent and 20 percent, stock 2 is 13.4 percent, stock 3 is the is 18.8 percent, and stock 4 is 15.3 percent. So, if you look at in this case, the stock 1 appears to the highest risk whereas, stock 3 is the next highest risk, and stock 4 the next higher risk, and stock 2 is the next highest. Among these stocks that is your stocks or shares available, the stock 2 appears the least risky instrument, when the risk is measured in terms of standard deviation or variance for that matter; whereas, government security. Since, there is no fluctuation in the expected value. So this obviously, the risk is actually 0 percent.

So this is the way, one can find out the standard deviation and find the risk as such, and one can as well extend this particular concept, of risk and return to finding out the risk in the context of portfolio, which one can discuss in the case, of portfolio theory. And if it is a return and the portfolio is concern then in that case, we have the weight-age of the different investments made 20percent, 30percent; whatever, that may be multiply the weights with the respective returns of different securities, and then combine them and find the return. And for portfolio return, we have a different portfolio risk, we have a different formula, which can be discussed in subsequent sessions. Thank you