Investment Management
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Lecture - 15
Equity Investment Strategies

Hi there. In the last session of this week, we will learn about Equity Investment Strategies, because earlier we have discussed about the valuation of different assets. So, we started with valuation of fixed income assets such as bonds, then we moved on to the valuation of equity.

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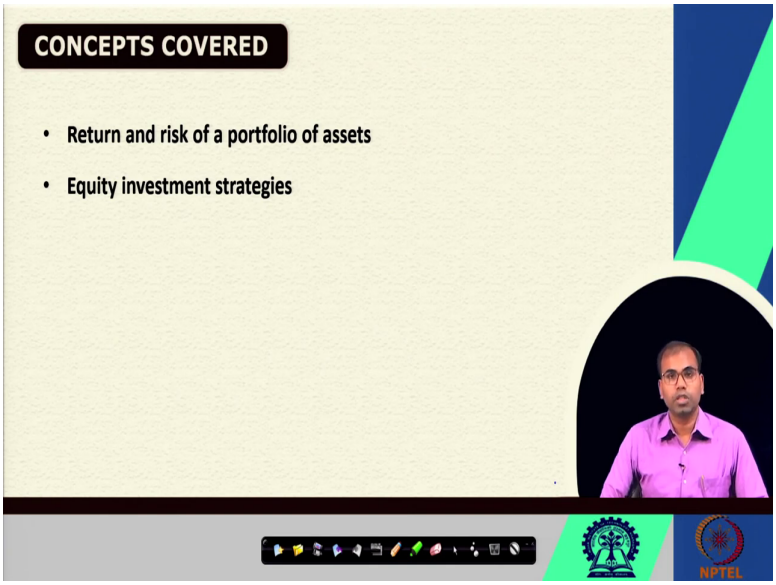

And now, in this session, we are going to discuss about equity as a component of portfolio. So, basically, we are going to talk about investment strategies in the context of equity assets.

So, first we will talk about risk and return of a portfolio of assets. Earlier, we have discussed about risk and return of individual assets, but now we are going to talk about risk and return of a portfolio of assets. And in the context, we will also see what are what are those different types of equity investment strategies that an investor can consider.

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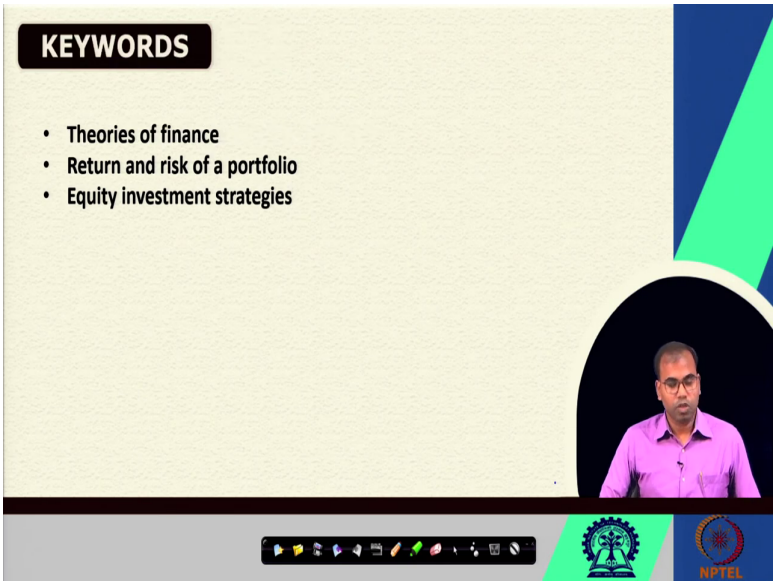

So, through this throughout this session, we will draw concepts from different theories of finance. We will also try to see how risk and return of a portfolio interact with each other.

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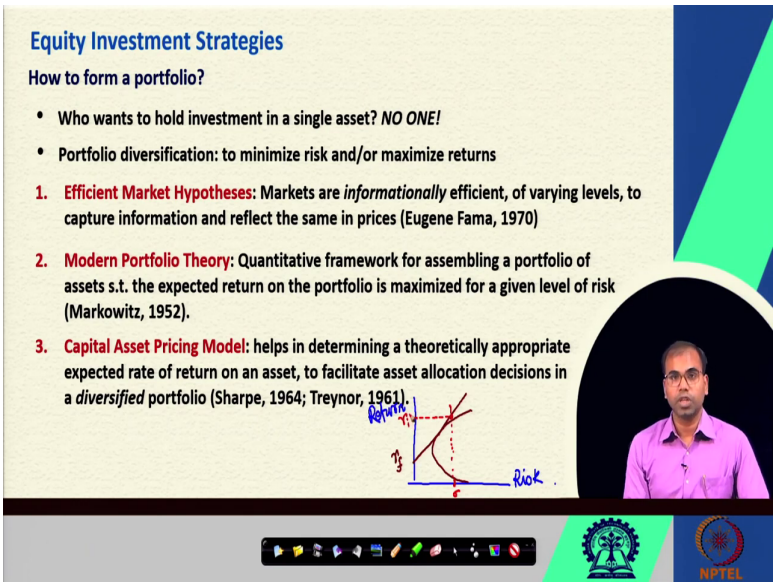

And subsequently, equity investment strategies will be discussed. Now, as we as I say the risk and return of an a portfolio of asset, the first term that comes to our mind is the portfolio. So, what essentially is portfolio? When we start learning the these concepts, we know that we can start with a single asset, but who wants to hold a single asset as an investment? No one would like to keep all their money in a single asset. Remember, the old saying which says do not keep all your eggs in a single basket. So, the same goes here.

Typically, investor wants to diversify the risk and that is why investors include more and more assets as many assets as possible for individual investors to form a portfolio. So, basically, a portfolio is a combination of assets and mind it, these assets could belong to different categories.

Here, although we are talking about equity assets, but as a matter of fact, these the portfolio any portfolio for that matter can consist of multiple assets belonging to different categories. For example, an investor can have a portfolio of both equity and debt assets. As an investor, I can invest part of my money in the share of a company at the same time I can also invest remaining part of the money in a bond.

And if I am left with something else, I can keep that money as cash or in savings bank account. So, when I look at all the money invested in different instruments, I would call it a portfolio. In a similar fashion, I can have individual portfolio of equity assets similarly, separate portfolio of fixed income assets and so on and so forth. We have seen that in there are multiple types of instruments or financial and otherwise, where an investor can invest her money.

So, essentially, we all as an investor hold a portfolio of assets. So, the idea behind holding a portfolio of assets is to diversify the risk in order to maximize return or and in in some cases minimize risk. An investor would want to reduce the overall risk by way of diversifying the investment or it can the investor can also try to achieve maximum return by diversifying her investment in different instrument or different assets. The theoretical concepts underpinning these arguments are basically categorized into three lines of theories or three lines of thoughts.

First, it started with efficient market hypothesis. Basically, Eugene Fama proposed in 1970 that markets are informationally efficient and they are efficient of varying label, which means they capture information and reflect that information in the prices of assets at a different levels. For example, a market could be weekly in weekly efficient, which essentially indicate that it reflects only historical information in the prices. Market could be semi-strongly efficient and market could be strongly efficient as well.

So, at different level of market efficiency, information are reflected in the prices of assets in a different way. And of course, it goes without saying that when a market is strongly efficient,

then the prices should reflect all the information whether historical present or into certain extent expected information.

And in such a market, no investor is supposed to be earning more than average rate of return in the market, which means as an investor in a strongly efficient market, I cannot outperform the market in general. Well, that is what the theory says.

Although theories have been contradicted over the years, we have seen in recent times, there are several investors who have outperformed the market in general or there are certain assets which have violated the basic concept or convention proposed by these theories. Second theory is that lie behind these arguments are basically modern portfolio theory and along with that capital asset pricing model.

So, modern portfolio theory which was proposed by Harry Markowitz in 1952 suggested a quantitative framework where portfolio of assets can become created such that the expected rate return on such a portfolio is maximized for a given level of risk.

Which means if we try to visualize risk and return on a two dimension graph. So, if we say that this is risk and this is a return. So, if we follow Harry Markowitz argument, he suggested that if an investor has the capacity to hold this carry on this much risk only. For Markowitz portfolio theory, the investor can earn only a certain level of maximum return.

Of course, if you have attended any finance courses before, or if you understand the basic concepts of finance and particularly portfolio theory, you might be able to relate to the a fact that in Harry Markowitz portfolio theory, we have an efficient frontier and there is a concept called risk free asset where we have certain a level of return guaranteed.

So, this is indicated as r f and this is efficient frontier which is basically the combination best combinations of all the assets available in the market given their different level of risk and return. So, essentially what it implies is if an investor is standing here which means he can carry only this much risk, this is the maximum return that the investor is expected to earn in

this market. So, this is the maximum return that investor should expect given this efficient frontier proposed by Markowitz.

Now, the final theory that we should be knowing here is the Capital Asset Pricing Model also known as CAPM which helps in determining a theoretically appropriate expected rate of return on an asset to facilitate asset allocation decision in a diversified portfolio. Several researchers have proposed several versions of capital asset pricing model, but the basic argument remains same.

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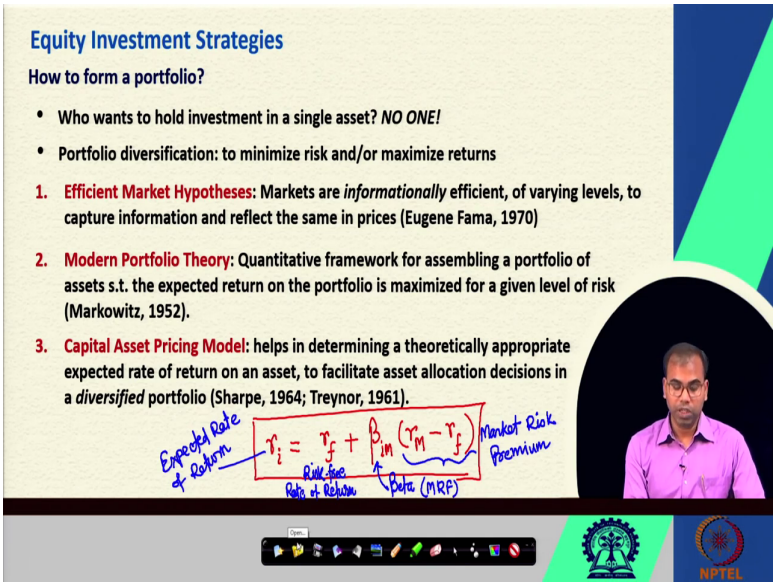

It suggest that the expected rate of return on any asset i can be indicated as risk free rate of return that is indicated by r f plus some sort of market risk factor which is basically the relative risk of individual asset with respect to the market and the risk return excess return or risk premium that market asset is giving over and above the risk free rate of return.

So, this is what capital asset pricing model suggest where we know that this is the expected rate of return which means the return that an investor should expect from the investment in asset i. This is risk free rate of return which means this is the return that any investor would get without carrying any risk.

This is what we know as beta or risk factor market risk factor and this is market risk premium which means market is giving a over and above extra excess return over and above the risk free rate that is indicated by r f.

So, so capital asset pricing model theory is one of the fundamental theories that are used in finance particularly for decision making with respect to investments. Although we are not going to discuss in detail, but we will see more about asset pricing models and how we can arrive at this this particular CAPM or similar models in a more detailed way next in next set of sessions.

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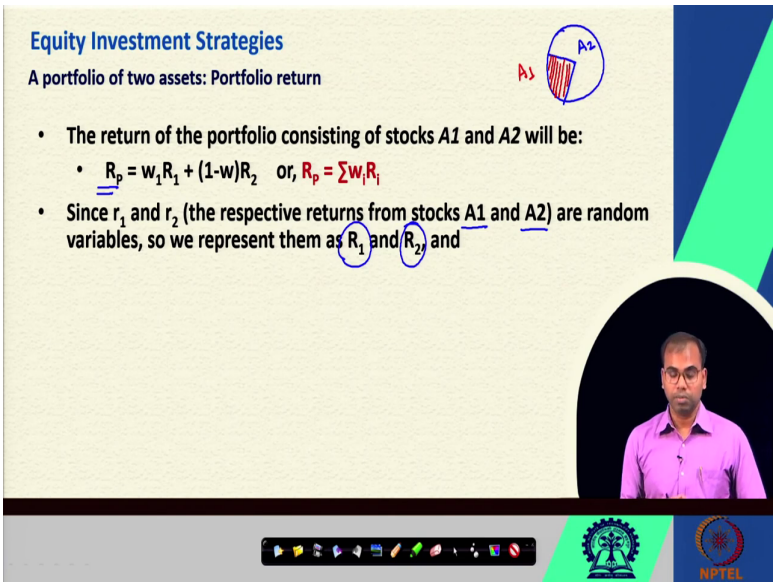

Currently let us focus on the risk and return of a portfolio of an of assets. So, first we look at the portfolio return because it is simple to understand and calculate. So, if you look at this portfolio return, we know that when an investor is holding more than one asset c is holding an a portfolio. So, if I am holding my investment in some asset A, let us say asset A1 and I am also holding some part of my investment in asset A2.

So, if there are two assets that I am holding A1 and A2 and these two assets generate return in terms of R 1 and R 2. So, R 1 and R 2 are the returns generated from asset A1 and A2 respectively. So, we can indicate the return on the portfolio in the following way.

So, whenever I hold different assets in my portfolio, I would invest certain percentage of my wealth, certain percentage of my investable fund in certain asset and remaining in some other asset. So, if we denote this a portfolio as a Pie. So, we can say that suppose 30 percent or 25

percent of my investment is in let us say asset A1 and remaining of my investment is in asset A2.

So, essentially this is indicated by the proportion of or the weight of investment, total investment invested in each of the assets as part of the portfolio. So, if we assume that for the sake of simplicity an investor is holding two portfolios and sorry, two assets.

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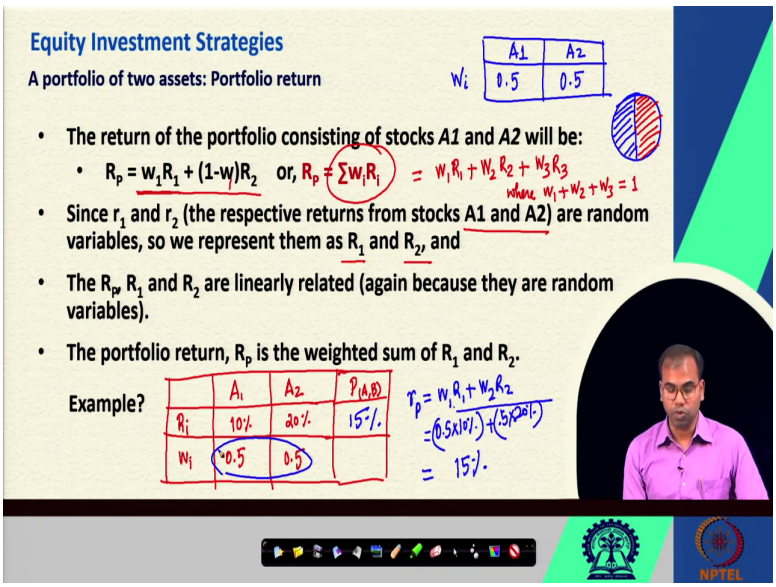

And these two assets are denoted as A1 and A2. So, the weight of asset A1 is let us assume that 50 percent and remaining 50 percent is invested in asset A2 which means the Pie will look like 50 percent is investment in A1 and remaining 50 percent of investment in A2. Now, if this is the case then we can simply calculate the return on the portfolio in the following way. So, return on the portfolio is basically the weighted average rate of return of individual asset.

So, here since we have two assets R 1 and A1 and A2 that are generating return R 1 and R 2. So, we can calculate the return on portfolio as summation of weight 1 into R 1 plus weight 1 into weight 2 into R 2 which is basically 1 minus weight 1. If I have multiple assets then I can also indicate as let us say I have three assets.

So, I can say weight 1 into R 1 plus weight 2 into R 2 plus weight 3 into R 3 where weight 1 plus weight 2 plus weight 3 should be 100 percent which means 100 percent of my investible fund is distributed in three assets A1, A2, A3 in the proportion of w 1, w 2, w 3.

Now, it is linear assume that R 1, R 2 or the return on portfolio or and return of an on individual assets are linearly related because returns are typically believed to be a random variables mathematically. And portfolio return R P is basically the weighted average sum of R 1 and R 2.

So, if we extrapolate this example of weight 50 percent weight invested in asset A and 50 percent weight invested in asset B rather asset A1 and A2, we can use this example let us say for instance we have two assets invested in here let us assume that A1 and A2 here I have return, here I have weight.

So, if we have return as 10 percent here and 20 percent here. And let us believe that I invest 50 percent of my money in A and 50 percent of my money in B then we can calculate the portfolio of A and B in the following manner. So, we know that we have return on portfolio as weight 1 into R 1 plus weight 1 into R 1 plus weight 2 into R 2. So, we have 50 percent into 10 percent plus 50 percent into 20 percent. So, we can say that the return on the portfolio is 15 percent.

Now, as we can see if we change this proportion the return on the portfolio will also change, if we have multiple assets more than two assets this calculation will be extended accordingly. Here we are assuming that all my investment is invested in the assets that I am considering here.

So, here in this case there are two assets A1 and A2. So, all my money is invested in A1 and A2. If we have three assets then maybe all my money is invested in three assets and we will have numbers related to their return in the form of our return on asset 1, return on asset 2, return on asset 3 and so on.

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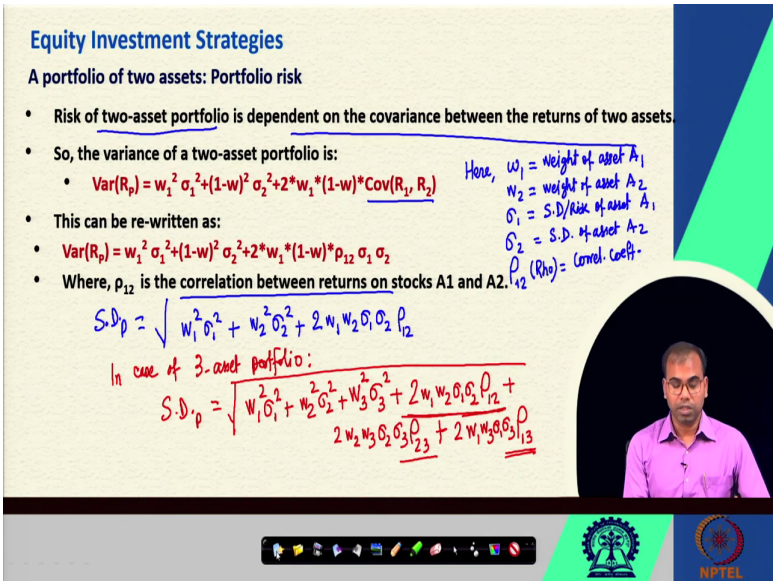

Calculation of return could be considered as one of the simplest tools to be used in such decision making, but when it comes to risk it becomes little tricky. Because when we talk about risk of a portfolio of two or more assets. So, let us start with the simplest approach that is two-asset portfolio.

So, risk of two-asset portfolio is typically calculated using the combination of risk of individual assets in the portfolio, but it is also dependent on the covariance between the return of two assets. Because as we understand when we try to multi include multiple assets in a

portfolio it is not only their individual risk that are coming as the risk of the portfolio, but also how they are interacting with each other.

So, the variance or the indicator of risk in this portfolio is calculated as following. So, we have this variance formula where we have weight of asset A1, sigma of asset A1 which is basically the indicator of risk standard deviation as we have seen earlier. Then weight of asset two, sigma of asset two and then we have 2 into weight of asset one, weight of asset two and covariance between the two-asset. If we simplify this formula further, we have this formula given as weight of asset one.

So, here weight 1 is proportion of investment invested in asset A1, weight 2 is proportion of investment in asset A2, sigma 1 is basically standard deviation or risk of asset A1 and sigma 2 is standard deviation of asset A2. And of course, correlation between asset A1 and A2 or we also know as rho is basically the correlation coefficient between asset A1 and A2.

So, this is how we can calculate the variance of the portfolio. If we want to calculate the standard deviation of the portfolio then we all we have to do is simply the standard deviation of the portfolio as weight 1 square sigma 1 square into weight 2 square into sigma 2 square plus 2 into weight 1, weight 2, sigma 1, sigma 2 and rho.

Now, you may ask or think about a situation where a portfolio consists of three assets. So, in that case the calculation or the approach changes slightly. So, in case of, in case of 3-asset portfolio, the formula for standard deviation of such a portfolio would be weight 1 square sigma 1 square weight 2 square sigma 2 square weight 3 square sigma 3 square plus, for every pair of assets there will be a correlation coefficient that will be driving the risk of the portfolio altogether.

So, 2 weight 1 weight 2 sigma 1 sigma 2 correlation 12 plus 2 into weight 2 weight 3 sigma 2 sigma 3 and correlation between asset 2 and 3 plus 2 into weight 1 weight 3 sigma 1 sigma 3 into correlation between 1 and 3. And this will tell us the risk of a portfolio of three assets.

So, you can imagine if there are more and more assets added to the portfolio, in a similar fashion we will have more and more correlation coming in the picture. And if there is a situation where the correlation between let us say two assets in a portfolio is 0, then you can understand this, but the entire a part of this function will be 0 and then then there will be just risk associated with individual assets. As we understand from our basic knowledge of statistics, correlation can range from minus 1 to plus 1.

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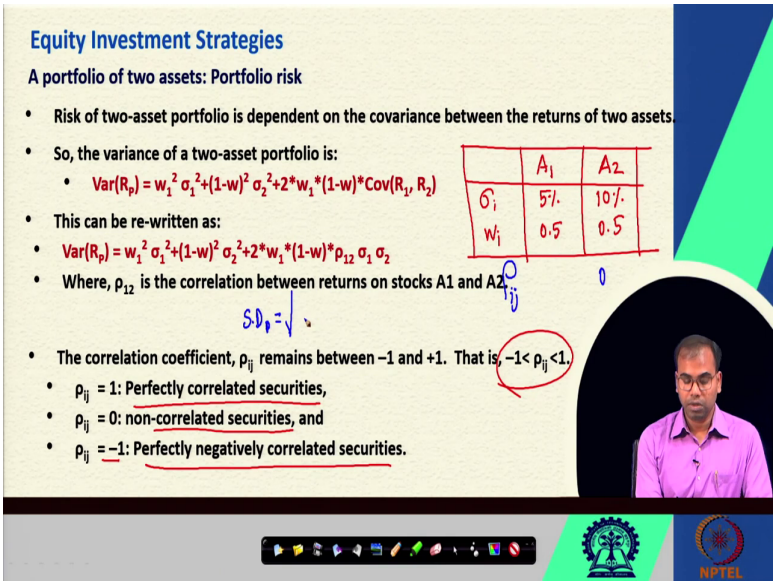

So, if we look at a correlation coefficient between two assets, it can be anywhere between minus 1 and plus 1. So, which means if the correlation coefficient between two assets is plus 1, these are considered to be perfectly positively correlated securities or assets.

If correlation coefficient between two assets ij is minus 1, they are perfectly negatively correlated securities or assets. And if correlation coefficient between two assets is 0, then

these are non correlated securities. However, in finance financial markets, an investor can hardly find any pair of assets which are not correlated at all.

But assuming that a correlation coefficient between two assets can be 0, we can show some example here. Suppose, extending the earlier example where we have asset A1 and asset A2 with sigma given as let us say 5 percent and here we have 10 percent and weight we had already calculated 50 percent in both cases. With this, we should also have what we know as correlation coefficient between i and j.

Let us assume that it is 0. If it is 1, then again accordingly we will change, but if it is 0, we can consider. So, if we apply this these numbers in into this formula, we know that standard deviation of portfolio would be or using the same formula for variance.

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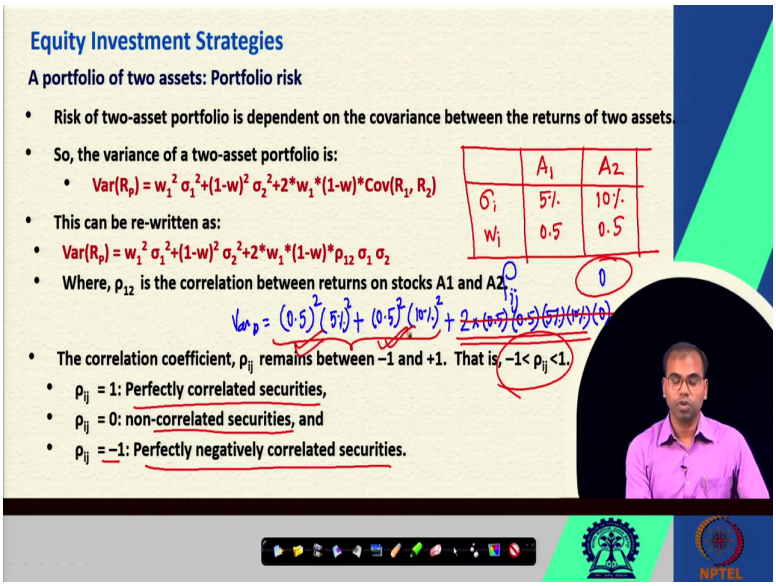

We can use variance of the portfolio as weight 1 which is 0.5 square into 5 percent. That is weight 1 into sigma 1 square plus weight 2 into sigma 2 square plus 2 into weight 1 weight 2 sigma 1 sigma 2 and correlation coefficient.

Now, since correlation coefficient is 0. So, this entire component will be 0 in this case because correlation coefficient is 0. And the risk of the portfolio will be only the risk of individual security squared. So, that is how we calculate the risk of the portfolio. As I was highlighting, if there are correlation values between pair of assets ranging from minus 1 to plus 1, accordingly the risk of the portfolio will go up or down by including more and more assets.

If you if we add more assets in the portfolio with higher positive correlation, we know that we are adding more and more risk to the portfolio because then this entire component will add to the individual risk of assets. And if we are including in the portfolio assets that are negatively correlated, then we are trying to diversify the portfolio and reduce the risk.

So, if we have negative correlation here. So, this entire component will be negative and that will reduce the risk of individual portfolio combined together. So, these are two tools that we use for portfolio analysis particularly calculation of risk and return.

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Using these tools, we can invest in equity assets and there are multiple investment strategies that can be considered by an any investor. For example, an investor can consider as simple as buy and hold strategy.

So, when an investor is unsure of beating the market, typically what an investor what the investor does is just buy some asset based on certain valuation, based on certain expectations and hold the that asset for the entire holding period or the entire duration of the holding period. In this case, the investor will not frequent deal frequently in order in terms of buying and selling rather just buy and hold for certain period of time to avoid transaction costs.

And in this case, the investor expect that this strategy might hold, but this might hold only if the investor has entered the market or per say bought the asset after careful consideration and

calculation of the valuation of the asset, then only buying at a lower price and holding it for long term, when the assets value increases in over the period, it pays off a decent return.

On the contrary, active strategies involve frequent buying and selling which means when you are an active in investor, you buy and sell more frequently than a typical buy and hold strategy. The whole purpose is to earn above average return, but in active cases, in active strategy, investor has to bear higher transaction cost, but in case of passive strategy, investor does not have to bear higher transaction cost because of limited number of dealings.

Another approach of investment is value investing where you try to invest in a company after carefully examining its intrinsic value or a future proposition. Basically, you try to see whether an invest whether an investment or whether a stock, whether the stock of a company is undervalued at the moment and then you buy it and hold it in few for very long period of time.

So, a typically you expect to identify an undervalued company where present value of the worth of the company or the future cash flows of the company is much more greater than the current market price. And you expect that when the market goes for correction, you hope that the price of such a stock goes up significantly because that is how it achieves the equilibrium and then you as an investor who entered at a lower price will sell and make money.

Another approach of investing is growth investing where you try to invest or make your decision based on the value that they intend to add to the portfolio and it is decided on the basis of holding time. So, typically investors invest in such firms which are also known as growth firms or growth investment or growth assets to increase their corpus value.

If they think the company will expand over the next few years and the intrinsic value of the stock will eventually increase. Some factors that might be worth considering or keeping in mind is wealth effect, risk behavior of the investors and expectations as well. We have already discussed about the risk behavior.

There are some investors who might be having some threshold level of risk to be carrying in as part of their investment strategies. They will have certain expectations which might be varying from different in from other investors as we understand wealth effect has its own role to play in the investment decision making.

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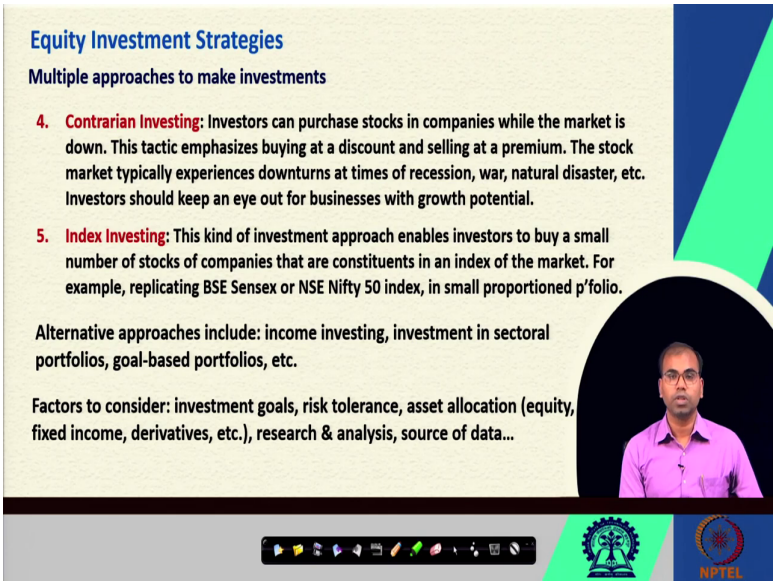

There are some alternative investment approaches such as contrarian investing where investors are typically supposed to purchase stocks in companies in businesses while the market is very low. So, you buy when everyone is selling. Typically, when the market is very low people start leaving the market people start selling more. But contrarian investment strategy suggest that when the market is low you buy more and when the market is high you sell and that is how you make money.

Another alternative in approach of investment is index investing where you do not have to do lot of active trading or active buying and selling rather you identify and invest in index let us say BSE Sensex or NSE Nifty 50 and you replicate a similar portfolio of you know smaller proportion.

So, if BSE Sensex or NSE Nifty or for that matter any other index has certain number of stocks in in as constituents you create a same portfolio in same proportion, but with smaller value. And whenever the index goes up or down you expect that the value of your portfolio will also in sync with the index value and that is how you can at least match up through the market except certain situation where you might have some higher transaction cost or tracking error in the process. These investment approaches include income investing, in investment in sectoral portfolios.

Sometimes there are investors who have some goal based or objective based portfolio for example, retirement portfolio or education portfolio in for short term to medium run it can have vacation portfolio. So, basically whenever we propose such investment strategies for our client or for our self we have to consider factors such as the investment goal the ability to bear risk which is basically risk tolerance, whether an investor is risk seeker or risk averse.

What kind of asset allocation that we have to consider, whether more funds should go to equity or fixed income or derivative and so on. And it goes without saying that research and analysis is an important aspect of making investment decision along with the data that we are using for research and analysis.

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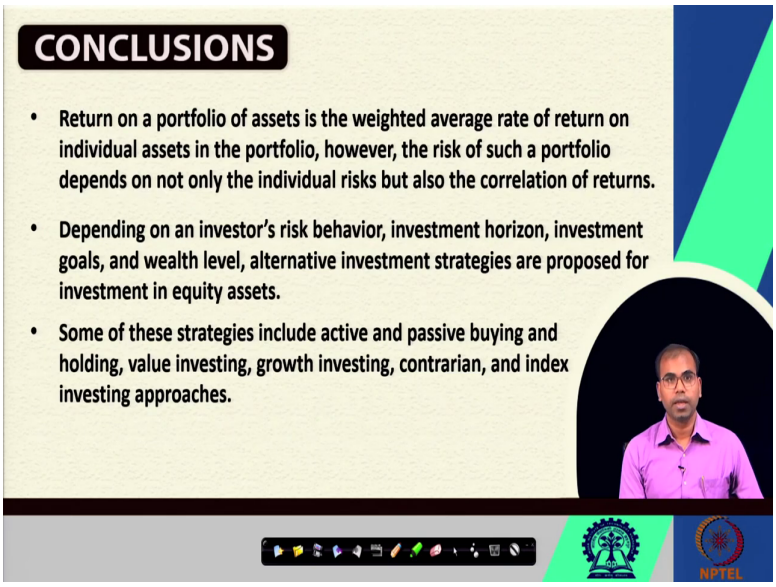

With this I conclude this session highlighting the importance of risk and return as part of our decision making for investment and we should also keep in mind that there are alternative investment strategies that an investor can consider.

However, every investment strategy is unique and before considering a particular investment strategy investor or the advisor should keep in mind factors such as the goal of investment or the objective of investment, the risk taking ability, the investment horizon, the level of wealth that investor is playing at and so on and so forth. With this I stop here.

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Thank you very much.