Behavioral and Personal Finance

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Lecture - 14
Beliefs, Biases and Heuristics (Contd.)

Hi there. Welcome again in previous session we discussed about Behavioral approach of investing and loss aversion. We have discussed that most of the investment decision making process is based on cash flow approach, where you have to consider expected cash flows from your investment and subsequently you try to compare it with the initial price that we are paying for that particular investment.

Now, we try to connect this approach with the context of loss aversion. In today's session we will discuss loss aversion with other behavioral biases such as sunk cost fallacy and endowment effect.

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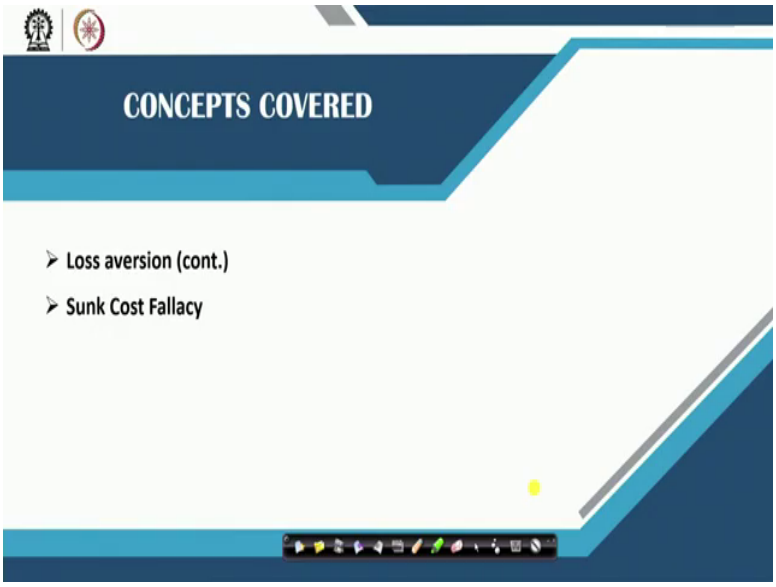

The topics that we are going to discuss today include loss aversion and such sunk cost fallacy in general will also try to touch upon the endowment effect and some other examples of behavioral biases. Taking the discussion from the previous session, we know that most of our decision making is driven by cash flow analysis of any investment avenues. To keep it in a very generic framework, if I can show that when we have to make a decision, we start with analyzing the cash flow, which is basically the flow of cash on a time line.

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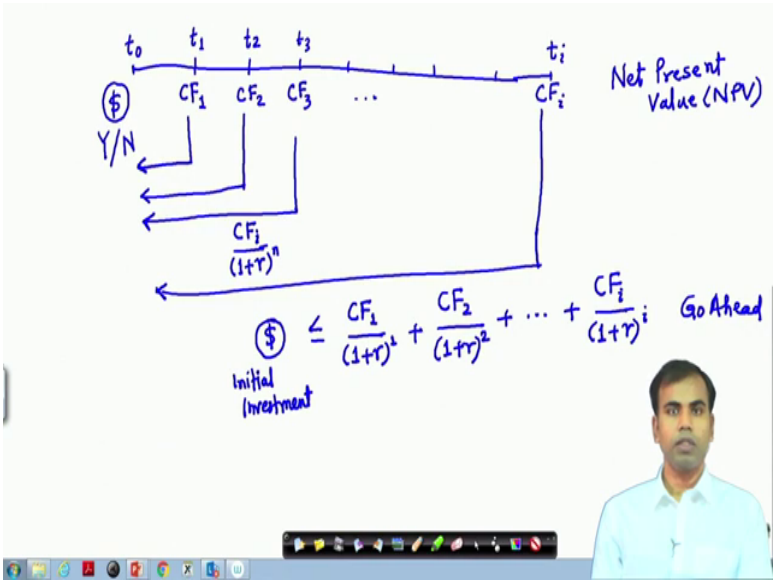

So, taking the example which we have discussed earlier, if this is a time line where t 0 represents time today t 1 represents next period, t 2 represents next to next period and so on. So, there are several time points and it ends with ti which is at certain point of time in future. We know that we will be getting cash flow 1 at time t cash flow 2 at time 2 cash flow 3 at time 3 and so on in future till cash flow i at time i.

Today, we have to make a decision, which means that we have to decide whether to pay for this investment or not. Y or N implies that whether we are going to make the investment or not. Consider this case as an example of investing some money in any project.

So, companies typically have to make some investment in a new project and they expect that the particular project might be yielding certain cash flows in future. So, if it is a project with a

timeline of i years and every year the company is expecting to get certain cash flow in terms of C F 1 C F 2 and so on.

Today, it has to make certain investment and has to justify whether the investment is good enough to go ahead or not. The standard approach is you try to calculate the value of these cash flows occurring at future dates, bring it to the present time and then compare the total value of expected cash flows with the initial investment.

We have discussed about net present value approach earlier, where we do the same exercise. This is also known as NPV approach, the idea here basically is you have to calculate the present value of these future cash flows, in terms of you have to consider cash flow at time i divided by 1 plus r that could be a discounting rate to the power n, which is basically the period for which you are investing.

So, which implies that when we are discounting cash flow at time 1, we will be discounting, we will be using cash flow at time 1 divided by 1 plus discounting rate and n would be 1. Similarly, cash flow at time 2 will be discounted with the discounting rate for 2 years and so on. So, cash flow at time I would be discounted with 1 plus discounting rate to the power i years.

So, this will basically be equated with the initial investment that we are going to make. If, it is greater or equal to than this initial investment, then we will go ahead with the project if it is not greater or equal to then we will try not to pursue that project. So, this is the basic approach of cash flow based method of investment decisions.

Now, let us consider behavioral biases that might be affecting. Now, these cash flows which we are talking about here would be coming from certain calculations. Those calculations could be done on the basis of the revenue that we can expect to generate from the business. For example, if a company takes up a project to set up a new production plant in a different location and that production plant is expected to generate certain revenues and consume certain cost.

So, this cash flow is basically cash flow generated after considering all the cost of production and net of all expenses that might be incurred at that particular plant. So, this cash flow at different years would be discounted at the rate r, for the number of years for which the product is the production is continuing.

Now, the calculation of cash flow might be conservative or aggressive depending on who is calculating the cash flow. Now, if the person who is doing the estimates estimation of the cash flows from that particular plant is very risk averse, he would like to consider this, in his calculation and if he is risk seeker his calculation would be changing accordingly.

Similarly, the discounting rate basically determines the cost of capital and the risk premium that the company might be considering. Here also the behavioral biases such as risk aversion or loss aversion might be incorporated in determining the discounting rate r and accordingly the calculation might change.

So, the behavioral biases might affect the calculation of CF as well as the r and subsequently this will in effect your decision whether to go ahead with the project or not. In a similar yet different example, if I can show you a situation where a company who is investing in R and D project.

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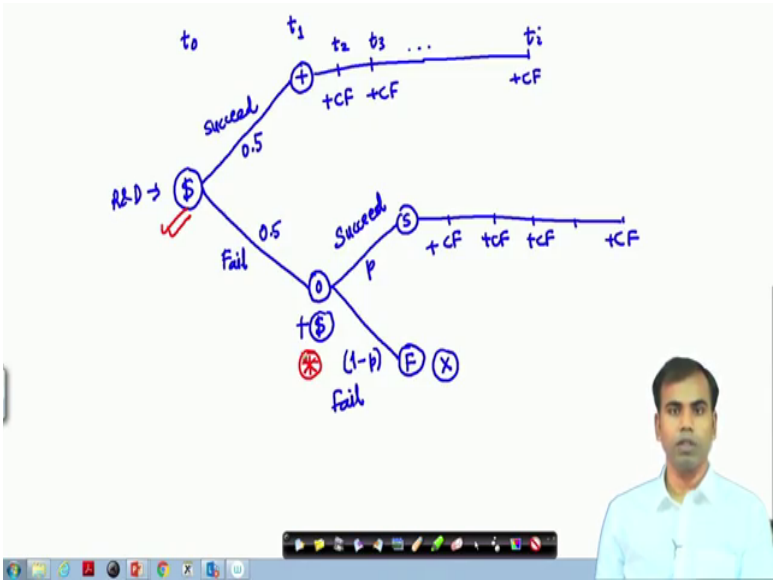

Let us say the company is investing in R and D project of a new product. So, certain amount of money is to be invested and the possibility that this project might succeed is 50 percent and this probability that it might fail is also 50 percent. Now, if it fails you get 0 at the end of let say 1 period hence. So, this is t 0 this is t 1.

If it succeed you start getting some money from that particular successful product. So, again you go ahead with t 2 t 3 and so on till ti. So, every time you get some positive cash flow, till the time your product is being sold in the market.

But, if the R and D project fails you get nothing. Now, at this point you have to decide, whether to put more money in the project, which means if it fails after 1 year would you be considering investing more money. So, that the project might revive or it might be successful and subsequently you might get certain revenue or certain income out of it. Which means, you

have to again some additional investment to be done and this investment might again lead to a success or failure of a project.

So, certain probability will be there of success and failure probability of success is defined as p and probability of failure is defined as 1 minus p. So, this could be the success case and this is fail case. And, if you succeed you start getting certain cash flows here, for some future period and if you do not succeed you get nothing.

Now, consider yourself as the decision maker. In the beginning you have already invested some amount of money at this point of time. Now, if you have invested and you failed after 1 period hence, which is here, would you like to invest some more money and consider this project to be reviving in future.

Well, many a times we do things which we do not like to do and that is where the psychological bias becomes more prominent. In investment decisions particularly you might observe that people make some bad decisions and to cover up those decisions they make even more bad decisions.

And that is why this example highlights the problem of something which is known as sunk cost fallacy. Let us try to discuss with the theoretical inputs of sunk cost fallacy in a similar case.

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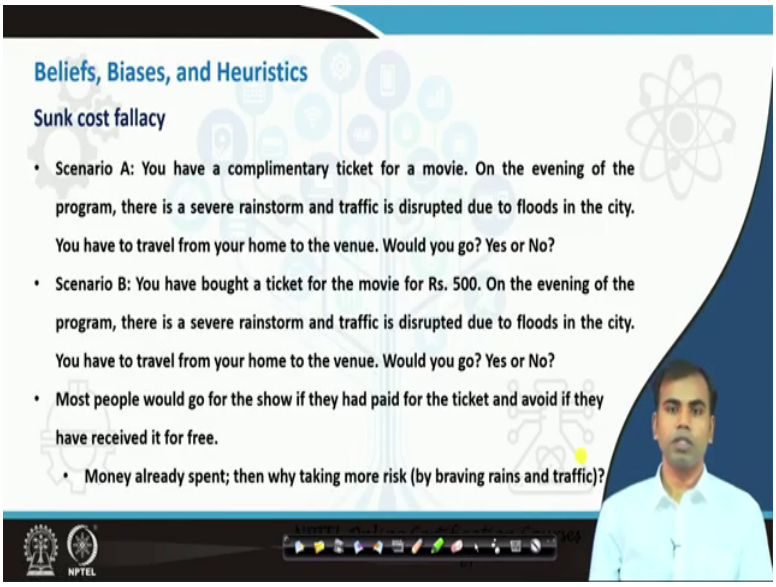

Let me begin with posing a situation before you. So, the situation here is suppose you have got a complimentary ticket for a movie in a situation one and that just before just before the program starts on the evening there is a severe rainstorm and floods affecting the traffic in the city, and you probably would not like to go for the movie. And, the reason is the distance from your home to the venue of the program is quite far and you are likely to be stuck at in traffic because of rainstorm and resulting floods.

The question here is would you like to go? Yes or No? Now, considering this situation let us consider a different situation in scenario B; where you have purchased that movie ticket for a price of let us say 500 rupees. And, the situation is same there is a heavy rain storm and the floods that is affecting the traffic and the venue is quite far and the decision choice here is whether you would like to go for the movie or not.

Now, what would be your response? In general we have observed through some experimental evidence, that when people spent money on buying the tickets. They would tend to go for the movie or the event or the program and where they have received the ticket for free, which is basically the complimentary ticket, they would not like to go for attending the movie.

Now, if you consider in a very homo economicus sense, which is very rational way of thinking. You know that ticket is already purchased for whosoever and whoever paid the price money is already spent, which means even if you have got that movie ticket for free someone must have paid for it and it has some economic value. And, if you have paid it you have paid it from your own pocket.

So, why do people behave differently when it is coming for free and when it is coming for a price that you have paid? The reason is people tip tend to take more risk when they are spending money from their own pocket. And, they take more risk by braving rains and traffic in this case; this particular example highlights a tendency of sunk cost fallacy. Where people tend to justify the decisions or rather bad decisions that they have made and thereby they make even further bad decisions.

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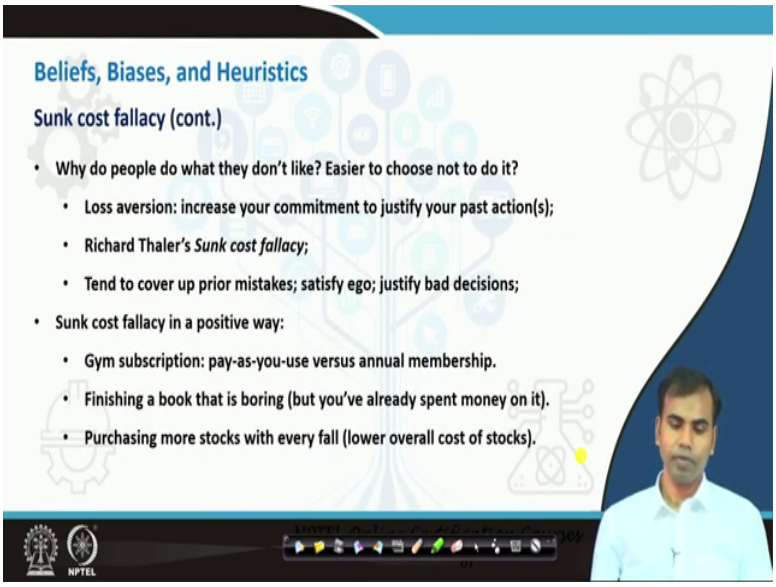

The argument here is it is a case of loss aversion where you increase your commitment to justify your past action. In the example shown here shows that you have purchased a ticket and thereby you had committed some amount of money to go for a movie and when the situation is riskier, in that sense that there are rains and traffic in the city, you take even more risk by going for the movie in this situation, because you want to justify your past action.

Richard Thaler calls this as sunk cost fallacy. Basically, the reason for which this behavior is exhibited is people tend to cover up their past mistakes and in the process they try to satisfy their ego and justify the bad decisions. Not that sunk cost fallacy is always bad, if we try to understand the resulting effect of sunk cost fallacy in a positive way, we can see the people's behavior when they go for a gym regularly, and they have to choose between pay as you use versus pay for the annual subscription.

If you want to maintain the discipline and rigor of going for the gym regularly, it is better for you if you stick to annual subscription plan, because in that sense you would realize that you have already paid some amount of money for the annual subscription. And to justify your prior commitment you increase your commitment further by going to the gym regularly. Whereas, if you stick to the pay as you use plan, the commitment level is satisfied immediately and there is no further commitment required from your side.

So, if you want to maintain that discipline you probably would like to pay for the annual subscription plan, this is a positive example of sunk cost fallacy. Similarly, you might observe the behavior of students when they start reading a bad book. So, bad book means a book that is boring.

For example, if a student has purchased a book for let us say a price of 300 rupees and after reading 30 pages, the student realize that the book is very boring, but since the student has already paid some amount of money in buying that book, the commitment level should be increased to complete that book because of justification of the prior commitment and thereby completing the book. So, this is another example of sunk cost fallacy in our day to day life.

In a different case, if you try to relate this sunk cost fallacy in financial market or rather stock markets, investor tend to buy more stocks when the prices fall, the underlying argument is buy cheaper and sell high. Whereas, when we try to see this example from a sunk cost fallacy case, people suppose there is an investor who purchased a stock for some amount of money and the price was x rupee.

Tomorrow or next period if the price falls to lower than x, the investor would probably try to buy more share saying that it will average the cost in terms of overall cost of purchase shares. whereas, at the root it is basically the evidence of sunk cost fallacy, where the investor is basically trying to justify the price that he had already paid the first time, by paying a lower price at the second time. So, he is actually trying to cover the previous mistakes by committing further amount of money in the investment.

This particular phenomena is very common in stock market where investors tend to over commit and commit again and again after they realize that they have met some mistake.

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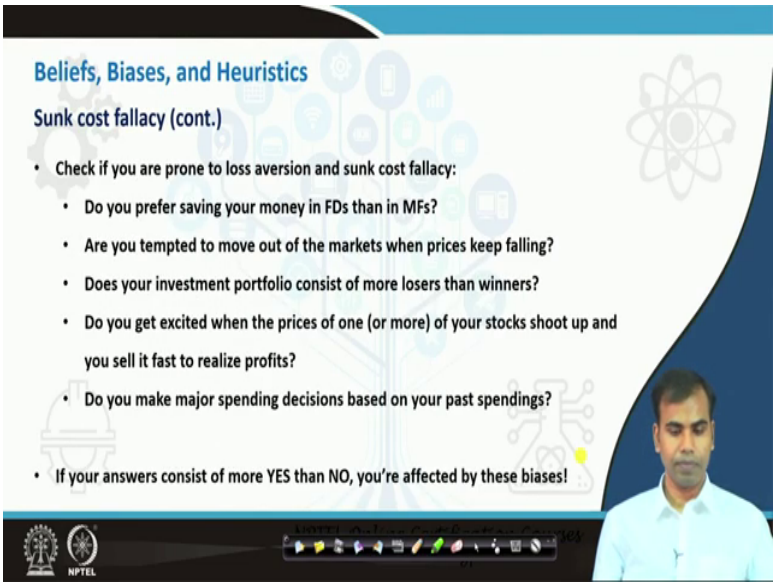

Now, if you want to know whether you are suffering from sunk cost fallacy in stock market or in your generic day to day decision making, you ask yourself the following questions. So, the question here indicate whether you might be prone to sunk cost fallacy or not; the question are whether you prefer to save more amount in fixed deposits than in mutual funds.

So, we all know that fixed deposits are safe investment where you are guaranteed a fixed return whereas, mutual funds are subject to market risk and the returns might be varying over several periods. So, you might prefer fixed deposits over mutual funds and if yes it shows that you are basically affected by loss aversion and resulting in some other behavioral biases.

Second question is whether you are tempted to move out of the stock market when the prices keep falling. If you realize that the prices are falling continuously you are tempted to sell everything and quit the market that is again a case of sunk loss aversion where you try to justify by selling your stock just by looking at the falling prices.

If your investment portfolio consists of more losers than winners it again indicates your loss aversion tendency, which means that you sell your stocks, who have been performing well, because you want to realize the profits. And, if the stocks are not doing well, you keep on holding them in the with the hope that the prices will recover and then you will sell to make the profit.

Another, situation could be when you get excited because the profits of one or more of your stocks that you have in your portfolio increases and you tend to or you want to sell that stock to realize the profit. This is again very much related to the previous example, where you tend to sell the winners who have performed well in the stock market and keep on holding the losers who have been doing really bad and letting you lose money.

Another question could be whether you make your spending decisions, the major spending decisions based on the prior experiences or prior spending decisions. If yes then again you are suffering from your sunk cost fallacy as well as loss aversion. So, when you have certain previous expenses and the decision to spend your money is affected by your previous experiences. Essentially it implies that your decision making is not objective rather it is affected by the experiences of the recent past.

If answer to these questions are more of yes than no then you are essentially affected by loss aversion as well as sunk cost fallacy in some cases. Now, having learnt that we whether we are affected by sunk cost fallacy or loss aversion or other behavioral biases, we should also highlight how we can take care of these issues when we take financial investment decisions.

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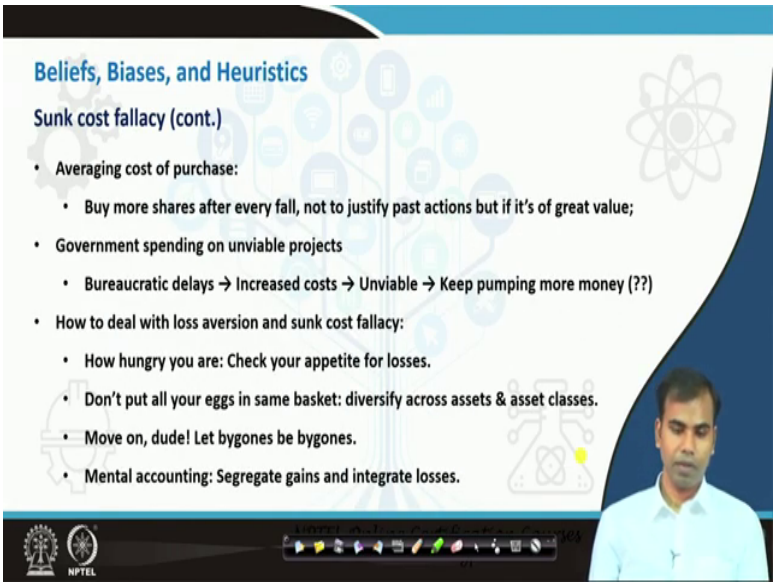

So, we know that sunk cost fallacy basically is in stock market reflected in terms of averaging the cost of buying shares, where people tend to buy more and more shares every time the price falls. In the hope that the overall cost of purchasing shares would be averaged out, essentially they are trying to over commit or rather they are trying to commit, even further after realizing that they have made some mistakes in investment decisions.

Similarly, if government have made some decisions related to public policy or public welfare and because of bureaucratic delays or any other political or economic factors, the decisions are not implemented in time thereby increasing the cost of the decision. Government tend to spend even further amount of money in order to cover up that mistake and that is a perfect example of sunk cost fallacy in government mechanism.

This is basically tried at an attempt to cover up the prior mistakes or previous commitment by committing even further and trying to justify the previous actions. The suggestions for taking over of issues related to sunk cost fallacy are as follows. So, for individual investors the first thing that we should keep in mind is your risk taking capacity.

It implies that if you would be able to understand how much risk you can undertake, it will determine how much return you should expect. So, going by the standard finance theory we know that if we can ascertain the amount of risk we can undertake it will affect the return determination that we are going to expect. So, the first step towards overcoming this sunk cost fallacy or loss aversion is to understand how hungry or how risk seeker you are.

Second step is to diversify as much as possible. As they it is said that do not put all your eggs in a single basket sunk cost to overcome sunk cost fallacy and loss aversion, you should diversify across all assets and across asset classes. When we mention all assets and asset classes we imply that you should diversify your investment, not only in different types of asset classes such as stocks, bonds, fixed deposits, precious metals like gold and silver and other investment of venues such as real state, precious arts and so on.

You should also diversified within asset classes such as within stocks you should invest in stocks of different companies, which are not very correlated such as you invest in consumer goods stock, you also invest in real state stock, you also invest in manufacturing or automobile stock and pharma stock and so on.

So, the idea is to diversify as much as possible in your investment of venues. At any point of time if you understand or you realize that there is some mistake just let it go. So, the idea here is to move on from the mistakes that you have committed do not cover up by making more mistakes.

So, let bygone be bygone. So, if we have made some investment mistakes and you see that the investment is letting you lose money, you just escape that investment by selling it off or

keeping it as it is do not keep on holding on to for long time by, which you will lose even more money.

And of course, to counter the one behavioral bias you should or you would rather prefer to apply another behavioral bias that is known as mental accounting. So, we have discussed that mental accounting helps us in segregating or integrating gains and losses. So, if you want to use mental accounting for positive output, you should segregate gains and integrate losses, which means that when it is about decisions which have some gains associated with it, you segregate it and if it is about losses you try to integrate all the losses before you take the decision further.

And, already we have discussed that when we try to integrate losses or segregate gains we essentially try to change our reference point and that reference point makes a very important contribution to our final decision making.

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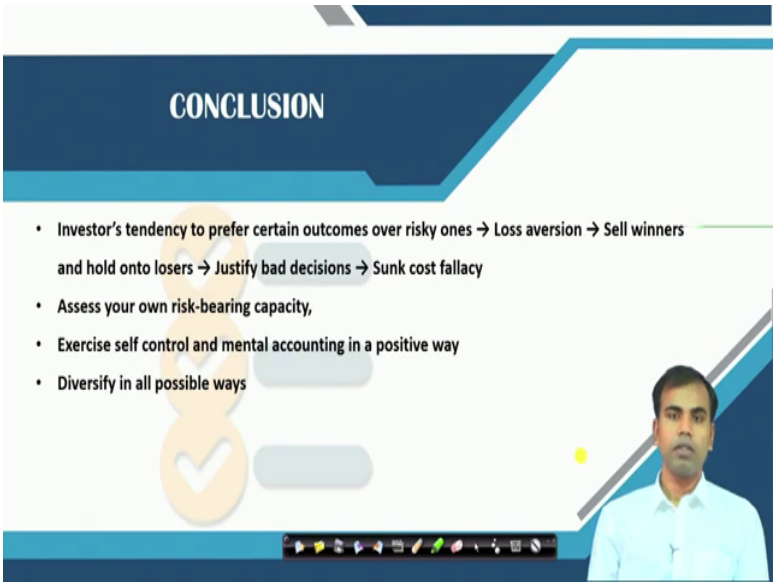

In this session we have discussed about certain example of loss aversion with the help of some cash flow based approach examples. And, we also touched upon a resulting behavioral bias known as sunk cost fallacy, where people tend to spend more money after realizing that they have already committed to a wrong decision.

This is tendency is basically resulting in more economically fertile decisions. Essentially, it is about the tendency to over commit or rather commit to a wrong decision and to cover up commit even further resulting as because of loss aversion attitude. And in stock market we have understood that it could be resulting in selling winners and holding onto losers.

We should not justify this decision by holding on to losers in a falling market, because sunk cost fallacy can be positively implemented when we try to incorporate in our decision making. Essentially, this sums up the effect of loss aversion and risk aversion in terms of the

biases affecting our decision making process. And, the ways to take care of these biases namely loss aversion and sunk cost fallacy is to exercise self-control and diversify as much as possible. This is all for now.

Thank you very much.