Financial Management for Managers
Professor Anil K. Sharma
Department of Management Studies
Indian Institute of Technology, Roorkee
Lecture 46
Risk Analysis in Capital Budgeting - Part 7

Welcome all. So in the process of learning about the say risk analysis in the capital budgeting proposals, now I am going to take the last class on this topic – Risk Analysis. And in this class, we are going to learn about that after learning about the different methods of risk analysis in the capital budgeting proposals of the new investment proposals we will be learned about the say sensitivity analysis, scenario analysis, benefit cost, means you call it as break-even point, not benefit costs but the break-even point.

And then we learned about the say some advanced techniques, mathematical models like Hillier's model and then we learned about the say some other techniques like your stimulation analysis and the decision tree. Now, the question arises that how to go for the say corporate analysis or maybe the analysis of the project as a whole. So, in this case, because when you talk about the different techniques, so we can say that those techniques help us to learn that how to measure the risk or how to go for this kind of analysis.

But in the practical sense, how to do it and say depending upon the risk profile of the project or the say new investment opportunity or the new investment proposal, it depends upon whether it say first time a proposal or maybe the firm which is going to take up this investment proposal is the new firm and there only have this project in their mind or they have some other projects also or this is an adjusting firm and in the existing series of investments, they are going to make a new investment.

So, if it is a existing firm and in the series of existing investments, they are going to make a new investment then we call it as a corporate risk analysis. But if it is a standalone project, maybe the only project or the first project of a any new entrepreneur or the new say group of the people who have established maybe a partnership organization or a joint stock company or maybe a private limited company, not joint stock company directly but a private limited company.

So, in that case means the two different approaches we have to follow. In case of the standalone, if it is a new firm for the first time they are into the business, they are new entrepreneurs or maybe it is a startup. In that case the say risk analysis been largely depend upon these techniques. You see sensitivity analysis, scenario analysis, because other say projects are not in say existence. The firm is already not in existence. It is going to be a new firm.

So we have to make use of these methods maybe the sensitivity and scenario analysis, which are very commonly used. And then we can say there means the use the break-even point also and in the new businesses, breakeven point plays a very-very important role because there you have to recover the fixed cost. Once that total cost fixed and variable stands recovered then after that whatever the production and sales we make, that is going to give us the profit.

So in the new businesses, for the new entrepreneurs, the challenge is that to arrive at or reach at the breakeven point as early as possible. Venture capitalists also when they accept the proposals, they also expect that in the not in the first year, it may be a loss in the first year; second year will be a loss, third year at least the business should reach at the breakeven point. So, that fourth year onwards now the firm or that project or the business start earnings the profit.

If any business is not expected to reach at the break-even point even after say four years, but to talk of three. But even after the four years, then a venture capital is not liked generally. This kind of the proposals or this kind of the investment opportunities. So, in case of the stand-alone any of these methods can be used or say jointly we can use not one method is sufficient. You can use the break even analysis and we can use the sensitivity analysis or we can create different kind of scenarios and then we can decide about whether to go for this investment or not.

But in case of the corporate risk analysis, the caution is say, very serious caution is required because what is going to happen, that it is going to say add up a new activity, a new investment proposal, and that new investment proposal may be the riskier proposal or maybe say less riskier proposal, more riskier proposal. So definitely it is going to impact upon the existing risk say complexion or the profile of the business.

So, if it is a riskier proposal, then it is going to increase the overall risk of the firm. And if it is a less riskier, then it is going to have the less impact. So, it means in the corporate risk analysis we

will have to think about in terms of that the new project is going to create what kind of the situation for the existing firm. Say, for example, when I talked to you in the beginning about the anchor fruit beer project. So in that case, you see that when they lost 350 corers by adding up a new activity into the business, say it was a very riskier project for them and they lost almost a very high sum out of the reserve surplus or maybe from the funds raised from other sources.

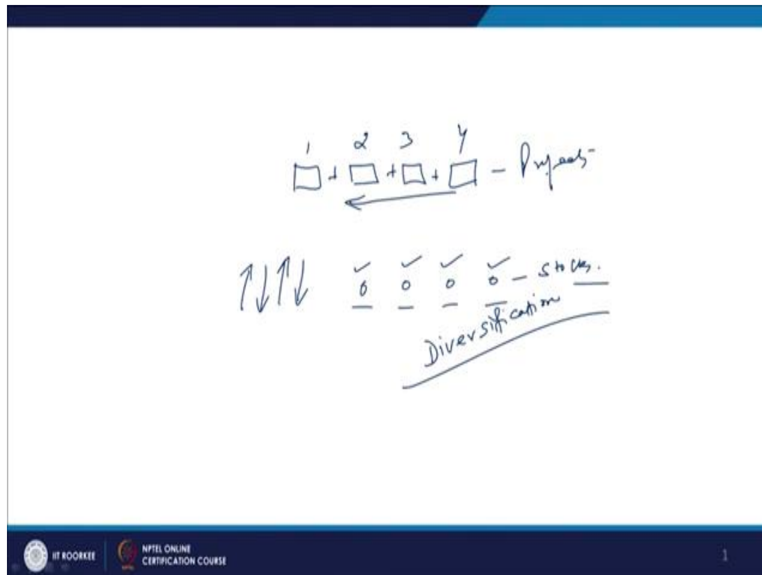
So, corporate risk analysis requires that a new investment proposal is going to change or impact upon the existing risk profile of the firm in what manner? How right. And here we could have the say two important points in mind.

(Refer Slide Time: 6:01)

CORPORATE RISK ANALYSIS

- A project's corporate risk is its contribution to the overall risk of the firm
- On a stand-alone basis a project may be very risky but if its returns are not highly correlated – or, even better, negatively correlated — with the returns on the other projects of the firm, its corporate risk tends to be low

IIT ROORKEE | NPTEL ONLINE CERTIFICATION COURSE



First point given here is the project; project corporate risk is its contribution to the overall risk of the firm. Already we have the say different say you can call it as a investment. The projects we are already working on these are, the three projects of firm already have or they might have the different say different three products they are manufacturing and selling now they want to add the fourth one in the say row. So it means this is means this, these three projects, this plus this are going to means say give or they are giving some returns as well as the risk.

But when they are going to adopt the fourth one also, so this is going to impact the performance of all the three existing projects also. And overall risk profile or the complexion of the firm is going to be impacted. So, if this is going to be the situation, if this is going to be the case, then we have to see here that say, second point, on standalone basis or project may be very risky, but if its returns are not highly correlated. If its project returns are not highly correlated or even better, negatively correlated.

If they are not highly correlated or even better, negatively correlated with the returns of the other projects of the firm, its corporate risk tends to be low. So, you must have heard about, for example, if you have say gone through some concepts of the investment finance. So there we used the say a portfolio theory for making investment in the market. We follow the portfolio theory for making investment in the market and there we make the say mean variance analysis.

In the mean variance analysis in the portfolio theory suggested by or given by the Harry Markowitz long back ask for that say there should be complete diversification of the say different investment options which we have, and we should not put all of our eggs into one basket. We should not put all our eggs into one basket. So it means what we are going to do here, when this firm is going to have four projects. One, this is two, this is three and this is four so it is means going to be the one which is going to say have the philosophy.

They are not going to put all their eggs into one basket. They had the first project in the beginning when it was successful. Then they went for the second. Then they went for the third. And then they went for the fourth. Now, in this case, what is written there in the point, if we have properly read that 'returns of the projects must not be positively correlated rather they should be less correlated or it would be much more better if they are negatively correlated'. It is not the case of the new projects. It is case of the existing projects also.

So, it means if the especially for the new project, the fourth opportunity, if the returns of this fourth project are negatively correlated. So, it is going to reduce the risk profile of the firm. Normally what happens, the diversification we do is because normally there are two kinds of risk involved in any kind of investment opportunity, in the stock market investment when we use the portfolio theory which I am just talking to you about, is that just given by the Harry Markowitz, we used this concept of diversification.

So what we do is slip the stocks, maybe the individual investor. They do not make investment in one company's shares only. They make investment partly the investment into this, into this, into this and into this. So they diversify. And what they do is these four stocks belong to four different companies which might be belonging to the four different sectors. One must be belonging to the consumer sector. One is belonging to the consumer durable. One is belonging to the infrastructure sector and one is belonging to that say you call it as a say, oil and gas or maybe the telecommunications or any other company.

So four different companies say they have chosen into the stocks of the four different companies the investment is going to be made. So what is there? There are two kinds of risks involved in any investment opportunity, whether that is a project investment or whether that is a stock investment. So, in both the investments, say possibilities or opportunities two kinds of risk are

there; Firm level risk and the say industry level risk or you can call it as economy level risk, not industry level, but the economy level risk.

So the firm level risk can be managed. You can say, look at that say the profitability position of the firm or you can look at the financial position of the firm. You can see how the stocks of the say firm are being say, traded or what is the price people are paying for. So firm level risk managing the firm level risk there is not a difficulty at all because after proper analysis of the financial statements of any company, you can make out that for the past three four years, after analyzing the financial statements if you come to know that this company is performing well so maybe in the years to come also this company will be doing very well in the market.

So, means in any way you can understand the firm level risk and that can be managed also. But with the risk, which is the economy wide risk, which is called as the systemic risk, which is a risk caused by the system that can be in terms of the inflation say rate that can be in terms of the interest rate so for say a hedging the systemic risk, we have to use a strategy which is called as diversification, proper diversification.

So, in this case, what we are doing, these are the projects, which are the bigger the project investment, is being made by the same business entities and these are the stocks where the investment is being made by the individuals. And in both these say projects as well as the stock investments if you want to minimize the risk, what you have to do is you have to use the strategy of the diversification. And if you properly go for the proper diversification, so you are going to minimize your risk.

What is now the diversification means that what we are doing it? We are not putting all our eggs into one basket. It means partly the investment it made here, partly the investment is made here, partly the investment is made here and partly the investment is made here. Why we are doing it because we want to go for the diversification of the total investment so it may be possible that the returns from the different investment options may behave like this. It is like this. It is like this. It is like this. And it is like this.

Returns of one stock are going up, one are going down one are going up, one are going down. So what is going to happen that if there is going to be any loss in any project that will be offset by

the profit from the other project? Similarly, if there is going to be a loss in one stock investment, then it may be offset by the profit or gain in the, another stock price because the price of another stock may go up right. So, in this case means because I have as I am saying what is written here that with the returns means on a standalone basis the project may be very risky, but if its returns are not highly correlated or even better negatively correlated.

So this is called as a negative correlation. Highly correlated means all four are going like this or all four are going like this. This can be like this if they are a highly correlated. So what is happening? All the four investment options are going to be either the loss or the profit. And that is a very bad situation. So for managing the corporate risk, like as we manage the individual's level risk that is by say diversifying our investment into different kinds of stocks. The firms also have to diversify the say investments.

And you might have seen the bigger companies like say, for example, Hindustan Unilever; they make investment into different type of the products. Some of the investments they are making into the say your consumer products some are, some investment means their total portfolio if you look at even in the consumer products also the total investment is not into one product into the different products. So, because of the change in the taste of the people requirement of the people demand for the one product may go down, but the demand for the other product may go up.

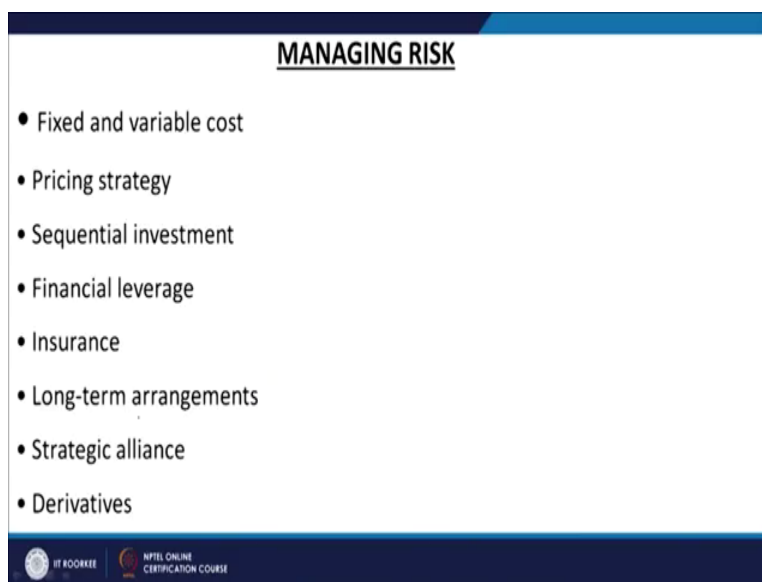
So they have a property portfolio and same is the case with the other say investors also, bigger companies, for example, you talk about the reliance, not the reliance is the different activities they have investment into the say distribution, also reliance stores are there, they are into the petroleum and chemicals. They are into the textiles also; they are into the telecommunication also. So why this all they are doing to minimize the risk, the corporate risk so that if the one sector is not doing well.

The other sector will do well. And there is a very say standard saying that a firm will stand better of means like a balance firm in the market if it has minimum three legs, if it has minimum three legs for example, we have the say blackboard. So how many legs it has? It has three legs. If it has only two legs, what will happen, it will fall down if it has only one leg. It is not possible for the firm to stand. If it is the three legs, minimum three legs and I am saying if it has more legs then there is no problem.

But minimum if it is three legs are there it is better for the firm to keep on standing rather than having the lesser than three, because that will create a very difficult situation. So what we can do is we can use the strategy of the diversification and proper diversification so that that the loss and profit situation into different products ultimately means either means it takes us to a no loss situation or maybe lesser loss in the one project may be compensated by the more profit in the other projects. So ultimately the firm keeps on going.

So corporate risk requires the proper diversification strategy and apart from falling this sensitivity analysis, scenario analysis, breakeven analysis, we should go for the proper diversification. So, that means if one sector is giving a loss, other is giving the profit and firm is going on. It is continuing its properly functioning in the market. So this is a corporate risk analysis. Then managing the risk, how could we manage the risk?

(Refer Slide Time: 16:18)



We have the different options available here and for managing the different options available here, say you can use any of the strategies here. For example, you can manage the cost, you can manage the price you can to manage the investment like a sequential investment. We can take care of the financial leverage, insurances and other way out then long term arrangements are there, strategic alliances are there and derivate are there. So, I will discuss them these important things and not shall not in detail because of the shortage of time and for the detailed discussion and detailed reference.

Again, you can refer to the book, any book on financial management. Now, for example, managing risk by say managing the cost both fixed and the variable cost. Normally what happens that when the fixed cost of any firm is very high, so it is very difficult for the firm to reach at the breakeven point at the earliest? Because when you calculate the break-even point, first of all, we calculate the contribution and after a contribution, what we talk about here is a break-even point, can be calculated by a fixed cost divided by the contribution margin ratio CMR.

And after this fixed cost ends are recovered we arrive at the profit right. So, break-even point is this and then the same I would say that is equal to this. You can do one thing here is that is the, for calculating the profit once this fixed cost is recovered, it means we are at the state of nonprofit, no loss. And in this case, the say for calculating the profit what you have to do is contribution margin ratio or maybe not contribution margin ratio but the contribution margin here you would say contribution margin minus fixed cost. So that is going to give you the profit.

So, it means if you are say manufacturing everything yourself for the firm is going to manufacture everything by themselves it means in that case they have to create the fixed assets or maybe the plant building and machinery. And if they are going to make huge investment into the fixed assets, it means they have to recover that fixed investment also. And in the process of recovery of the fixed investment, their break-even point will go very high. So, it will take means larger amount of time for the fund to reach at the say profitable speech.

So in this case, sometimes what happens the firms may adopt the strategy that whatever the total number of products they want to say sell in the market under their brand name part of the products they can manufacture themselves, part of the product they may acquire from the market, from the small manufacturers. Those small manufacturers can be asked that you manufacture for us and then manufactured under the proper quality control. The manufactured products can be bought from the small manufacturers and they can be sold under the company's own brand name.

And many say consumer products manufacturing like Hindustani Unilever, Dabur, Parle's, even Patanjali also, Patanjali whatever the products they are selling in the market under their own brand name, they are not manufacturing all the products. They have outsourced the manufacturing. So in that case, what happens, we do not have to say shell out the larger amount of investment for making investment into the fixed assets also. So we are avoiding investment into fixed assets and then only by incurring the variable cost.

We have to recover only the variable costs so lesser the amount the fixed cost, higher the amount of the variable costs it is easier to reach at the profitable stage rather than having the higher amount of the fixed cost. So means arriving at the fixed cost will create the problem. And I think that the break-even point will create a problem. So it means we can manage the fixed cost. It happens many a times. For example, a long back you must have heard about the company's name Onida. Onida was a leader in the consumer durable market.

They were manufacturing electronics products like color TVs and say other things like air conditioners and washing machines. So, till I think 2000, ‘99 - 2000, they were the leader in the market. But after that, because of the multi-nationals influx in this economy, they started losing the market and today the Onida's overall say the market share is not very high. So in 2001 or ‘02 they adopted a strategy that if they keep on manufacturing all the product they are selling under

the brand name, brand name of Onida then it will be very difficult for the company to meet the fixed cost because their sales got negatively hit.

So, then they adopted the strategy there part of the product they manufacturer themselves and part of the products they outsource and then they bought the manufactured products and then sold the products under their own brand name. So that happened the company two, 2 means, to take care of the fixed cost so that way you can minimize the fixed cost and simply by incurring the variable cost and recovering that we can increase the profitability of the firm that can be the one strategy.

Then pricing strategy, so sometimes if we are say feeling that we will be able to gain the larger market share by reducing the price of the product so it will be a better strategy, but if you reduce the price of the product so risk comes up here is again reaching the break-even point creates the problem. So, we have to be very careful looking at the total market dynamics that say what price should be charged. There the two kinds of the marketing policies.

One is a market penetration policy another is the market skimming policy, under the market penetration policy to earn a desirable amount of the profit we reduce the price and increase the number of units we are going to sell in the market. So what happens? Per unit profit is lesser but when we sell large number of units in the market, so it means multiplied by the large number of units, the per unit profit which we are earning ultimately the profit volume or the amount of the profit comes up as we want to earn.

But under the market schemed policy or the market skimming policy, what we do is we keep the price of the product relatively high and the target that by keeping the relatively high price for our product will not be able to sell the large number of units in the market rather lesser number of unit is in the market, but since the profit per unit is very high. So, it means ultimately we will be able to reach at the point of profitability where we want to reach.

So, depending upon the risk profile, market dynamics, customer preferences, consumer preferences, we can follow the marketing policy and we can price the product by following either the market penetration policy or the market skimming policy. So risk can be managed. Sequential investments do not make all their investment together. We can follow the decision

tree. So we are not going to make a say for example, all the investment together. You see that we are going to do like this.

And then we are going to do like this so we can create a decision tree means decision tree analysis is very, very important in sequential investments. If you make all the investments together and if for example it does not work, then huge risk is involved so sequential means, for example in 1982 when Nirma came up to a came up in the market by Karsanbhai. So, he started the say production at a very small level. He distributed initially had free of cost. Then he say when the response was very good he started the commercial production.

But the commercial production was also means carefully done and producing that all other investments, whether they are into the education sector or whether they are into the cosmetics or they are into the detergents means first was the detergent. Then they moved to the cosmetics, then they moved to the education sector. So sequentially, investments are made in the market and that can also help to manage the risk.

Financial leverage keep the level of borrowings debt amount as low as possible because debt brings the risk in the firm, because debts always has a fixed charge and if you are paying the fixed charge means if we are borrowing more funds especially when we are the new in the business, it is the advice to the new entrepreneurs that if they want to move into the business or maybe you want to have a startup, always avoid to borrow money in the form of the debt capital and debt is known as basically the financial leverage.

The technical name of the debt capital is called as the leverage. So, keep your leverage as low as possible, because if the more funds come as a borrowed capital, as a debt capital and the firm start incurring the losses so you will not have the say liquidity, or the funds surplus funds available to service the debt and to repay the principal. And that will means immediately create a situation for the firm where the firm has to be to be liquidated because it will become bankrupt. So always means the financial sources should come largely from the internal sources more in the form of the equity capital or investment from the entrepreneurs.

Similarly, if it is an existing firm they want to make investment into the new project, even in that case also borrowings should be as low as possible. The component of the financial leverage in

the capital structure has to be as low as possible, so that the fixed charge, fixed financial charge, creation of the fixed financial charge is as low as possible and it is within the manageable limits. So financial leverage has to be managed to keep the risk low.

Insurance we can get our all fixed assets, our people insured, even our stock insured, so that in the event of any loss we can say, we can means take advantage of the claims to be paid by the insurance companies and business is ultimately safe. Long term arrangements – Long term arrangements are in many terms. For example, we can enter into the long term arrangements with the suppliers that you will keep on supplying at this particular price per unit for the next 5 years, that means you will not change the price.

Normally because of inflation we have to change the price of the raw material. But if you are entering into 3 to 5 year long term arrangement, then I think we are at the means in a better position, we can enter into the long term say agreement with the labor, with the workforce, with the employees, that you will be paid this much an annual increase for the next 5 year will be this much. So, it means firm is safe they are they know in advance that supply of the material for the next five years is assured.

The availability of the human resource is best human resources is assured for the next 5 years. Similarly, we can have the long term say contracts with the say buyers of the finished product. This is one classical case here. Steel Authority of India Limited when it became a sick company means when they lost their sale in favor of the private sector players after the liberalization of say Indian economy and opening up of the steel sector for the private sector participation, so they now how to think about the sales which they lost in India. They had to make the sales good by looking for the say markets in the other countries.

It was suggested to the sale that if you want to continue selling the same amount which you were selling earlier, then the economy was a closed economy and you were the largely the sole player in the steel market. So in that case, you have to look for the markets now in the say countries outside India. So, they suggested McKinsey as a consulting adviser. They suggested SAIL that Middle East could be a market where you can look for the say, for the customers for the lost market and they can help you to regain the market and company did, SAIL did like this.

They opened up a say, you can call it as a noddle office in Dubai, and that noodle office facility the facility to the long term say contract with the buyers in the Middle East countries that for the next say three years or four years or five years, the buyers in those countries will keep on buying the finished steel from SAIL. So means long term contract in terms of raw materials, in terms of labor, in terms of selling the finished product can be entered into, so that risk of input and selling of the output in the market can be avoided.

Strategic alliances – We can form the joint venture to deal with the risk and you would say, find it interesting that multinational companies when they move from one market to another market, they enter into a joint venture or they enter into a strategic alliance with the local player in the host country. For example, in India when the multinationals came in the different sectors. For example, you must have heard about the company Hero Honda.

Now the Hero Honda was a joint venture, but say long back it is now say broken away and now these two companies are independently operating in the market. But Honda when they had to enter the Indian market they entered into a strategic alliance. They formed the joint venture with the Hero cycles and Hero and Honda jointly then performed in the market for many years. Later on when they, Honda thought that now independently they can sustain in the market then they broke away the say joint venture of the strategic alliance.

Now, these two companies are independently working in the market. Honda is working independently and Hero Moto Corp. is working independently. So, it is a very good strategy to minimize the risk because when any multinational company goes into the new market, they do not know the say taste of the people, the distribution channels, the government strategies, the government rules and regulations. So, it is always better to form the strategic alliances to take care of all of those risks, once you are aware of the market, say regulations and changes, then no issue.

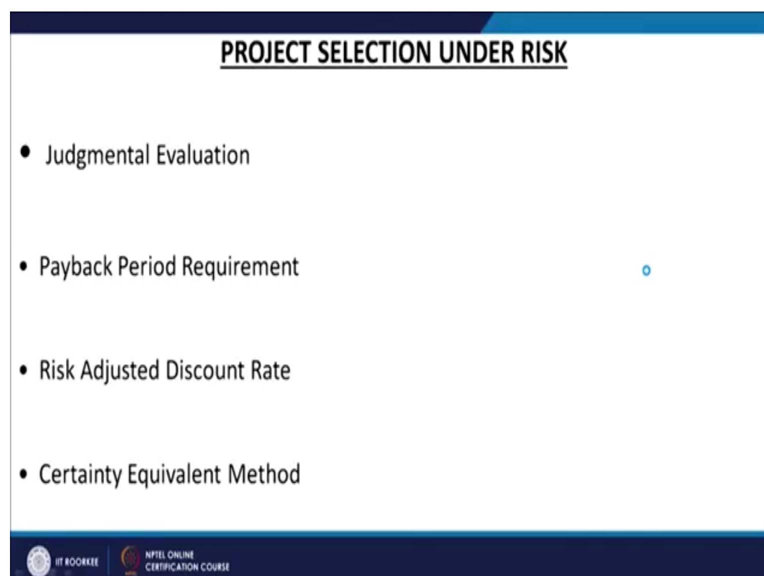
You can start operating independently. So, it is done. Recently you might have seen that the risk which was posed by the Jio's entry in the telecommunications sector. There the two adjusting big players Idea and Vodafone, they enter into a strategic alliance. They formed a joint venture because they knew it that the risk which is going to be posed by the Reliance Jio, that is going to be very-very difficult for them to fight. So, they entered into that joint venture strategic alliance

and largely that was to deal with the say lost or the market share to be lost in favor of Jio. So that was done largely to deal with the risk of the loss of the market share.

So, strategic alliances are very-very useful. Then we can take the help of derivative products. We have the very popular derivative products available in the Indian market, also stock exchanges are regulating these say products they have that say largely two products, futures and options. So with the help of futures, we can say secure or we can mitigate the risk of rise in the price of any kind of the particular input. For example, oil refineries, they can buy the long term oil futures from the suppliers of the crude oil that for the next 5 years, or maybe the crude oil in this year or in this date or in this particular period will be supplied to the refinery at this price.

So if we are entering into a future contract for the supply of the crude oil from the supplier, so our supply of input is secured and risk of increasing the price in the market is taken care of. Similarly, we can use options, where the call options and put options are there. Call option gives the right to buy something at a predetermined price and say put option give the right to the buyer of the option to sell a one particular product at a predetermined price. So, it means these derivative products are available in the market and they can be made use of for mitigation of the risk.

(Refer Slide Time: 32:02)

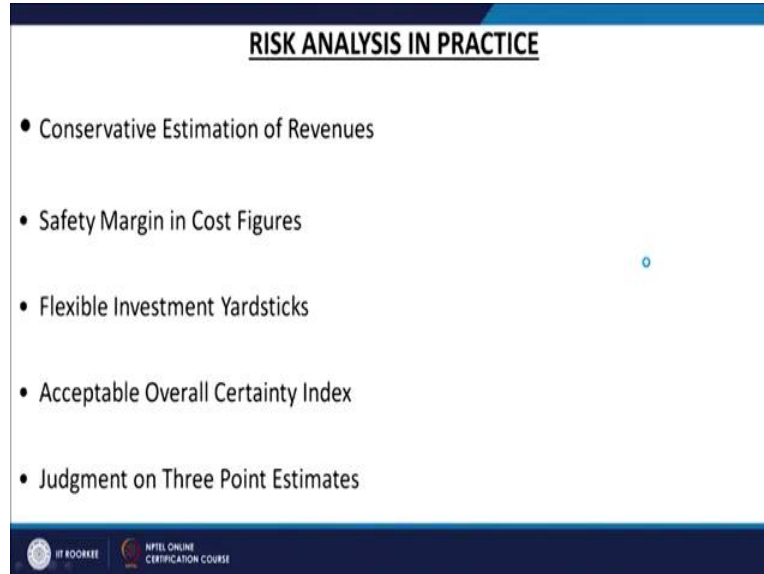


So, project selection under the risk. So there are the different methods, different say options available here with us for the project selection under the risk and the four methods are available here, quickly, let us go through these. Judgmental values – We can judge experts, means experts can judge and they can find out how much risk is involved and that can be taken care of. Payback period Method is the one which helps us to understand that how or in how much period the investment is going to be paid back so that can be one way.

Risk adjusted discount rates we can use and there is a one method called as the certainty equivalent method. So, we can make sure with the help of the certainty equivalent method that how much say return is available from the project, because certainty equivalent index or the say you can call it as coefficient we have to work out. And when we work out the certainty equivalent coefficient, then we make sure that my rate of return is this much and how much return is available from the project.

So say required rate for return and expected rate for return on the basis of that we work out a say certainty equivalent coefficient and then we multiply the cash flows with that coefficient and calculated the NPV. So, detailed discussion you can refer through the books, particularly The Financial Management by Prasanna Chandra, the method is very nicely explained there. So please, I request you buy the book and then you would be more clear about all the concepts we are discussing say here in this class.

(Refer Slide Time: 33:42)



Then we talk about lastly, the last leg of discussion is just quickly for 2 minutes Risk Analysis in practice. Largely what the people do, what the corporates do when they go for the risk analysis? Number one, conservative estimates of revenue, safety margins in the cost figures, flexible investment yardsticks, acceptable overall certainty index, and then the judgmental, judgment of the three point estimates. All these five methods not all alone, but to jointly are being used in the practice.

So, conservative estimates of the revenue, because ultimately cash flows depend up on the revenue. So, when you are going to say, on the basis of the market and demand analysis, when you are going to estimate for that revenue, always be conservative. We know that we are going to sell 1000 unit per month but always say assume that we are going to sell 800 units in the market so that if your revenue estimates are conservative and despite that, the project is going to be the profitable proposition then certainly to a larger extent that risk is managed.

Similarly safety margin in the cost – When you estimates for, estimate for the cost like the fixed cost of the variable cost always keep some contingencies so that we are planning that our plant and machinery investment requirement is 100 crores or maybe the 100 lacs, 1 crore rupees, but we will assume that it will not be available for 1 crore, it will be available for say 1.20 crore. So we have already kept so means lowering down the revenue, expected revenue and increasing the

expected cost still of the projects NPV is becoming positive it means to a larger extent you have taken care of the risk.

Flexible investment yardsticks always means keep on changing your investment yardsticks always, do not say that I always want this much rate of return. Depending upon that my cost of capital goes down my rate of return can go down also. So always it has to be a you can call it as a multiplier effect means you should not always stick to one thing that I would like to borrow, buy raw material from this source only or my rate of return is this much only or my cost of capital is going to be this much only.

No, we have to change so many variables at a time so that we can find out that in the best possible situation what is going to happen. And acceptable overall certainty index, when we are going to calculate the say acceptable overall certainty index or the coefficient, we should mean that say required amount of the return that should be means optimally determined. So comparison between them required and expected returns from the project should be means carefully worked out.

And then when you calculate the NPV by multiplying the cash flows with the certainty quality coefficient, then we will be able to find out that whether it is a workable project or not. And lastly, judgment on the three point estimates. Like when we follow the sensitivity analysis of the scenario analysis we create three estimates, three scenarios. You call it as most likely scenario or most expected scenario, pessimistic scenario and the optimistic scenario.

So, by creating these three scenarios firms normally take care of the risk. So, in practice, all these techniques are there in practice and not one technique is going to be a foolproof or going to be the say give us the best results. We have to use the say 2 - 3 techniques together so that overall means the risk profile of the project, which we work out, we are able to find out to a larger extent in advance how risky this investment is going to be and whether we are in a position to take care of that risk or not.

So, if we are clear about how much risk is involved, how much return is involved still we find that the project is a worthwhile, say proposition. We should make investment into this investment opportunity. Then there is no point not making investment. We should go ahead,

make investment because almost all possible negative and positives have been say visualized in advance. So with this discussion I closed the discussion on the risk analysis in the capital budgeting proposals to some extent because of the say time shortage.

Whatever the time was available or I could give it for this topic I tried to discuss the different methods, different techniques and some other concepts associated to this particular topic. And for the detailed reference, say especially the certainty equivalent index I wanted to discuss with you, but because of the shortage of time I could not. So for the say a detailed reference of this kind of things which we could not discuss in this class here you can refer to any good book on the financial management.

And the one which I am following The Financial Management by Prasanna Chandra, if you buy that book, use that book. It is certainly going to means remove all your doubts, if there is any after means listening to these lectures. So, with this I stop here and in the next class I will move up with the next topic and that will be the say cost of capital. Till then thank you very much.