

MINERAL ECONOMICS AND BUSINESS

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Week 8

Lecture 36 : Net Present Value (NPV)



The slide features a dark blue background. At the top left, a white rounded rectangle contains the text 'CONCEPTS COVERED'. Below this, a larger white rounded rectangle contains a bulleted list of four items: 'Capital budgeting' (with a red checkmark), 'Project classification', 'Investment criteria', and 'Net Present Value (NPV)'. To the right of the list is a vertical rectangular image showing an aerial view of a mining operation at sunset, with yellow excavators and a winding road.

Hello once again, welcome to my lecture. In this part, we will be learning about the net present value, a very important concept widely used primarily for project evaluation. In this lecture, we will cover some basic concepts about capital budgeting and why NPV is related to this. There are different types of projects that we will classify from a budgeting point of view. Then, the investment criteria, and we will start the net present value in this lecture.

Of course, in the next lecture after this, we will continue with more complicated concepts, problems, and solutions. As I have said, the context of NPV, related to the capital budgeting process, is what we are trying to clarify here. But broadly, let us understand what this capital budgeting process is. This is basically a structured process with multiple stages. So, first, let us start by identifying investment opportunities at a particular point in time to find

Capital budgeting process ✓

Capital budgeting is a structured process that involves multiple stages:

1. **Identifying investment opportunities** – Finding potential projects or areas for investment.
2. **Assembling proposed investments** – Gathering and evaluating different investment options.
3. **Decision making** – Selecting the most feasible and beneficial investment.
4. **Budget preparation and approvals** – Allocating funds and getting necessary approvals.
5. **Implementation** – Executing the investment plan.
6. **Performance review** – Assessing the investment's outcomes and making improvements if needed.



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potential projects or areas where we can invest money. Or we can assemble proposed investments, like gathering and evaluating different investment opportunities, and then make decisions. So, first, identify investment opportunities; assemble proposed investments—these are my choices—and then we make a decision. What decision? The selection of the most feasible and beneficial investment. It has to be feasible and beneficial for the investor, the company here.

Now, once we decide then we go for a budget preparation and different approvals ah for allocation of funds getting necessary approval approvals from the appropriate authority then you go for the executing the investment plan what we have decided. Of course, after that assessing the investments outcome and making improvements if needed. This can be theoretically studied also in the beginning that this this is how is going to give us benefits that means, the outcomes and accordingly we can make improvements in the planning for implementation. And of course, later on when we in we start investing and see what the returns are coming is after that also we can do the review part and accordingly modify and reimplement for better benefits.

Now, the projects that we are talking about for the purpose of budget allocation. So, let us know about different types of projects because in the previous ah slide we have seen that we need to collect different types of offers. Here for example, what are the different

projects that we can think of depending on the complexity, their significance and we and based on that we can categorize different projects different types for better for for better evaluation. Like the mandatory investment to start with these are essential expenditures required by law for example, pollution control equipment. for for purchasing fire safety measure or employee welfare facilities they do not generate revenue.

Project classification

Project analysis requires effort, and its costs must be justified by potential benefits. Based on complexity and significance, firms categorize projects into different types for better evaluation. The common classifications are:

- 1. Mandatory investments** – These are essential expenditures required by law, such as pollution control equipment, fire safety measures, and employee welfare facilities. They do not generate revenue, so the focus is on cost-effective compliance.
- 2. Replacement projects** – Investments made to replace outdated or inefficient equipment. The goal is to reduce costs (labor, raw materials, energy), increase efficiency, and improve product quality. These projects are generally straightforward but may require detailed analysis.
- 3. Expansion projects** – Investments aimed at increasing production capacity or expanding distribution networks. These projects involve higher risk and complexity, requiring careful forecasting of future growth. Decisions for such projects are typically made by top management.



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So, within the company when you are trying to invest these are not going to give you direct revenue. So, this the focus is that it has to be a cost effective compliance. ah very restrained and well planned. This is definitely a compliance, but ah it needs to generate the effect that we want from the investment. Then comes the replacement projects.

The investment is made to replace outdated or inefficient equipment that already exists in the project. So, the goal is to reduce costs like labor, raw materials, or energy, by which we can increase overall efficiency and improve product quality. So, these projects are generally straightforward, but they require much more detailed analysis on how to reduce labor costs, raw materials, or energy consumption, and how to improve efficiency or product quality in general. We need detailed analysis for this kind of replacement project. Also, we can think of expansion projects.

Project classification

- 4. Diversification projects** – Investments aimed at launching new products/services or entering new markets. These projects are high-risk, requiring significant capital, managerial effort, and board-level involvement.
- 5. Research and development (R&D) projects** – Traditionally, R&D received a small share of capital budgets, but funding has increased, especially in knowledge-intensive industries. These projects involve uncertainties and sequential decision-making, making discounted cash flow analysis ineffective. Instead, managerial judgment, decision tree analysis, and option analysis are commonly used for evaluation.
- 6. Miscellaneous projects** – A broad category covering non-core investments like interior decoration, recreational facilities, private aircraft, and landscaped gardens. For ex. Corporate Social Responsibility (CSR) projects.



This is where investments are aimed at increasing production capacity or expanding distribution networks. Now, these projects involve higher risk and complexity because you are trying to increase production capacity, which requires more funding. But that requires careful forecasting of future growth. Since we are trying to enhance production capacity and expand existing projects. So, for that purpose, you need to have confidence, and the people at the top have to make such decisions.

What other things are there, like diversification projects? These are another important aspect. Investments aimed at launching new products, services, or entering new markets. You have a certain kind of business, say, for example, you are venturing into a new area. These projects are high-risk and require significant capital and managerial effort.

and board level involvement. So, that we are expanding business venturing into new area. So, we have to evaluate that project. We need to know that what outcomes and what time we are going to get these returns. These are expansion definitely into new areas.

That means, we are not only expanding our project our company, but we are actually diversifying into new products or services, entering new markets for business. Now, other than this, we can think of research and development. Traditionally, this receives a very small share of capital budget, but nowadays the funding has increased, especially in

knowledge intensive industries. this projects involve uncertainty is definitely R and D because you do not know whether you are really going to get ah fruitful results or and then that is why you need to take certain this definitely, but continuous effort in R and D will give you new product, new way of thinking of running the business.

Investment criteria

Investment criteria are categorized into discounting (considering time value of money) and non-discounting (ignoring time value of money) methods.

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graph TD
    A[Investment Criteria] --> B[Discounting Criteria]
    A --> C[Non-Discounting Criteria]
    B --> D[Net Present Value]
    B --> E[Benefit Cost Ratio]
    B --> F[Internal Rate of Return]
    C --> G[Payback Period]
    C --> H[Accounting Rate of Return]
  
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*Non discounting criteria already covered in previous lectures

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So, the traditional ah ah way of discounted cash flow analysis will be ineffective here because you do not know what outcome exactly you are going to get. It is an investment for the purpose of research and development and then the in house capacity to improve the product, the management, the quality of the product all these things. So, instead will depend on the managerial judgment whether we should venture how much we should invest into the R and D. The decision tree analysis and option analysis ah what are what are the options that we have and where we should invest in R and D.

Now, miscellaneous projects, a broad category covering non core investment like interior decoration, recreational facilities, private aircraft purchase or for example, landscaping gardens or say the very bright example corporate social responsibility project. all these are projects requires careful examination and therefore, therefore, we need to understand what is the value addition by this this project. And therefore, we need to evaluate that means, we try to understand the project clearly what are the outcomes in future, how it is going to help our business. Now we are trying to narrow our field of discussion and we

are just trying to ah concentrate on the investment criteria. and we are into evaluating projects through some valuation methods here, where it is applicable.

So, the investment criteria can be categorized into discounting and non-discounting method, means the criteria either discounting criteria or non-discounting criteria. value of money. That means, we are considering time value of money in using the discount rate. In non-discounting, we are ignoring the time value of money. The discounting criteria and the related topics have been discussed in previous lectures that you might have might remember.

Here we will be concentrating on the discounting criteria and the related net present value, then benefit cost ratio, internal rate of return these things. In previous a lecture where we talked about the non discounting criteria cases, there we talked about payback period or accounting rate of return. So, what is this net present value? What is so great about these things? It is so widely accepted and used that almost everybody who talks about a project evaluation or evaluation of a project proposal invariably talks of the NPV and IRR.

Net Present Value (NPV)

- Net present value (NPV) is a key financial concept used to assess investment and financing decisions that involve cash flows over multiple periods.
- It calculates the sum of all expected cash flows (both positive and negative) over a project's lifetime, adjusted to their present value. The formula for NPV is:

$$NPV = \sum_{t=1}^{t=n} \frac{C_t}{(1+r)^t} - \text{Initial Investment}$$

where:

- C_t is the cash flow at the end of year t
- n is the project's total lifespan
- r is the discount rate



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In net present value is basically a key financial concept. used to assess investment and financing decisions that involve cash flows over multiple periods. It calculates the sum of all expected cash flows whether it is either positive or negative over a project's lifetime. So, that we the the all the cash flows are adjusted to their present value adjusted that

means, what we learnt in the time value of money. that means, the present value of all future cash flows, it can be either positive or it can be negative also.

The formula for NPV is:

$$NPV = \sum_{t=1}^{t=n} \frac{Ct}{(1+r)^t} - \text{Initial Investment}$$

where:

- Ct is the cash flow at the end of year t
- n is the project's total lifespan
- r is the discount rate

NPV indicates the net benefit after accounting for time and risk. The decision rule is:

- **Accept** the project if NPV is positive.
- **Reject** the project if NPV is negative.
- If NPV is zero, there is no clear preference: it depends on other factors.

Assumption: Intermediate Cash Flows Reinvestment –

- The NPV rule **assumes** that any cash flow generated **before** project completion are **reinvested** at a rate **equal to the cost of capital**.
- This means firms do not assume excess returns on reinvested cash flows beyond their cost of funds.

NPTEL



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So, all these cash flows are summed up. So, that gives you net cash flow and minus net present value all future cash flows are transformed into present values, then we sum them sum up and then we get this this net present value, but to get the net present value we have to definitely deduct the initial investment.

So, ultimately we get the net present value. Let us see how is the examples then it will be much much better understood understood. Now NPV indicates the net benefit after accounting for time and risk both. So, the decision rule is that if the NPV or the net present value is positive you should in principle accept the project proposal. If the net present value is negative in that case in principle you should reject the project.

and if NPV is 0, that means, there is no clear preference or choice available to you, it depends on other factors. That means, NPV is not the criteria for that particular project at that moment. For remember that, for when we are determining the NPV, the NPV rule assumes that any cash flow that is generated before the project completion are reinvested are all reinvested at a rate that is equal to the cost of capital. that we are not utilising for any other purpose that is getting reinvestment reinvested in the business.

Properties of the NPV Rule

- NPV helps determine whether a project will generate more value than its cost. A **positive NPV** indicates a profitable investment, while a **negative NPV** suggests potential losses.
- **NPV is Additive** – The total NPV of multiple projects is simply the sum of the NPVs of each individual project. This means a firm's total value can be expressed as:

$$\text{Firm Value} = \sum \text{Present values of existing projects} + \sum \text{NPV of future projects}$$
 (The first term represents **current assets**, while the second reflects **growth opportunities**.)
- **Impact of Negative NPV Projects** – If a company **terminates a project** with negative NPV, its overall value **increases** by that amount. Conversely, starting a new project with a negative NPV will **reduce** firm value.



That is why the the discounting takes place on the entire cash flow as if it is being reinvested and that we are trying to find out the present value of that ah ah the reinvested capital also. This means firms do not assume excess returns or reinvested ah returns on the ah reinvested cash flows beyond their cost of funds. So, whatever the whatever is equal to the cost of capital that will be taken ah for the purpose of accounting discounting ah ah discounting process. So, we ah we so, we assume that there is no excess returns on the reinvested cash flow beyond just their cost of ah funds.

Now, NPV or net present value helps determine whether the project will generate more value than the cost. That means, a positive NPV indicates that it is a profitable investment. Simply, if we look at the values of the NPV, then we can conclude that it is a profitable investment. Similarly, a negative NPV will indicate a potential loss. Now, if you have two projects or several projects and if you are evaluating NPV, then the NPV is additive.

Properties of the NPV Rule

- **Effect of Divestiture** – When a company **sells a project**, the sale price determines the impact on firm value:
 - If the price is **higher** than the project's present value, the firm **gains value**.
 - If the price is **lower**, the firm **loses value**.
- **Impact of Overpriced Acquisitions** – If a company **acquires another firm or project** and pays more than its present value, it is equivalent to taking on a negative NPV project, leading to a **decrease in firm value**.
- **Impact of Positive NPV Projects** – The effect of a new project with **positive NPV** depends on whether it meets investor expectations.

Example: XYZ Limited is expected to invest in high-NPV projects. If a project's NPV is lower than expectations, the firm's value may **decline**, even if the NPV is positive.



That means, you can sum the firm value by finding out the present values of all existing projects, the net present and the net present value of all future projects can be summed up to find out the final firm value. So, the first term, this part, will be taken as the current assets, while the second will reflect our growth opportunities. Now, the impact of a negative NPV project, if you are talking about the negative NPV. So, if a company terminates a project at a particular point in time when we see that it is having a negative NPV at that point.

So, its overall value will increase by that amount because we are terminating and avoiding further investment that would give us a negative net present value; we can terminate it. So, the overall value will increase by that amount. Similarly, or rather conversely, we can say that if you start a new project which already has a negative net present value, in that case, it will reduce the total firm value because you are adding a negative term, which is a negative net present value. So, the overall or the net worth will go down. Now, what are the properties of this NPV in general?

So, the effect of divestiture is very important when a company sells a project; the sale price determines the impact on the firm's value. So, if the price is higher than the project's present value, then the firm gains value definitely, but if the price is lower, then the firm loses value. Now, what is the impact of an overpriced acquisition? That means you are

paying more than its value—much more than its value. So, if you are acquiring another firm or project and you pay more than its present value, it is equivalent to taking on a negative NPV project. For example, you are supposed to pay X, the present value of the project.

Instead, you are paying a premium, which means you are overpricing for the purpose of acquisition. That means you may be going toward the negative side—eroding the net present value and moving toward the negative side. So, it is basically equivalent to acquiring a negative NPV project, leading to a decrease in the firm's overall value. Now, what is the impact of positive net present value projects? The effect of a new project with, say, positive NPV will depend on whether it meets investor expectations or not. So, that means when you are acquiring something with positive NPV, it will depend on how much the investors are

expecting from this new addition of the project. For example, XYZ Limited is expected to invest in a high-NPV project. If the project's NPV is lower than the expectation, the firm's value may decline even if the NPV is positive. Because if the NPV is lower than expectations—the overall expectation from the addition of this project—then the overall expectation goes down. So, the total firm value will effectively decline from the investors' point of view.

We will now start solving simple problems for the net present values. The first example talks about a case where we have a list of cash flows. This is within brackets, meaning this is a negative cash flow; others are all positive. These are the years: first year, second year, third year, fourth year, and fifth year. So, you can imagine that at time zero, we have an investment of 100,000 at this point.

Example 1:

Consider a project which has the following cash flow stream. Calculate NPV for this project. The cost of capital is 10% for this project.

Year	Cash flow
0	₹ (1,000,000)
1 ✓	200,000 ✓
2 ✓	200,000 ✓
3 ✓	300,000 ✓
4 ✓	350,000 ✓
5 ✓	400,000 ✓

*All figures written inside () represents negative cashflow or cash outflow



And then these are the net cash flows at different year-ends, like 1, 2, 3, 4, 5, and so on. So, what we are trying to do here is find out the present value of all the cash flows for every year. First year to present value, second year to present value, third year to present value, fourth year to present value, and, of course, the fifth year again to present value. Here at this point, we will find out whether it is positive or negative, considering all the signs, to determine the net present value.

It is a net present value—we are bringing all the present values together at a point in time, say for example, and then we are trying to find out the net present value. As we have seen, the formula is a summation over a period of 1 to n years, where C_t is the cash flow at the end of year t, and 1 plus r is the discounting rate, which is 10 percent here. The initial investment is this. So, what are we doing? We are trying to find out the net present value.

Solution:

$$NPV = \sum_{t=1}^{t=n} \frac{C_t}{(1+r)^t} - \text{Initial Investment}$$

Given:

- $r = 10\%$
- $C_t =$ from the table
- Initial investment = Rs 1,000,000

Present value of 1st cashflow = $\frac{200,000}{(1+0.10)^1} = 181,818$ (approx.)

Present value of 2nd cashflow = $\frac{200,000}{(1+0.10)^2} = 165,289$ (approx.)



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this is a cash outflows it will be having a negative sign or other cash flows which are we are trying to find out using the same formula. Say for example, in the in the in the previous slide say first year 200,000 and then here this is again 200,000 and this is 300,000 like that 3 lakhs, 4 lakhs like that. So, these are this will be discounted and brought to the first at the beginning where we are trying to find out the present value. So, the present value of the first cash flow after 1 year is 200,000 by 1 plus

0.10 is the 10 percent raise to the power 1. So, here we are getting 181,818. So, the present value of second cash flow is again 200,000 divided by this. So, we get 165,289 ah 280. The initial investment is this one.



Present value of 3rd cashflow = $\frac{300,000}{(1+0.10)^3} = 225,394$ (approx.)

Present value of 4th cashflow = $\frac{350,000}{(1+0.10)^4} = 239,054$ (approx.)

Present value of 5th cashflow = $\frac{400,000}{(1+0.10)^5} = 248,368$ (approx.)

NPV = $(181,818 + 165,289 + 225,394 + 239,054 + 248,368) - 1,000,000$

NPV = Rs 59,923



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As you can see that the similarly we can find out the present values of third cash flow which is 225000, again present value of the fourth cash flow which is 239000. Similarly, using the same formula everywhere we also get the fifth cash flow. So, what we have we do now? that we have these are all positive cash flows, these are all plus plus plus, these are all plus plus cash flows and this one is having the negative cash flow negative cash flow. sum of all these things and deduct ah the initial investment which is having a negative or cash outflow then the net present value is positive 59923 that is the net present value here in this case which is positive which is positive.

NPV calculation with time-varying discount rates

Flexible Discount Rates – Traditional NPV assumes a constant discount rate, but in reality, discount rates may change over time. NPV can be adjusted using time-varying discount rates.

$$NPV = \sum_{t=1}^{t=n} \frac{C_t}{\prod_{j=1}^t (1+r_j)} - \text{Initial Investment}$$

Where,

C_t is the cash flow at the end of year t ,

r_j is the one period discount rate applicable to period j ,

n is the life of the project.



Now, for NPV calculation, what we have done in the previous slide. A previous example is where we see that the discount rate is fixed at 10 percent. Now, what happens if the discount rate is taken as a flexible or a variable one? So, in traditional cases, we assume that the discount rate is 10 percent or 12 percent, or we have studied in a separate class how to decide the discount rate for the purpose of using the time value of money concept.

But in reality, the discount rates may change over time. So, the net present value can be adjusted using time-varying discount rates. Here, what we are doing is not taking r as a fixed quantity, but we are taking r_j , where r_j is a one-period discount rate applicable to that specific period. Otherwise, the rest of the things are the same: n is the life of the project, and the discount rate is flexible, meaning it varies in different years. Now, what are the reasons for considering the changing discount rate?

It can be due to interest rate fluctuations from market conditions that can lead us to change the discount rate that we considered when we first calculated the net present value. So, our expectation, depending on the varying interest rate, will also change. Now, the project risk variation: as the project progresses, the risk profile may shift. So, impacting the cost of capital—if we are monitoring the progress, we may see that the risk profile is changing. So, that will impact our cost of capital.

NPV calculation with time-varying discount rates

Reasons for Changing Discount Rates:

1. **Interest Rate Fluctuations** – Market conditions can lead to changes in expected interest rates.
2. **Project Risk Variation** – As a project progresses, its risk profile may shift, impacting the cost of capital.
3. **Changes in Financing Mix** – The way a project is funded (equity vs. debt) can evolve, leading to variations in the discount rate.



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In that case, we need to adjust our discount rate with the change to account for the concept of the risk that has been added to the profile of the company. Or changes in the financing mix, we have debt and equity, and if this ratio now changes. In that case, debt and equity are not having the same return. For the debt holders, it may be 10 percent; for equity holders, it is changing. So, now if you are changing the ratio of equity and debt, then the overall valuation.

will have to match with the changed discount rate. That means our concept of a fixed discount rate will not hold true if there is a considerable variation or the debt-equity ratio changes. So, we will take a simple case for the explanation of these things. We have a project where we have the cash flows and an interest rate which is varying: 14, 15, 16, 18, and 20 percent. And these are the cash flows in rupees lakhs: 4000, 5000, for example. These are the cash flows that we have noted down here.

Example 2:

Consider a project which has the following cash flow stream and varying cost of capital for each year. Calculate NPV for this project. Initial investment is Rs 12,000 lakh

Year	1	2	3	4	5
Discount rate	14%	15%	16%	18%	20%
Cash flow (Rs lakh)	4,000	5,000	7,000	6,000	5,000

Solution:

$$NPV = \sum_{i=1}^{t=n} \frac{C_i}{\prod_{j=1}^i (1+r_j)} - \text{Initial Investment}$$

$$\text{PV of 1}^{\text{st}} \text{ cash flow} = \frac{4,000}{(1.14)} = 3,509$$

$$\text{PV of 2}^{\text{nd}} \text{ cash flow} = \frac{5,000}{(1.14) \times (1.15)} = 3,814$$

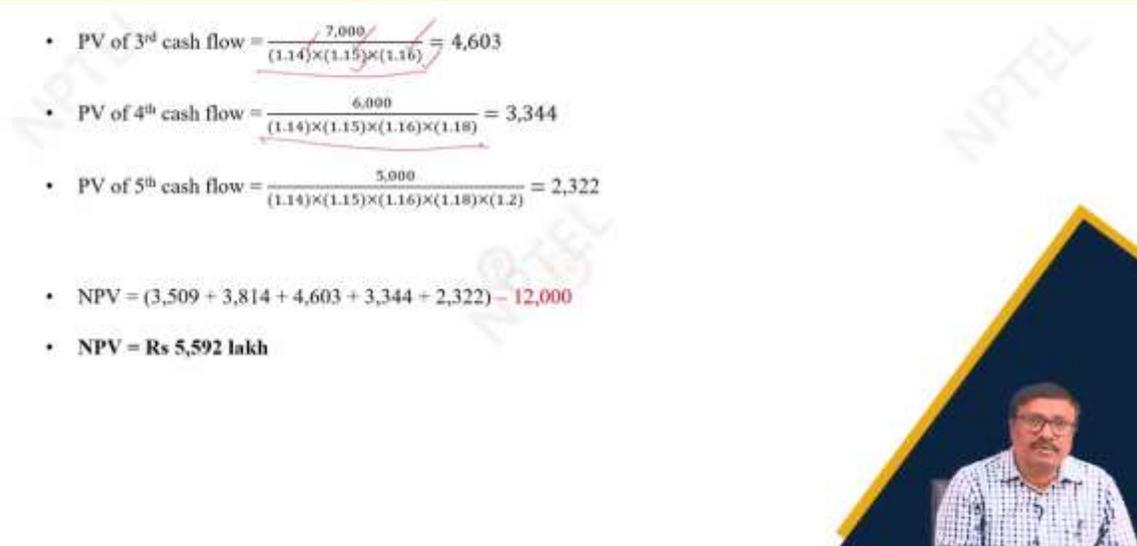
So, we have estimated cash flows as this one, and the discount rates, for example, are changing. So, from the formula, you can see for the first cash flow, we are using the first discount rate, that is 14 percent. So, it becomes 4000 divided by 1.14, okay. So, it is becoming 3509, but the interesting part is the second cash flow, where it has been discounted twice. First, using the 15 percent and bringing it to the present because this is a second-year cash flow.

So, we are bringing it to the first year, and again, it is being discounted at the rate of 14 percent. So, it is double discounting in the two stages. In the first stage, we have used 15 percent and again discounted it using the 14 percent. So, overall, it becomes 3814 rupees as the present value of the second cash flow. For the first cash flow, it was simple.

For the second cash flow, it is a two-stage process. Second year to first year, first year to present. Similarly, it is easy to understand that in the case of the third cash flow, we will be doing it three times. First is 16 percent, then bring it to the second year at 15 percent, then bring it to the first year and to the 0 point. So, it is becoming a three-stage process here.

So, for the fourth cash flow, we will have a four-stage process; for the fifth cash flow, we will have a five-stage process. Finally, for example, for 5000, we are getting only 2322 as

the present value of the fifth cash flow. Now, since we all have these values of the present values, we will just try to add them: 1, 2, 3, 4, and 5. These are all the cash flows or present values of the cash flows for the first year, second year, third year, fourth year, and fifth year. So, now, we have to consider the negative cash flow or the cash outflow which we did in the beginning.



- PV of 3rd cash flow = $\frac{7,000}{(1.14) \times (1.15) \times (1.16)} = 4,603$
- PV of 4th cash flow = $\frac{6,000}{(1.14) \times (1.15) \times (1.16) \times (1.18)} = 3,344$
- PV of 5th cash flow = $\frac{5,000}{(1.14) \times (1.15) \times (1.16) \times (1.18) \times (1.2)} = 2,322$
- NPV = (3,509 + 3,814 + 4,603 + 3,344 + 2,322) - 12,000
- NPV = Rs 5,592 lakh



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The net present value, therefore, comes as 5592. 5592 is the net present value. So, these are all in lakhs. So, the value has come as 5592 lakhs. What are the limitations of NPV? What are the limitations?

We have just considered basic concepts about the net present value. So, despite many advantages, the NPV method has some drawbacks. First, we considered an absolute value. That means if I am getting 5 lakhs or 50 lakhs, we talk about 50 lakhs, but we do not talk about the relative comparison, right? The NPV is measured in absolute terms, ignoring the scale of investment. How big is the investment?

Limitations of NPV

Despite its advantages, the NPV method has some drawbacks:

- **Absolute values over relative comparison:** NPV is measured in absolute terms, ignoring the scale of investment. For example, a project with an NPV of ₹5,000 might require an investment of ₹50,000, while another project with an NPV of ₹2,500 may need just ₹10,000. This makes it difficult to compare projects of different sizes.
- **Ignores project lifespan:** NPV does not account for the duration of a project. When comparing projects with different lifespans, it tends to favor longer-term projects, even if a shorter project could be more beneficial.



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We are going by only the NPV figure. So, a project with, for example, an NPV of, say, 5000 rupees might require an investment of 50000, whereas another project with an NPV of, say, 2500 rupees (net present value) may need only 10000 rupees. It is very difficult to compare in these cases. We are investing 50000 and getting an NPV of 5000 (net present value). Whereas, in another project, the net present value is 2500 by investing only 10000 rupees. So, it is very difficult to compare projects only on the NPV absolutely.

REFERENCES

- *Financial Management* by P C Chandra. McGraw Hill Publishers. Chennai, India
- *Mineral Project Valuation* by O Jones, E Lilford and F Chan



And the project lifespan is again ignored when you look at the NPV value; the time is not even though during calculation it was there. So, NPV itself does not account for the duration of the project when it is expressed in terms of money—net present value. So, when comparing projects with different lifespans, it tends to favor the long-term even if a shorter project could be more beneficial.

So, this is a typical limitation of NPV. We have discussed the basics of net present value. We will go into much more detail in the next lectures. You can read these two books for a better understanding of the topics. So, in the next class—next lecture—we will talk in much more detail about the net present value concept with more examples, and we will also add the concept of the internal rate of return (IRR).

Till then, thank you. Bye-bye.