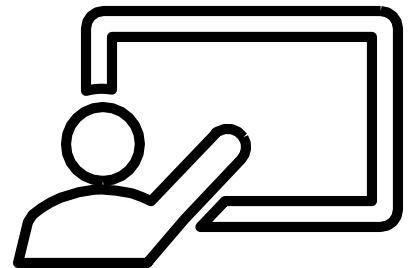


# Navigating Growth through Strategic Capital Budgeting

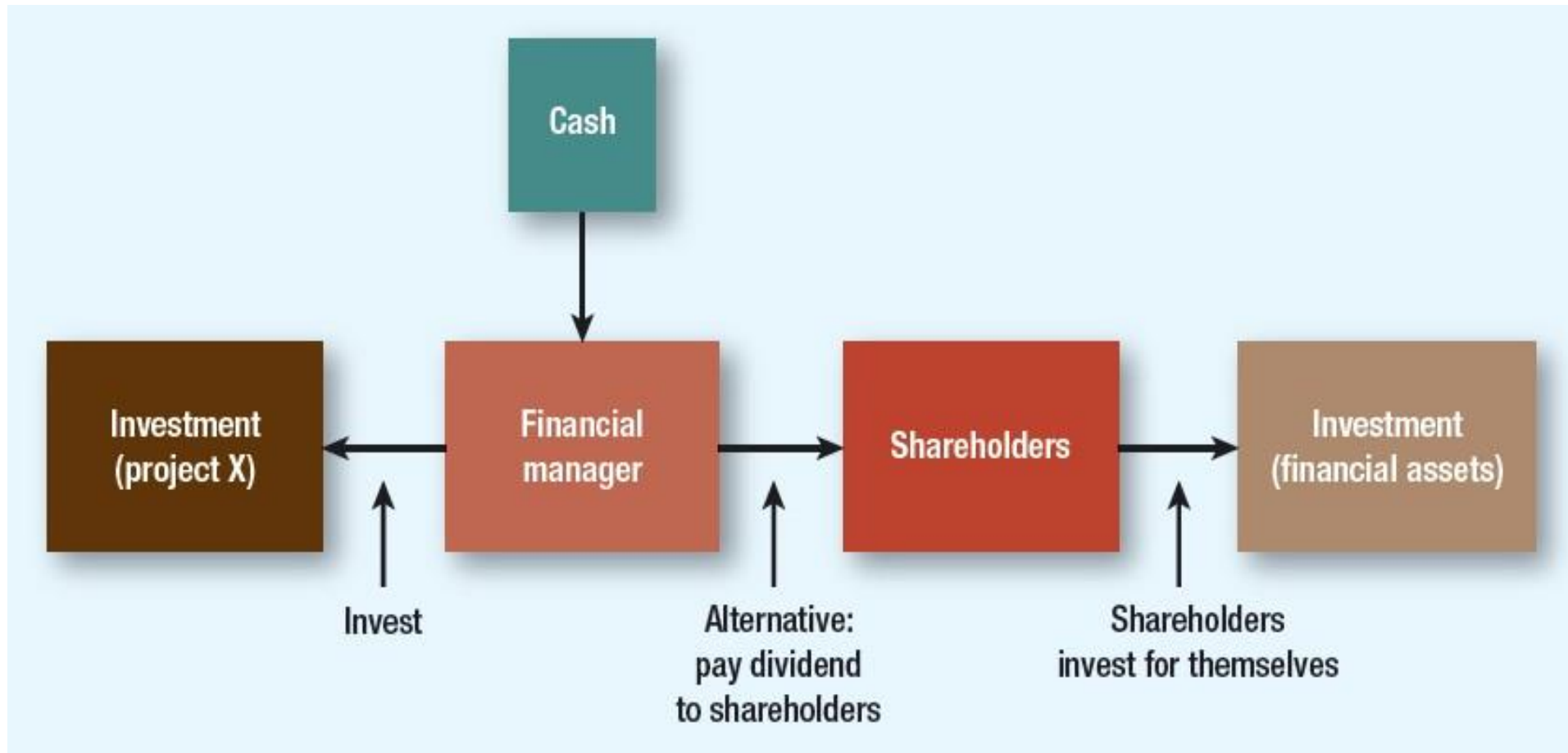
Senior Leadership Program



# Introduction

- In the relentless pursuit of growth and sustained competitiveness, companies must foster a **continuous flow of innovative ideas**. This involves:
  - Developing **New Products/Services**
  - **Enhancing the quality** of existing Products/Services
  - **Streamlining the cost** of production/operations
  - Expanding into **new markets/geographies**, and more.
- This sets the stage for Business Results Leadership, where visionary leaders actively seek, scrutinize, and choose project proposals that maximize value.

# Basis of Cash Transfers decision for leaders...



# Capital Budgeting and Leadership

- As we delve into the heart of Business Results Leadership, we encounter a linchpin: **Capital Budgeting**.
- Capital Budgeting is the *process of identifying projects that add substantial value to the firm*, particularly to its shareholders.
- **At every organizational echelon**, Capital Budgeting stands out as **one of the most pivotal decisions** leaders make. Why?
  - **Defines Strategic Direction:** Shapes the firm's strategic trajectory through decisions on product and geographical diversification.
  - **Long-Term Implications:** Imposes enduring effects, influencing financial flexibility and organizational stability.
  - **Risk of Poor Decisions:** Affects the company's future profoundly, with the potential for serious value erosion. This includes the critical challenges of *Overinvestment* and *Underinvestment*.

# Project A

- Year - 0: Investment of 700,000
- Year - 1: Cash Flow of 30,000
- Year – 2: Cash Flow of 30,000 & Sale at the end of year @ 840,000

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  - Cash Outflow (Investment) = 700,000
  - Cash Inflow = 900,000 (30,000+30,000+840,000)

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- Is this project profitable?
  - Cash Outflow (Investment) = 700,000
  - Cash Inflow = 900,000 (30,000+30,000+840,000)
  
- Profit =  $(900,000 - 700,000) / 700,000 = \mathbf{28\%}$

# Time Value of Money



*A rupee today is worth more than a rupee tomorrow.*



Investments in projects that are expected to generate cash flows in the future. Since the cash received at different time periods is not the same, we need a way to be able to assess their value.

# Future Values and Present Values

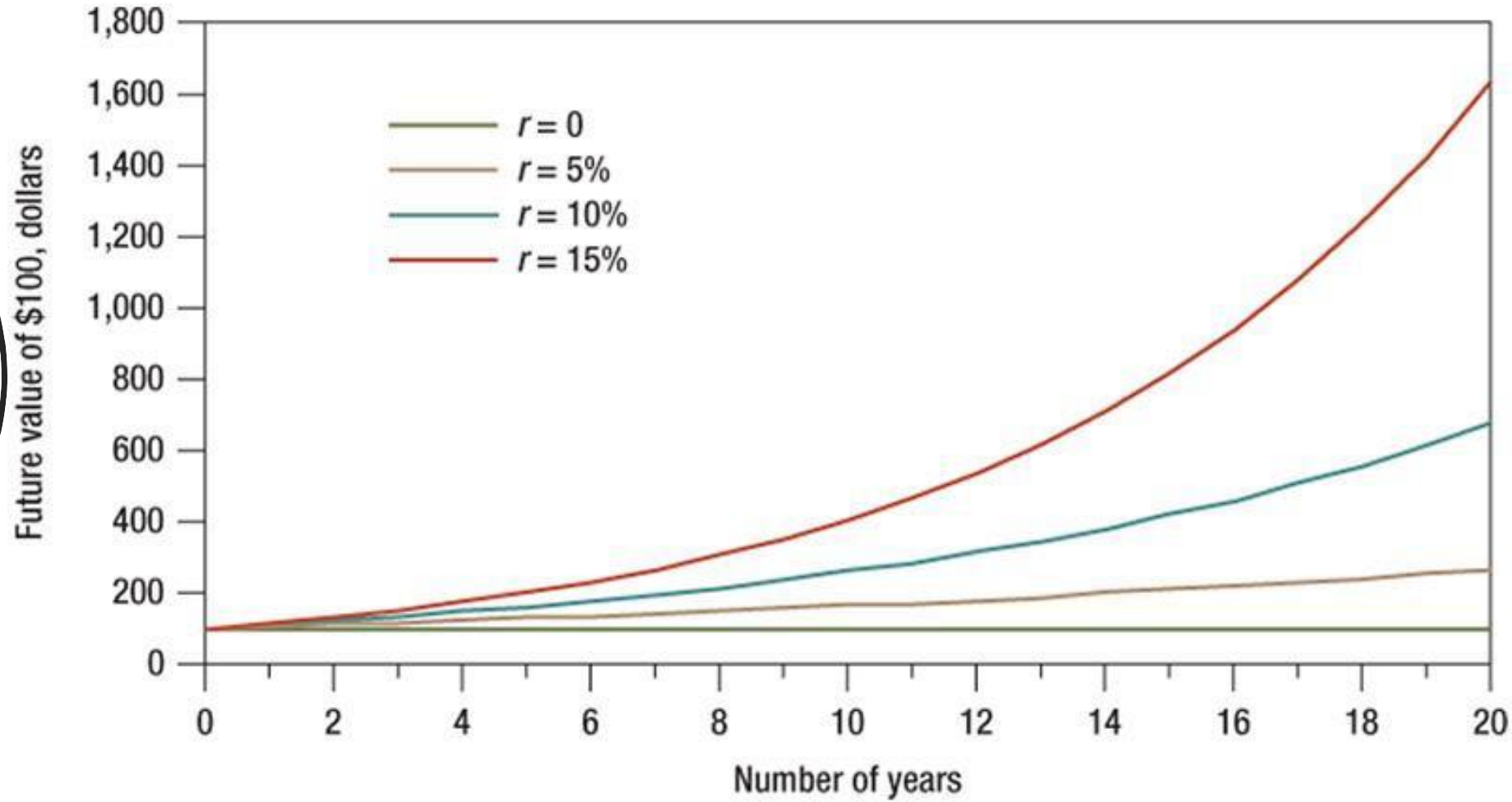
## Future Value

- Amount to which investment will grow after earning interest
- $FV = \text{Present CF} \cdot (1+r)^n$

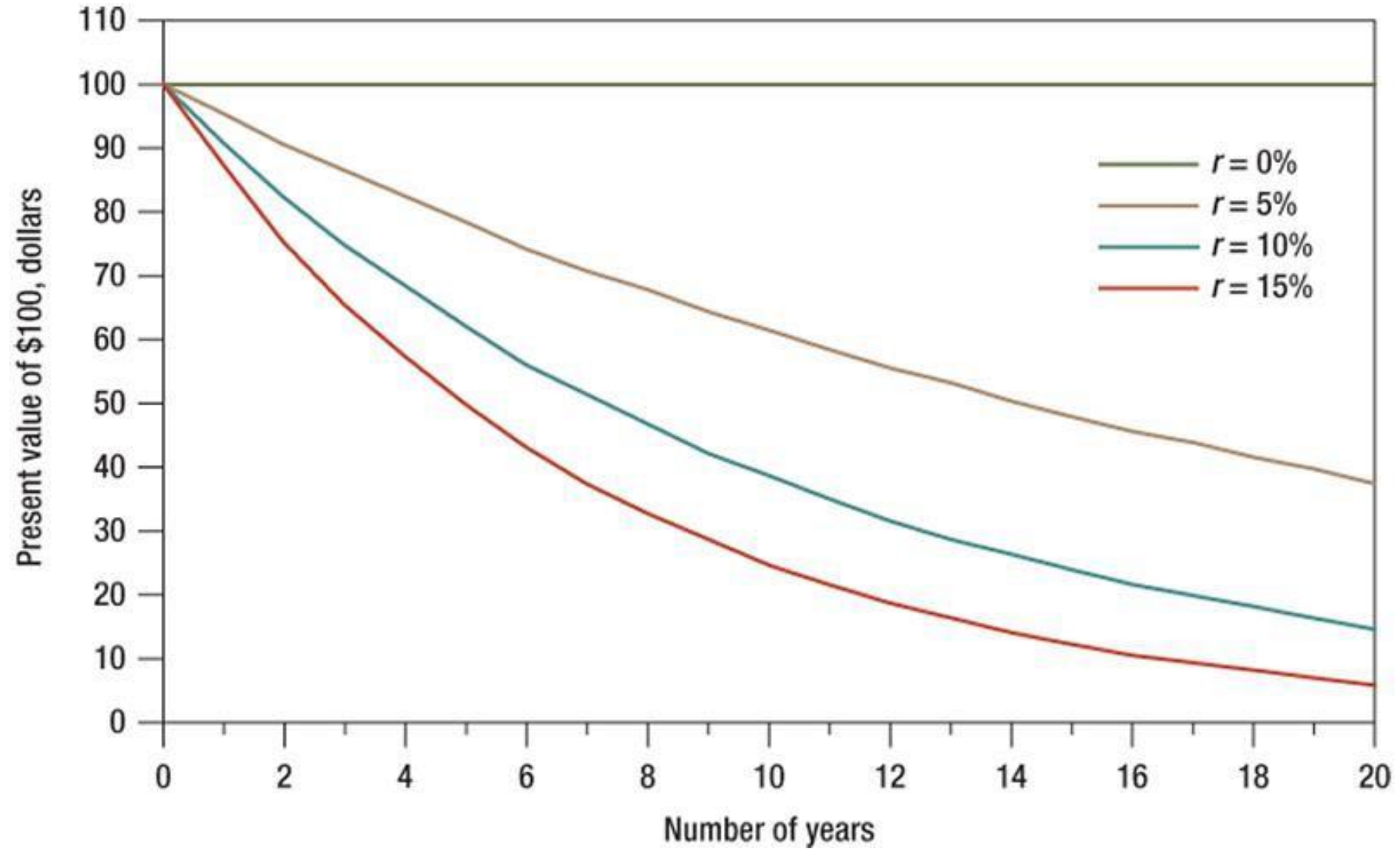
## Present Value

- Value today of future cashflow
- $PV = \text{Future CF} / (1+r)^n$

Future Values  
with  
Compounding

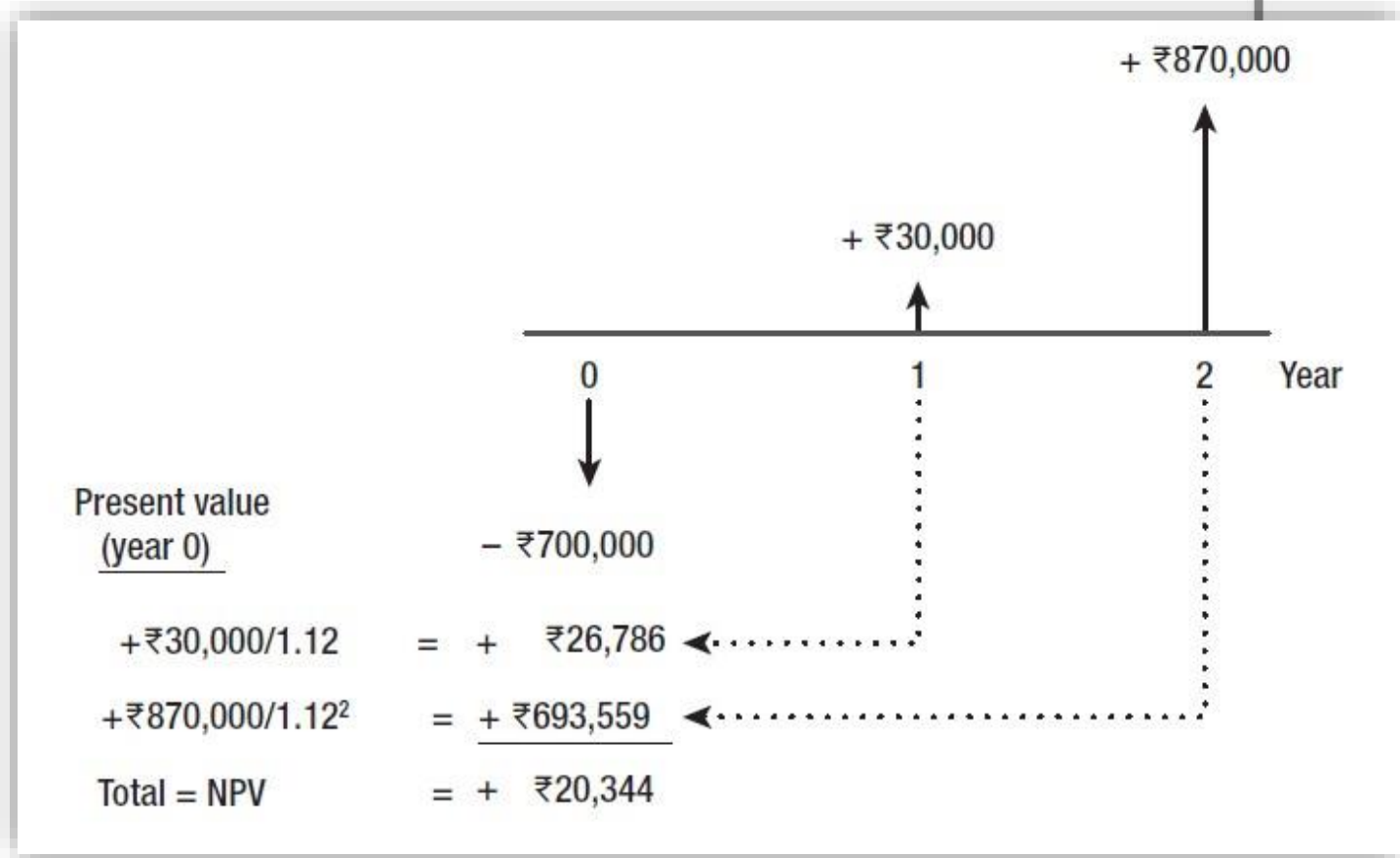


Present Values with Compounding



# The Net Present Value

- Cost of capital = 12%



$$NPV = C_0 + \frac{C_t}{(1+r)^t}$$

↓

$$NPV = \underbrace{C_0}_{\text{Initial investment outlay}} + \underbrace{\frac{C_1}{(1+r)^1} + \frac{C_2}{(1+r)^2} + \dots + \frac{C_t}{(1+r)^t}}_{\text{Present value of future cash flows}}$$

# Let's turn to the case: Regency Integrated Chips

Take 5 minutes and  
read the Case...



# A quick snapshot of the Case & key numbers...

Input Data			
Building Cost	12000	Market Value of building at Salvage	7500
Equipment Cost	8000	Market Value of Equipment at Salvage	2000
Net Operating Working Capital/Sales	10%	Tax rate	40%
First Year Sales (units)	20000	WACC	12%
Growth rate in units sold	0%	Inflation: Growth in sales price	2%
Sales Price per unit	3	Inflation: Growth in VC	2%
Variable Cost per unit	2	Inflation: Growth in fixed cost	1%
Fixed Cost	8000		

## Free Cash Flow (FCF)

$$\begin{aligned} &= \text{Investment Outlay} \\ &+ \text{Net Operating cash Flow (NOPAT)} \\ &+ \text{Net change in Operating Working Capital} \\ &+ \text{Salvage cash Flow (if any)} \end{aligned}$$

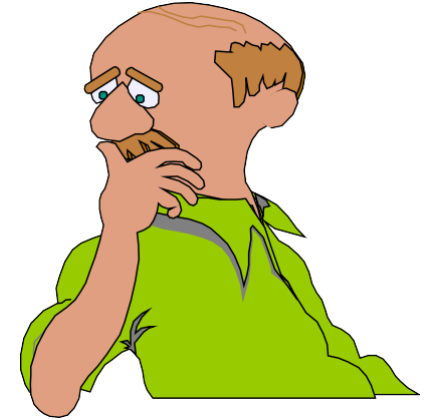
➤ Projected Net Cash Flows in our case for the year 2023-2027?

		2023	2024	2025	2026	2027
<b>Investment Outlay - Long Term investments</b>						
	Building					
	Equipment					
<b>Operating CashFlow of the Project</b>						
	Units Sold					
	Sales Price					
	Sales Revenue					
	Variable Cost					
	Fixed Operating cost					
	Dep. (Building)					
	Dep. (Equipment)					
	Operating Income before taxes (EBIT)					
	Tax on operating Income (40%)					
	NOPAT					
	Add back the Dep.					
	<b>Operating Cash Flow</b>					
<b>Cash Flow due to net operating working capital change</b>						
	Net Operating working capital (based on sales)					
	Cashflow due to investments in NOWC					
<b>Salvage cash Flow- long term assets</b>						
	Net Salvage cash Flow (Building)					
	Net Salvage cash Flow (Equipement)					
<b>Project Net cash Flow</b>						

So, let's check if our expansion project has a positive NPV or not?



- Is **NPV** the only available tool to evaluate Capital Budgeting Projects?



## Six commonly used Capital Budgeting Tools/Methods. . .

- Net Present Value (NPV)

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- Internal Rate of Return (IRR)
- Modified Internal Rate of Return (MIRR)

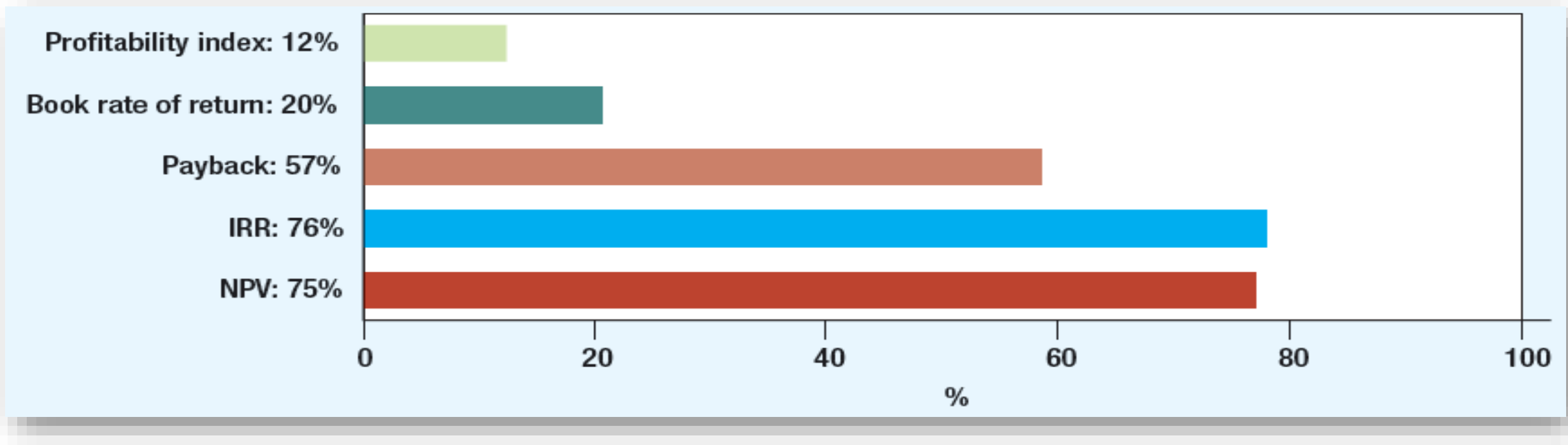
# Six commonly used Capital Budgeting Tools/Methods...

- Net Present Value (NPV)
- Internal Rate of Return (IRR)
- Modified Internal Rate of Return (MIRR)
- Payback Method
- Discounted Payback Method

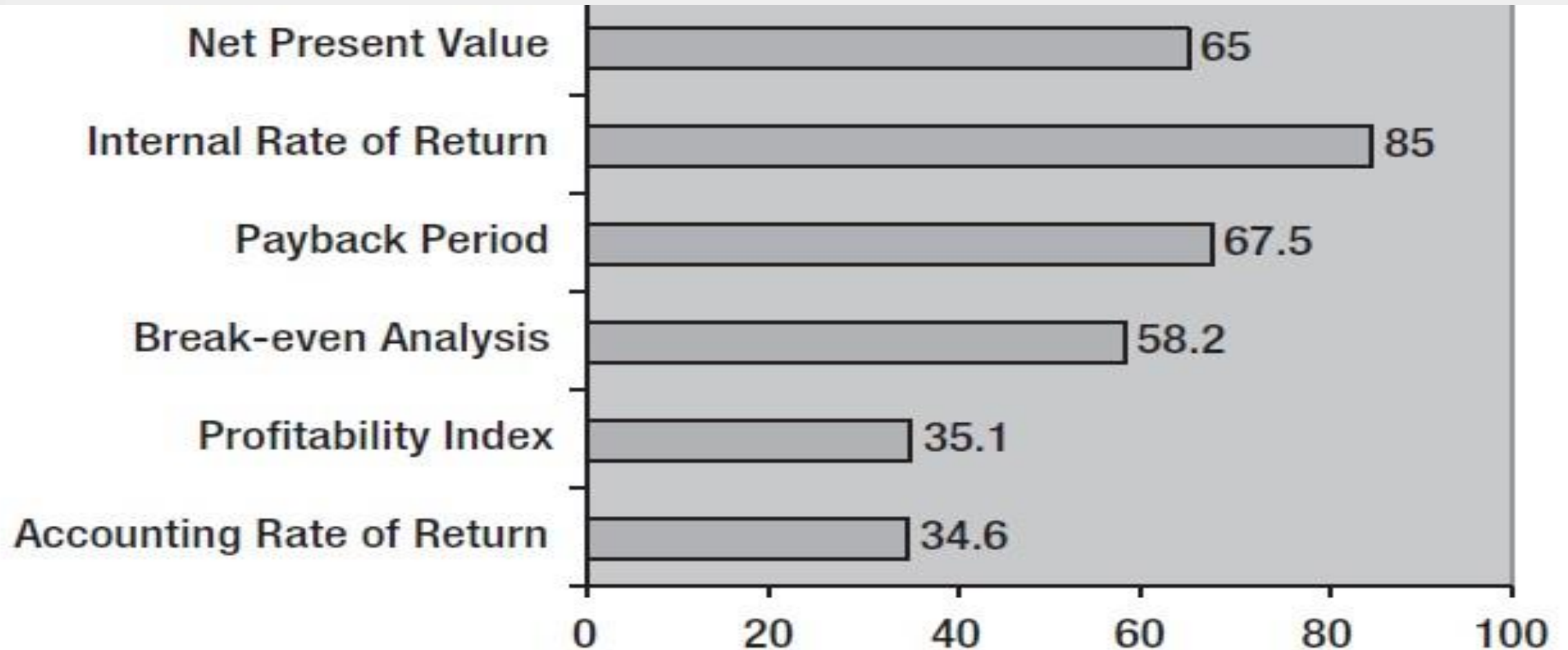
# Six commonly used Capital Budgeting Tools/Methods...

- Net Present Value (NPV)
- Internal Rate of Return (IRR)
- Modified Internal Rate of Return (MIRR)
- Payback Method
- Discounted Payback Method
- Profitability Index (PI)

# CFODecision Tools (Globally)



# CFO Decision Tools (India)



- Now that we know that our expansion project is Positive NPV...

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- Now that we know that our expansion project is Positive NPV...
- Is this information good enough to take up the project?
- Do we worry about the associated risk with the project?
- How do we assess the standalone project risk?

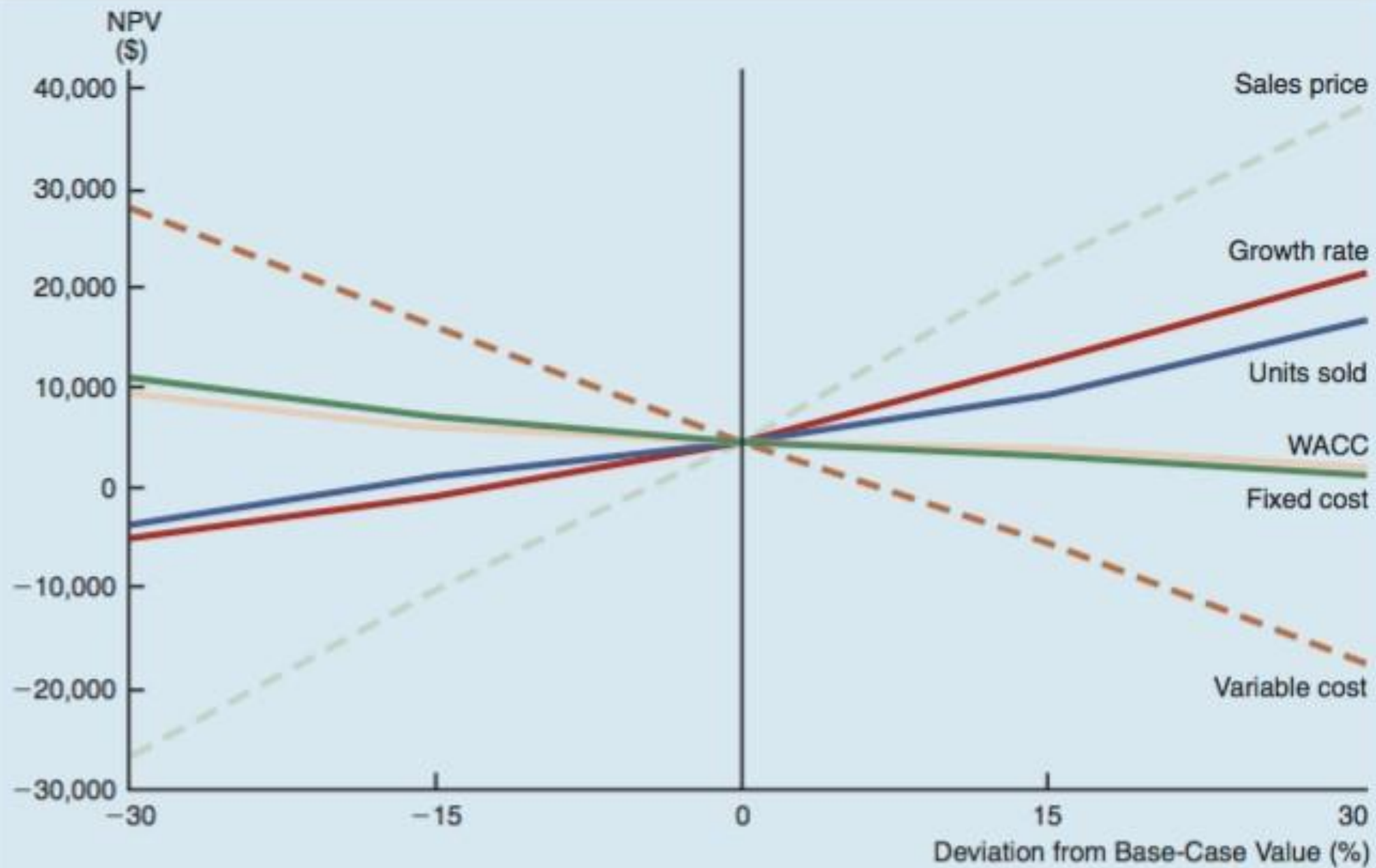
How to measure Project Risk?

# How to measure Project Risk?

- Commonly used techniques of analyzing Standalone Project's risk:
  - Sensitivity Analysis
  - Scenario Analysis
  - Monte Carlo Simulation

# Sensitivity Analysis

NPV At Different Deviations From Base						
Deviation from Base Case	Sales Price	Variable Cost/Unit	Growth Rate	Year 1 Units Sold	Fixed Cost	WACC
-30%	(\$27,223)	\$29,404	(\$ 4,923)	(\$ 3,628)	\$10,243	\$9,030
-15	(10,707)	17,607	(115)	1,091	8,026	7,362
0	5,809	5,809	5,809	5,809	5,809	5,809
15	22,326	(5,988)	12,987	10,528	3,593	4,363
30	38,842	(17,785)	21,556	15,247	1,376	3,014
Range	\$66,064	\$47,189	\$26,479	\$18,875	\$ 8,867	\$6,016



# Scenario Analysis

Scenario	Probability	Sales Price	Unit Sales	Variable Costs	Growth Rate	NPV	
Best case	25%	\$3.90	26,000	\$1.47	30%	\$146,180	
Base case	50	3.00	20,000	2.10	0	5,809	
Worst case	25	2.10	14,000	2.73	-30	(37,257)	
						Expected NPV =	\$30,135
						Standard deviation =	\$69,267
						Coefficient of variation = Standard deviation/Expected NPV =	2.30

$$\text{Expected NPV} = \sum_{i=1}^n P_i(\text{NPV}_i)$$

$$= 0.25(\$146,180) + 0.50(\$5,809) + 0.25(-\$37,257)$$

$$= \$30,135.$$

# Monte-Carlo Simulation

	Risky Inputs				Output
	Sales Price	Variable Costs	Unit Sales	Growth	NPV
Mean	\$3.01	\$2.00	21,662	-0.4%	\$13,867
Standard deviation	0.35	0.23	3,201	14.8	22,643
Maximum	4.00	2.47	29,741	42.7	124,091
Minimum	1.92	1.40	15,149	-51.5	-49,550
Median					10,607
Probability of NPV > 0					72.8%
Coefficient of variation					1.63