

Introduction to Capital Budgeting

FINANCIAL MODELING IN EXCEL



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What is capital budgeting?



- **Capital budgeting** is the process of allocating money to new projects that generate cash flows.
- Prioritize **mutually exclusive** projects

¹ <https://www.investopedia.com/terms/c/capitalbudgeting.asp>

Net present value (NPV)

- Net present value (NPV) is the sum of all present value cash flows.

$$NPV = PV_0 + PV_1 \dots + PV_n$$

- Invest if $NPV > 0$



¹ <https://www.investopedia.com/terms/n/npv.asp>

Net present value (NPV)

Example: Should a company invest in this project at a 10% discount rate?

Discount Rate = 10%

Period	0	1	2	3	4
Cash flow	(50,000)	20,000	20,000	20,000	20,000

Net present value (NPV)

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PV	(50,000.00)	18,181.82	16,528.93	15,026.30	13,660.27



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NPV = 13,397.31					

Where do discount rates come from?

Opportunity cost

- The next best alternative result that was given up to pursue the project
- i.e. stocks, bonds, other investments



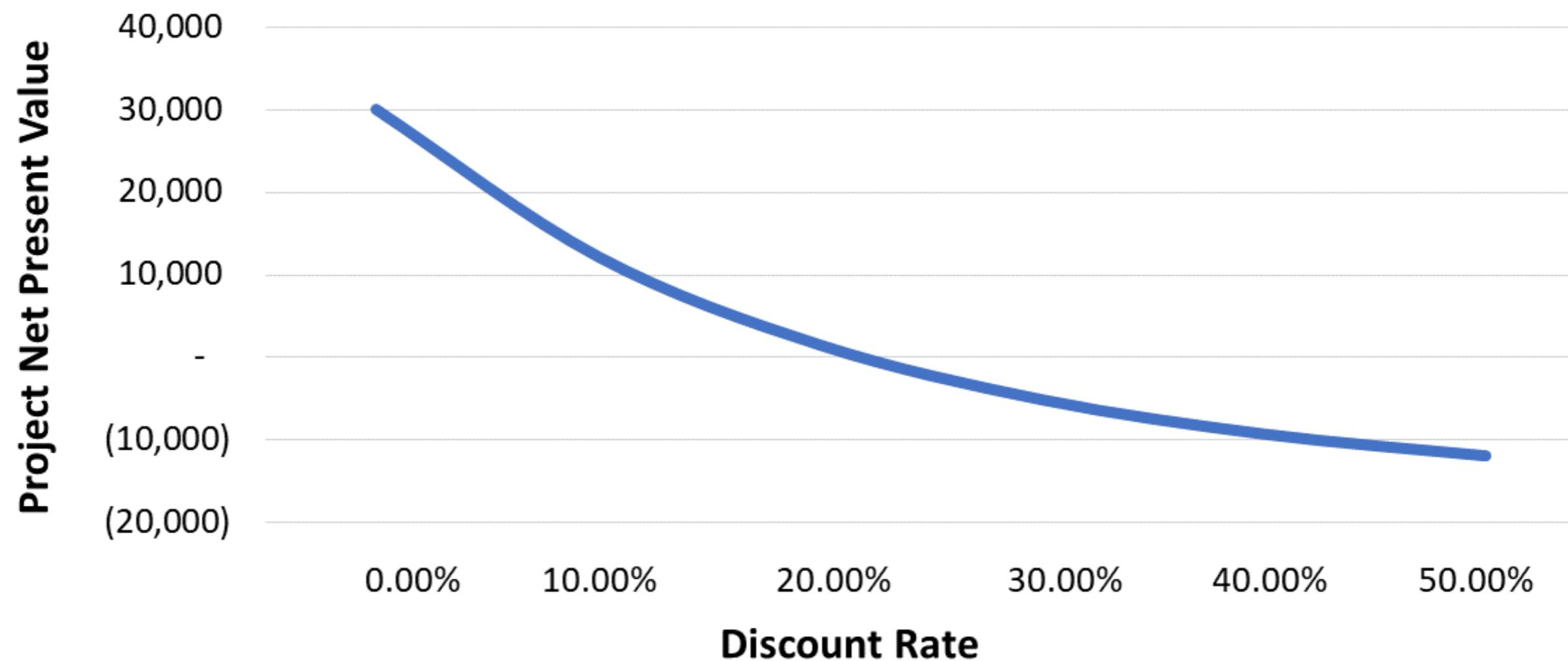
Cost of capital

- The cost of raising money for the project
- i.e. Issuing stocks or borrowing debt

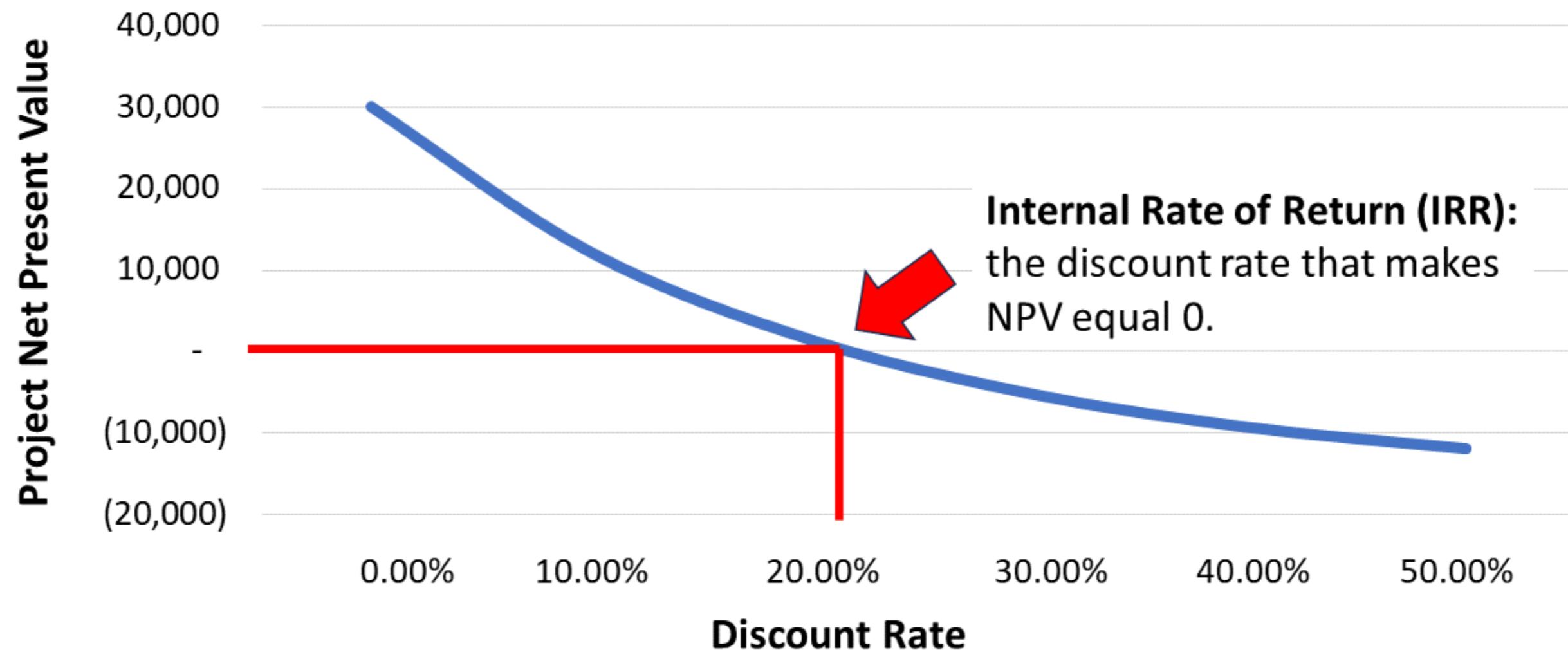


¹ <https://www.investopedia.com/terms/c/costofcapital.asp>

NPV Profile



NPV Profile



Testing the IRR

Discount Rate = 21.86%

Period	0	1	2	3	4
Cash flow	(50,000)	20,000	20,000	20,000	20,000

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	NPV = 0				

Using IRR in capital budgeting



- **Multiple projects:** the project with the higher IRR should be selected.
- **Benchmark rate:** IRR must be higher than the target return.

The Golden Rule

Always choose the project with the highest positive NPV.

- NPV represents a real dollar amount



Let's practice!

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Capital budgeting in Excel

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Let's practice!

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Congratulations!

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Chapter 1: Financial models

- Created a financial model!
- Formatted input cells per financial modeling standards.
- Used `SUM()` to calculate subtotals and net income on a financial statement.
- Used growth rates to forecast income.
- Created and used named ranges in formulas.
- Used `HLOOKUP()` to make the financial model dynamic.

Cash Flow Analysis		
14	A	B
15		
16		
17		
18	Net Potential Rent <i>Effective Monthly Rent / Unit</i>	1,493,760
19		
20		
21	Vacancy <i>Avg. Occupied Units</i>	(410,784)
22		
23		
24		
25	Delinquency <i>Delinquency %</i>	(179,251)
26		
27		
28	Total Rental Income	903,725
29		
30	Repairs & Maintenance <i>R&M Ratio</i>	(58,742)
31		
32		
33	Turn & Marketing Expenses <i>Turn Ratio</i>	(27,111)
34		

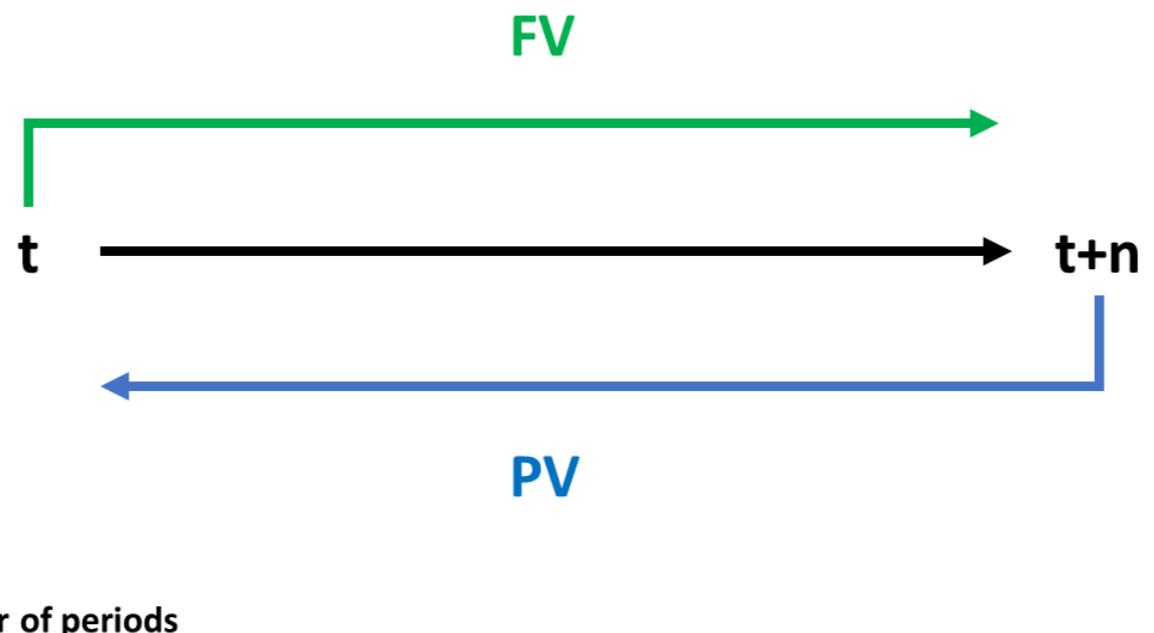
Chapter 2: Scenario analysis

- Practiced **scenario analysis** with What-if tools.
- Used the *Scenario Manager* to create scenarios and easily change between them.
- Used *Goal Seek* to find inputs.
- Performed **sensitivity analysis** with *Data Tables*.



Chapter 3: Time value of money

- Calculated return on investment (ROI).
- You used `FV()` to find the **future value** of the initial investment.
- You used `PV()` to find the **present value** of the total return.



Chapter 4: Capital budgeting



- Calculated **net present value (NPV)** using `NPV()` and `XNPV()`.
- Calculated **internal rate of return (IRR)** using `IRR()` and `XIRR()`.
- Used `EOMONTH()` to create a date range.
- Time series data with `XNPV()` and `XIRR()`.
- Used **capital budgeting** concepts to pick between two **mutually exclusive** projects.

Best of luck!

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