CPF

CERTIFICATE IN
PROJECT FINANCE

Investment/Financing a Project

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Concept of Capital Budgeting

Capital budgeting and investment appraisal, is the planning process used to determine whether an organization’s long term investments such as new machinery, replacement of machinery, new plants, new products, and research development projects are worth the funding of cash through the firm's capitalization structure.

Few Key points about Capital Budgeting

- Capital budgeting is the process by which investors determine the value of a potential investment project.
- The three most common approaches to project selection are payback period (PB), internal rate of return (IRR), and net present value (NPV).
- The payback period determines how long it would take a company to see enough in cash flows to recover the original investment.
- The internal rate of return is the expected return on a project—if the rate is higher than the cost of capital, it's a good project.
- The net present value shows how profitable a project will be versus alternatives and is perhaps the most effective of the three methods.

Concept of NPV

- The NPV method is the classic economic method of evaluating the investment proposals.
- It is a DCF technique that recognizes time value of money
- It postulates that cash flows arising at different time periods differ in value and are comparable only when their equivalents present value are found out.

Steps of calculating NPV

- Cash flows of the investment project should be forecasted based on realistic assumption
- Appropriate discount rate to be identified
- Present Value of cash flows to be calculated by discounting
- Initial Cash outflow to be submitted from the total of discounted cash flow- which is NPV

Example of NPV calculation

A Project has initial cash outlay of Rs. 2500. The year wise cash inflow for the project are as followed: Yr1- Rs. 900, Yr2- Rs. 800, Yr3- Rs 700, Yr4- Rs. 600, Yr5- Rs. 500. The opportunity cost of capital (discount rate) is assumed to be 10%. What is the NPV?

Solution:

NPV=[900/(1+0.10) + 800(1+0.10)^2 + 700/(1+0.10)^3 + 600/(1+0.10)^4 + 500/(1+0.10)^5] – 2500

=2725-2500= 225

Since the present value of all future cash flows are more than initial cash outlay, the project is profitable.

Concept of IRR

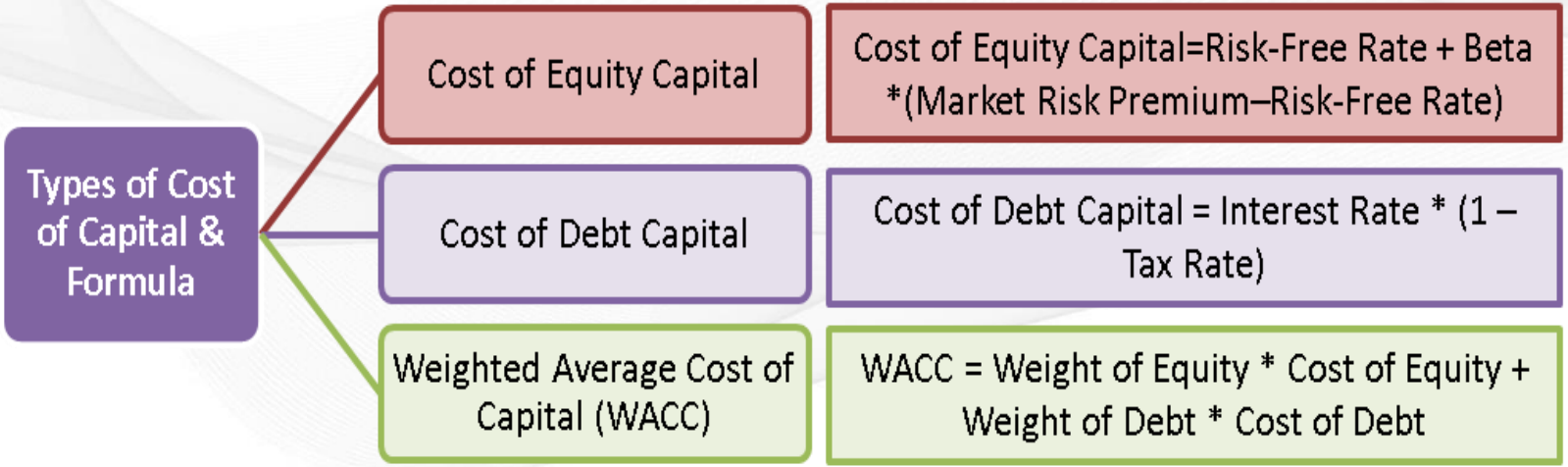
The internal rate of return is a metric used in financial analysis to estimate the profitability of potential investments. The internal rate of return is a discount rate that makes the net present value (NPV) of all cash flows equal to zero in a discounted cash flow analysis. IRR calculations rely on the same formula as NPV does.

Details/Time	2020	2021	2022	2023	2024	2025
Initial Investment	-250000					
After Tax Cash Flows		100000	150000	200000	250000	300000

Using formulae of IRR in excel we get the IRR as 57%

NPV	IRR
It is present value of cash inflow less present value of cash outflow.	It is the discount rate that makes NPV of all cash inflows of a project equal to zero.
It is expressed in the form of monetary return, which a company expects from the project.	It is expressed in the form of percentage return, a firm expects from the project.
It is an absolute measure.	It is a relative measure.
This method can be used to evaluate projects or investment plans where there are changes in cash flows.	This method cannot be used to evaluate projects with varying cash flows.

Cost of capital of an investor, in financial management, is equal to return, an investor can fetch from the next best alternative investment. In simple words, it is the opportunity cost of investing the same money in different investment having similar risk and other characteristics.



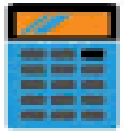
Cost of Equity Formulae

Method #1 (Dividend Companies)

$$\text{Cost of Equity (Ke)} = \frac{\text{DPS}}{\text{MPS}} + r$$

Method #2 (CAPM Model)

$$E(Ri) = R(f) + \beta\,[E(m) - R(f)]$$



E(Ri)= Return on investment i
R(f)= Risk Free Return, Beta= Systemic Risk, E(m)= Market Return

Cost of Debt Formulae

Cost of Debt (for DCF Valuation)

$$\text{Cost of Debt (Pre-Tax)} = \frac{\text{Total Interest Cost Incurred}}{\text{Total Debt}} \times 100$$

$$\text{Cost of Debt (Post-Tax)} = \frac{\text{Total Interest Cost Incurred} \times (1 - \text{Effective Tax Rate})}{\text{Total Debt}} \times 100$$

Weighted Average Cost of Capital (WACC)

$$WACC = \frac{E}{D+E}(r_e) + \frac{D}{D+E}(r_d)(1-t)$$

Where:

E = market value of equity

D = market value of debt

r_e = cost of equity

r_d = cost of debt

t = corporate tax rate

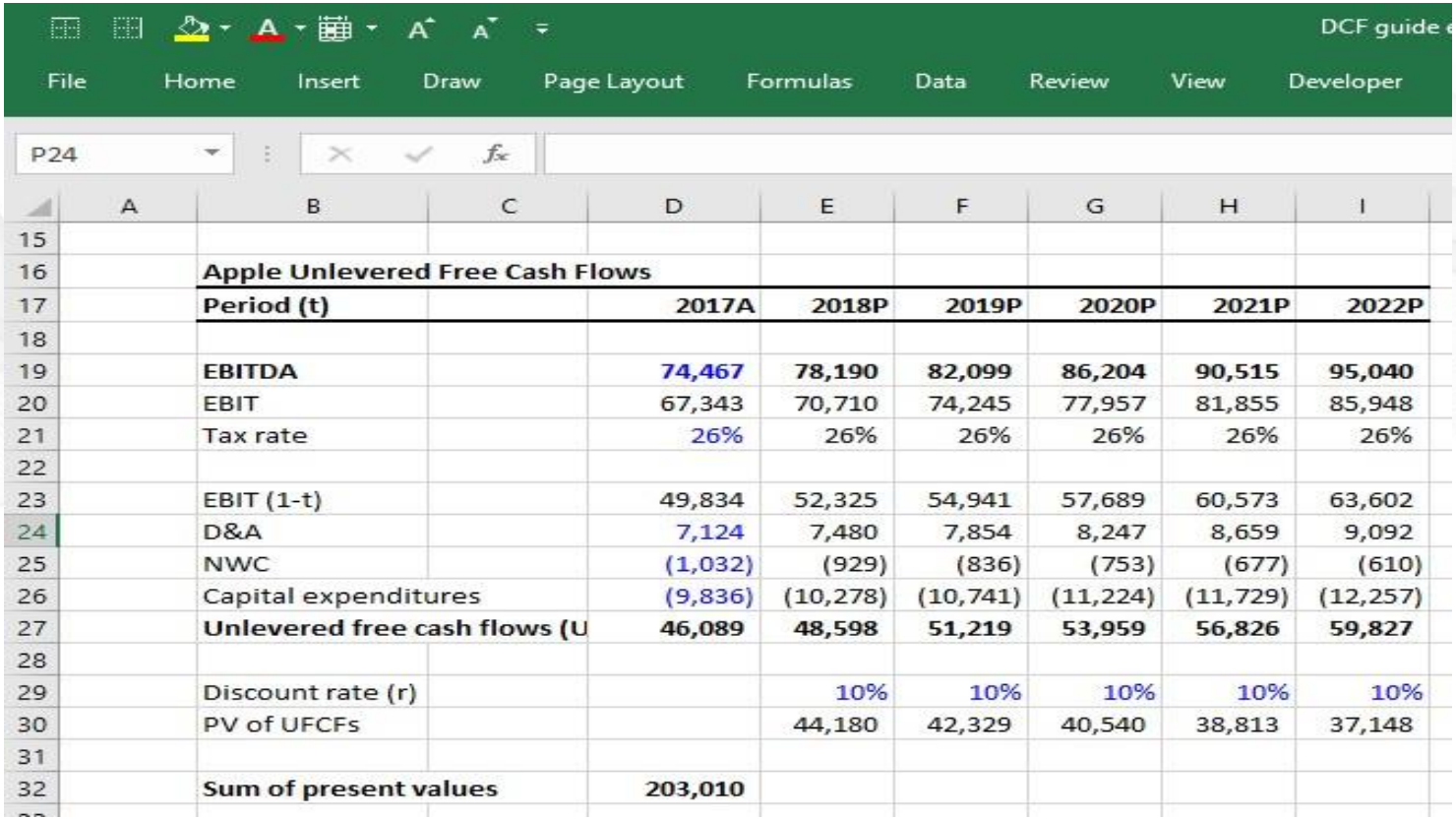
Steps to calculate Beta (Systemic Risk)

Given Risk Free Rate- 2%
Market Return Rate- 8%
Stock Return Rate- 7%

Steps	Details	Figures (%)
Step-1	Stock's return - Risk Free Return…(A)	7%-2%=5%
Step-2	Market Return- Risk Free Return…(B)	8%-2%=6%
Step-3	A/B (Beta)	5/6

Beta<1= Stock is less volatile
Beta>1= Stock is more volatile
Beta<0=Stock is loosing money while the market is gaining

Cash Flow Estimation



DCF guide

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	A	B	C	D	E	F	G	H	I
15									
16		**Apple Unlevered Free Cash Flows**							
17		**Period (t)**		**2017A**	**2018P**	**2019P**	**2020P**	**2021P**	**2022P**
18									
19		**EBITDA**		74,467	**78,190**	**82,099**	**86,204**	**90,515**	**95,040**
20		EBIT		67,343	70,710	74,245	77,957	81,855	85,948
21		Tax rate		26%	26%	26%	26%	26%	26%
22									
23		EBIT (1-t)		49,834	52,325	54,941	57,689	60,573	63,602
24		D&A		7,124	7,480	7,854	8,247	8,659	9,092
25		NWC		(1,032)	(929)	(836)	(753)	(677)	(610)
26		Capital expenditures		(9,836)	(10,278)	(10,741)	(11,224)	(11,729)	(12,257)
27		**Unlevered free cash flows (U**		**46,089**	**48,598**	**51,219**	**53,959**	**56,826**	**59,827**
28									
29		Discount rate (r)			10%	10%	10%	10%	10%
30		PV of UFCFs			44,180	42,329	40,540	38,813	37,148
31									
32		**Sum of present values**		**203,010**					

Risk Analysis in Capital Budgeting

- Projects differ in risk and it should be reflected in capital budgeting decisions. However, it is difficult to measure risk, especially for new projects without history.
- Three separate and distinct types of risks involved are:

Stand alone risk – the risk an asset would have if it was a firm's only asset and if investor's owned only one stock. It is measured by the variability of the assets expected returns.

Corporate risk – risk considering the firm's diversification but not stock holder diversification. It is measured by the project's effect on uncertainty about the firm's expected future returns.

Mark et risk – considers both firm and stock holder diversification. It is measured by the project's beta coefficient.

Real Option

- A real option gives a firm's management the right, but not the obligation to undertake certain business opportunities or investments.
- Real option refer to projects involving tangible assets versus financial instruments.
- Real options can include the decision to expand, defer or wait, or abandon a project entirely.
- Real options have economic value, which financial analysts and corporate managers use to inform their decisions.

Real Option- Example

- The McDonald's Corporation has restaurants in more than 100 countries.
- Let's say the company's executives are mulling the decision to open additional restaurants in Russia. The expansion would fall under the category of a *real option to expand*. The investment or capital outlay would need to be calculated, including the cost of the physical buildings, land, staff, and equipment.

- Now, McDonald's executives would need to decide if the revenue earned from the new restaurants will be enough to counter any potential country and political risk, which is difficult to value

The same scenario could also produce a *real option to wait* or defer opening any restaurants until a particular political situation resolves itself. Perhaps there's an upcoming election, and the result could impact the stability of the country or the regulatory environment.

Documentation in Project Finance

- Off-taker agreement/Power Purchase Agreement (PPA)/Work Order
- Operation & Maintenance Agreement (O&M Agreement)
- EPC Agreement
- Clearance from Government
- Land Acquisition documents
- Trust & Retention Agreement/Escrow Agreement
- KYC
- Loan Agreement
- Deed of Hypothecation
- Insurance
- Other relevant documents

Working Capital in Project Finance-1st Method

	Amount(₹)
Total CA required by the borrower	50,000
Current liabilities (excluding bank borrowing)	10,000
Working Capital Gap	40,000
Less:	
25% from borrower through long-term sources	10,000
Maximum Permissible bank borrowing	30,000

Working Capital in Project Finance-2nd Method

	Amount(₹)	
Total CA required by the borrower		50,000
Less:		
25% to be provided by borrower through long-term funds	12,500	
Less:		
Current liabilities (excluding bank borrowing)		10,000
Maximum Permissible bank borrowing	27,500	

Working Capital in Project Finance-3rd Method

	Amount(₹)
Total CA required by the borrower	50,000
Less: Core current assets (assumed)	4,000
Balance	46,000
25% to be provided by borrower through long-term funds	11,500
Balance	34,500
Less:	
Current liabilities (excluding bank borrowing)	10,000
Maximum permissible bank borrowing	24,500

Thank You