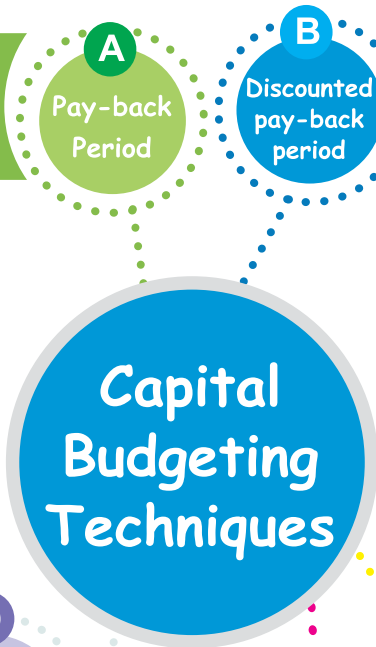


Ch 1 - Capital Budgeting (Chart 1.1)



It is the time period required to recover back the Principal amount invested for a project

A
Pay-back Period

B
Discounted pay-back period

It is time period to recover back the Principal amount invested considering the time value of money for a project.

Types of cash in flow

- Even Cash Flows**

$$\text{Pay-back Period} = \frac{\text{Initial Investment}}{\text{Annual Cash Flows}}$$
- Uneven Cash Flows**
 we use cumulative CF to check the exact pay-back period.

How To Select : **Lesser** the pay-back period better the Project

- * We first Discount the CFs of future years to PV
- * Then Discounted CFs are cumulated to check the exact discounted pay- back period
- * It is same like pay-back period, exact that here future years cash flows are discounted and then cumulated
- * **How To Select:** **Lesser** the discounted pay-back period better the project.

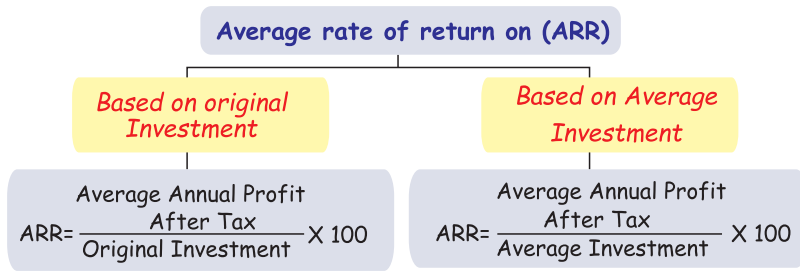
C
Pay-back reciprocal

it is just opposite of pay- back Period

it is the rate of return the project is giving without considering the time value of Money. This method considers profits and not cash flows for calculating rate of return

D
Average rate of return on (ARR)

- *As the name suggests, it is exactly opposite of pay back method.
- $$\text{Pay back reciprocal} = \frac{1}{\text{Pay back period}}$$
- *It indicates the annual rate of return on Initial Investment, without Considering time Value of Money
- ***How to Select :** **Higher** the pay back reciprocal, better the project.



Where, Average Annual Profit=

$$\frac{\text{Total Profit}}{\text{No.of Years}}$$

and

$$\frac{\text{Opening WDV} + \text{Closing WDV}}{2}$$

OR

Average Investment =

$$\frac{\text{Original Investment}-\text{Scrap Value}}{2} + \text{Additional Working Capital} + \text{Scrap Value}$$

How To Select: **Higher** the ARR, better the Project.

E
Discounted Cash-flow Methods

It has 3 methods.
 (a) Net present Value (NPV) Method.
 (b) Profitability Index (PI) Method
 (c) Internal rate of Return (IRR) method.
Next Page



Ch 1 - Capital Budgeting (Chart 1.2)

Discounted Cash flow Methods

Net Present Value (NPV) Method

*As the Name Suggests it is the net present value of all cash inflows and cash out flows

$$\text{Net Present Value (NPV)} = \frac{\text{Present value of Cash Inflows}}{\text{Present value of cash outflows}}$$

*It indicates by investing the project cost today how much extra we are getting in today's value.

*The cash flows are discounted using cost of capital.

*If NPV is +ve, we accept the project.

*Between 2 Projects the projects with higher NPV will be selected.

*Where the life of 2 projects under consideration is not same EAV is used as:

$$\text{Equated Annual Value (EAV)} = \frac{\text{NPV}}{\text{PVAF for life of Project}}$$

Profitability Index (PI) Method

$$\text{PI} = \frac{\text{PV of Cash in Flows}}{\text{PV of Cash Out Flows}}$$

OR

$$\text{PI} = \frac{\text{NPV} + \text{Initial Investment}}{\text{Initial Investment}}$$

*It indicates that for every 1 rupee invested in the project of how much we are getting in today's Value.

***How To Select:** Higher the PI better the project

Internal Rate of Return (IRR) method

$$\text{IRR} = \text{start rate} + \frac{\text{Surplus}}{\text{Surplus} + \text{Deficit}} \times \text{Difference in rate}$$

*It is the rate of return given by the Project.

*If IRR is taken as discounting Rate, NPV is always Zero & PI is 1.

***How To Select :**

1. If there is single project under consideration, IRR should be compared with cut off rate. We accept the Project if, $\text{IRR} > \text{cut off rate}$ is Minimum required rate of return.

2. Between 2 Projects, Projects with higher IRR should be selected.

Important Points to Remember:

- (1) Depreciation is Non-cash expense.
- (2) Still we consider depreciation for Calculating tax amount.
- (3) If there is no tax rate given, we ignore depreciation.
- (4) If tax amount is given, we ignore depreciation

Effective interest Rate (EIR) :
it is same like internal rate of return (IRR)

It is the rate used for discount the future cash flows where present value of inflows will be equal to present value of outflows means at IRR Net present Value of Project will be always 'Zero'

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Ch 2 - Leverage (Chart- 2.1)

Types of Leverage

Operating Leverage or Degree of Operating Leverage (DOL)

Taking advantage of operations of Business i.e., operating fixed cost

By increasing the **SALES** by a certain % we want to increase **EBIT** by a greater %

$$1) \text{ DOL} = \frac{\% \text{ Change in EBIT}}{\% \text{ Change in SALES}}$$

OR

In other words, we are measuring the impact of **FIXED COST**

$$2) \text{ DOL} = \frac{\text{Contribution}}{\text{EBIT}}$$

Formula (1) to be used when two situations are given. Whereas formula (2) to be used when only one situation is given.

Financial Leverage or Degree of Financial Leverage (DFL)

Taking advantage of financial structure of business i.e., fixed cost of finance - Interest

A) Assuming that there are no preference shares

By increasing the **EBIT** by a certain % we want to increase **EPS** by a greater %

$$1) \text{ DFL} = \frac{\% \text{ Change in EPS}}{\% \text{ Change in EBIT}}$$

OR

In other words, we are measuring the impact of **INTEREST COST**

$$2) \text{ DFL} = \frac{\text{EBIT}}{\text{EBT}}$$

Formula (1) to be used when two situations are given. Whereas formula (2) to be used when only one situation is given.

B) Assuming that there are preference shares

Now, assuming that preference shares are given in question. We can now take advantage of interest and preference dividend.

$$\text{DFL} = \frac{\text{EBIT}}{\text{EBIT} - \text{Interest} - [\text{PD}/(1-t)]}$$

Combined Leverage or Degree of Combined Leverage (DCL)

Taking advantages of both operations and financial structure of business. i.e. fixed cost of operations + fixed cost of finance i.e. Interest

A) Assuming that there are no preference shares

By increasing the **SALES** by a certain % we want to increase **EPS** by a greater %

$$1) \text{ DCL} = \frac{\% \text{ Change in EPS}}{\% \text{ Change in SALES}}$$

OR

In other words, we are measuring the impact of both **FIXED COST OF OPERATIONS & INTEREST COST**

$$2) \text{ DCL} = \frac{\text{Contribution}}{\text{EBIT}}$$

Formula (1) to be used when two situations are given. Whereas formula (2) to be used when only one situation is given.

B) Assuming that there are preference shares

Now, assuming that preference shares are given in question. We can now take advantage of fixed cost of operations & interest & preference dividend.

$$\text{DCL} = \frac{\text{Contribution}}{\text{EBIT} - \text{Interest} - [\text{PD}/(1-t)]}$$

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Ch 2 - Leverage (Chart- 2.2)

Assuming that there are no Preference Shares

Particulars	Amount
Sales	XXX
(-) Variable cost	(XX)
Contribution	XXX
(-) Fixed Cost	(XX)
EBIT	XXX
(-) Interest	(XX)
EBT	XXX
(-) Taxes	(XX)
EAT or Net Income	XXX

Assuming that there are Preference Shares

Particulars	Amount
Sales	XXX
(-) Variable cost	(XX)
Contribution	XXX
(-) Fixed Cost	(XX)
EBIT	XXX
(-) Interest	(XX)
EBT	XXX
(-) Taxes	(XX)
EAT	XXX
(-) Preference Dividend	(XX)
EAT or Net Income	XXX

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Ch 3 - COST OF CAPITAL (Chart- 3.1)



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Ch 3 - COST OF CAPITAL (Chart- 3.2)

Weighted Average Cost of Capital (WACC)

Using Book Value Weights

- 1) The weights used are derived from book value of different sources of finance as per books of accounts.
- 2) Retained earnings to be Included.
- 3) Always calculate weights for total value of Capital (Take proportion of total values as per books of accounts)

Using Market Value Weights

- 1) The weights used are derived from market value of different sources of finance as per prevailing market rates.
- 2) Retained earnings ignored.
- 3) Always calculate weights for total value of capital (Take proportion of total market values as per prevailing market prices)

Format for calculation of WACC or K_0

Source of Finance	Book Value or Market Value	Weights	Individual cost of Capital	WACC
Equity Capital	XX	W1	K_e	$K_e \times W1$
Preference Capital	XX	W2	K_p	$K_p \times W2$
Retained earning	XX	W3	K_e	$K_e \times W3$
Debt	XX	W4	K_d	$K_d \times W4$
Total	XXX	Total of above		$K_0 = WACC$



Ch 4 - Capital Structure (Chart 4.1)

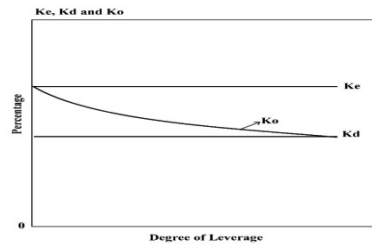
Capital Structure Theories

Net Income Approach

Assumption

- **Kd = Debt Capitalization Rate**
- **Ke = Equity Capitalization Rate**
- **Kd is always less than Ke**
- **Kd & Ke remains constant for debt / equity mix**

Diagram



Steps

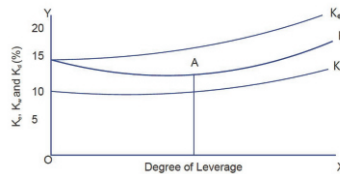
- 1) EBIT
- 2) EBT (NI) = EBIT – Interest
- 3) Value of Equity (s) = $\frac{NI}{Ke}$
- 4) Value of Debt (D) = $\frac{\text{Interest}}{Kd}$
- 5) Value of firm (V) = S + D
- 6) Overall cost of capital (Ko) = $\frac{EBIT}{V} \times 100$

Traditional Theory

Assumption

- **Kd is always less than Ke**
- **Kd & Ke vary with change in debt equity mix**
- **Ke is more sleeper and higher than increase in Kd**

Diagram

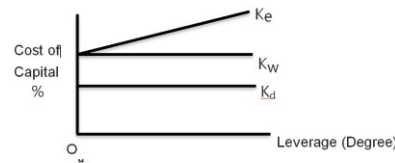


Net Operating Income Approach

Assumption

- **Kd is always less than Ke**
- **Kd remains constant at all levels of debt-equity mix**
- **Ke is increases at debt content increases.**
- **Market capitalises value of firm as a whole without any importance of debt - equity mix**

Diagram



Steps

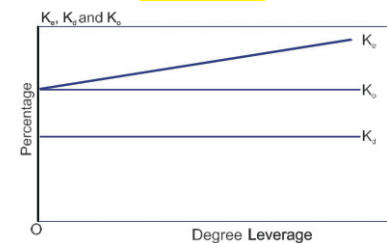
- 1) EBIT
- 2) EBT = EBIT – Interest
- 3) Value of Firm (V) = $\frac{EBIT}{Ko}$
- 4) Value of Debt (D) = $\frac{\text{Interest}}{Kd}$
- 5) S = V - D
- 6) Ke = $\frac{EBIT \text{ or } NI}{S} \times 100$

Modigliani-Miller Approach

MM Approach without Tax Assumption

- **Kd is always less than Ke**
- **Kd remains constant at all levels of debt- equity mix**
- **Ke is increases at debt content increases.**
- **Market capitalises value of firm as a whole without any importance to Debt - Equity mix.**
- **Capital Market is perfect, investors are face to buy or sell securities, no transaction cost, investors can personally borrow without restrictions on same terms as firms do.**
- **Same risk class classification - if 2 firms have same capital employed and same EBIT**

Diagram



MM Approach with Tax

- Value of levered company = Market Value of unlevered firm + (Debt X Tax Rate)**
- Cost of equity in a levered company (Keg) = Keu + (Keu - Kd) Debt / Debt + Equity**

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Ch 4 - Capital Structure (Chart 4.2)

Factors Determining Capital Structure

Nature of Industry (small/ large scale)

Gestation Period (Time required to settled the Business)

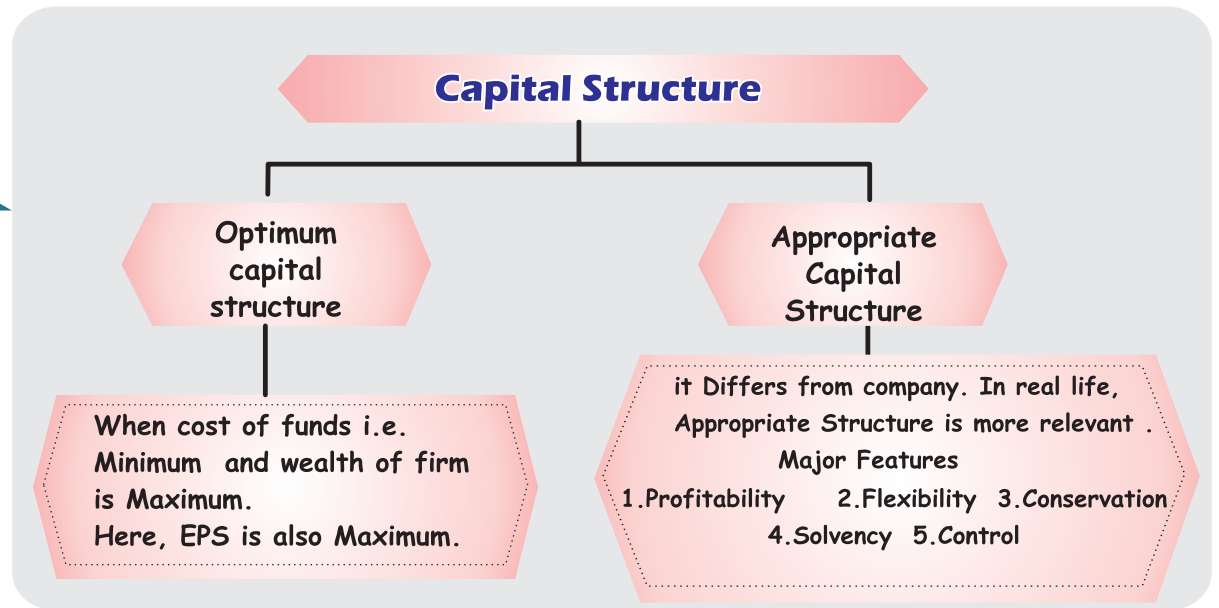
Certainty of profits
(More - Debt & Less - Equity)

Quantum of Return on Investment
(ROI to be compared to Cost of Funds)

Lending Policy of Bank (Liberal / strict)

Monetary and Fiscal policy of Govt.

Source	risk	cost	Control
Equity	Lowest	Highest	Is Diluted
Preference	Moderate	Moderate	Not Diluted
Debt	Highest	Lowest	Not Diluted



Other Important Concepts

Financial BEP

It Is that level of EBIT
At which EPS under a plan Is Zero

Let the EBIT be 'X'
 $(X - \text{Interest}) (1-t) - PD = 0$
No. of equity share

Indifference Point

It is that level of EBIT
at which EPS under two Plans is same.

Let the EBIT be 'X' plan A and B.
Plan A Plan B
 $\frac{(X - \text{Interest}) (1-t) - PD}{\text{No. of equity share}} = \frac{(X - \text{Interest}) (1-t) - PD}{\text{No. of equity share}}$

Marginal Cost of capital:-

- It is cost of raising an additional rupee of capital
- The word marginal means additional
- We compute cost of only additional / New Capital

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