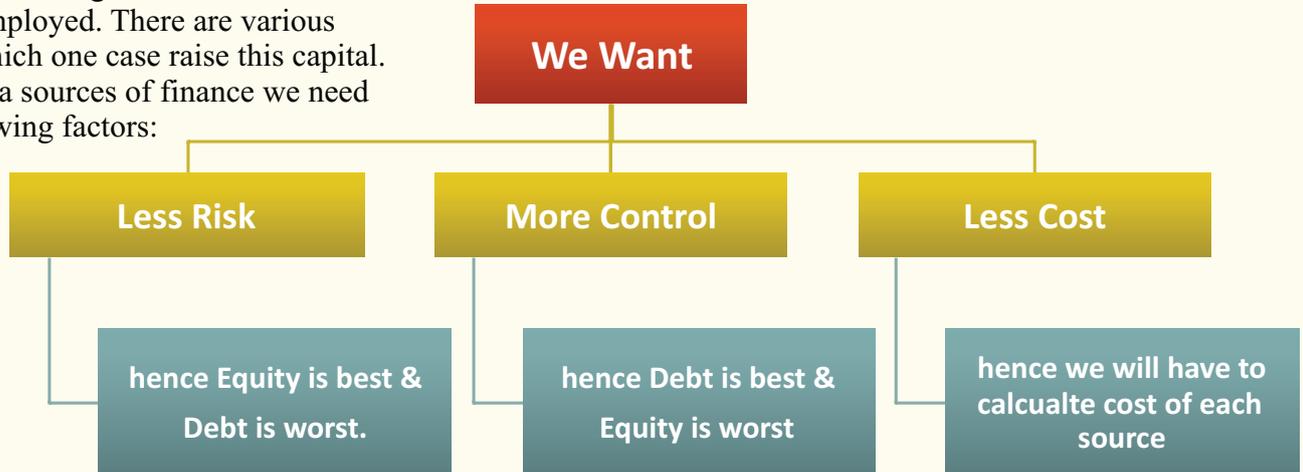# Capital Structure & Cost of Capital

Capital Structure

Money invested for long term in a business is called capital employed. There are various sources from which one case raise this capital. While selecting a sources of finance we need to balance following factors:

We Want

- **Less Risk** → hence Equity is best & Debt is worst.
- **More Control** → hence Debt is best & Equity is worst
- **Less Cost** → hence we will have to calcualte cost of each source

To balance all the above requirements we prefer a mix of sources of finance in place of a single sources. This **mix of various sources of finance is called capital structure.**

Cost of Capital

<u>Definition</u>: It is nothing but expectation of investors. It is also affected by issue expenses and taxation.

<u>Calculation</u>: There are two methods of calculation-

1) **Trial & error**: This will give exact answer. Here we discount all future cash flows to make its total equal to present cash flow.
   a. Future cash flows:
      i. Outflow of interest/ Dividend
      ii. Inflow of tax benefit on Interest/ outflow of DDT
      iii. Outflow of repayment/redemption price
   b. Present cash flows:
      i. Inflow of issue price (if question is silent issue price = market price)
      ii. Outflow of issue expenses

2) **Shortcut formula:** This will give approximate answer. Also there is no single shortcut. You will have to use different formulas for different sources.

	Redeemable	**Irredeemable**
Debt	$K_d = \dfrac{I(1-t)+\dfrac{R-P}{n}}{\dfrac{R+P}{2}}$	$K_d = \dfrac{I(1-t)}{P}$
Preference Shares	$K_p = \dfrac{D+\dfrac{R-P}{n}}{\dfrac{R+P}{2}}$	$K_p = \dfrac{D}{P}$

Here K_d = cost of debt
I = amount of Interest per year (not rate of interest)
R = redemption price
P = Net proceeds realized = issue price – issue expenses
n = number of years.

K_p = cost of preference shares

D = amount of dividend + Dividend Distribution Tax (if any)

Limitation of shortcut - In the following cases shortcut may give misleading answer hence trial & error method is preferable:

1) Higher the difference between R & P lower the accuracy of answer.
2) Gradual redemption means repayment of principal amount in installments.

Special points in questions:

1) Even if question says that company is issuing 1,00,00 debentures, calculate cost for one debenture. It will be same as cost of whole amount.
2) In the above case if issue expenses are given for total amount then divide it by number of debentures.
3) If life of debenture/preference shares is not given then assume it to be perpetual.

Shortcut for cost of equity:

Approach	When to use	Formula	Based on
Dividend Capitalization Approach	when dividend is expected to remain constant	$K_e = \dfrac{D}{P}$	$P = \dfrac{D}{K_e}$
Earning Capitalization Approach	when earning is expected to remain constant	$K_e = \dfrac{EPS}{P}$	$P = \dfrac{EPS}{K_e}$
Growth Approach	when dividend is expected to grow at a constant rate	$K_e = \dfrac{D_1}{P_0} + g$	$P_0 = \dfrac{D_1}{K_e - g}$
Realized Yield Approach	when future is unpredictable	$K_e = \left[(1+Y_1) \times (1+Y_2) \ldots \times (1+Y_n) \right]^{1/n} - 1$ $Y_n = \dfrac{D_n + P_n}{P_{n-1}} - 1 \quad Y_n = \dfrac{D_n + P_n}{P_{n-1}} - 1$	

Here Ke = cost of equity D = dividend per share + DDT (if any) EPS = earning per shares P_0 = P = Net proceeds realized 　　= issue price – issue expenses **If issue price is not given then assume it equal to market price. If issue expenses are not given assume it equal to zero.	D_1 = dividend at the end of first year = D0(1+g) g = growth rate 　= Return on equity x Retention Ratio Also Yn = yield (return) for year n Dn = dividend at the end of year n Pn= price at the end of year n Pn-1= price at the beginning of year n.

Examples of D_0:
- Company has paid dividend
- Company is paying dividend
- Company is about to pay dividend
- Dividend for the last year

Examples of D_1:
- Company will pay dividend
- Dividend at the end of current year
- Dividend at end of 1st year
- Next expected dividend

Note:
1) If in a question growth rate is equal to more than cost of equity then we can not calculate P0.
2) If cum dividend market price is given then to obtain true market price we will deduct dividend.
3) In realized yield approach we assume that investors get return equal to their expectation. Therefore historical average return realized by them is equal to their expectation or cost of equity for the company.

For Remaining Pages of Cost of Capital Concept Sheet and Concept Sheets of all other chapter of CA Inter FM (new/old syllabus)

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