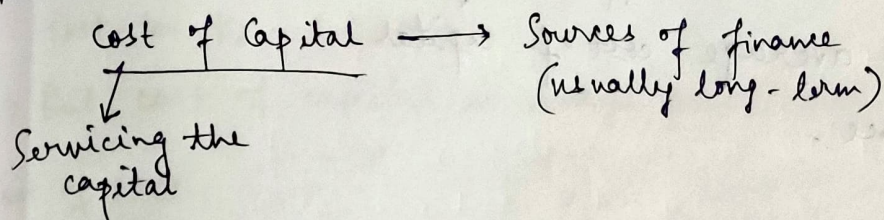


14/3/23



- $\rightarrow$  Loan  $\rightarrow$  type of capital
- $\rightarrow$  Interest on loan is explicit, is also booked as an expense.
- $\rightarrow$  Capital is from owner, i.e., equity share capital
- $\rightarrow$  Cost of equity is implicit.
- $\rightarrow$  Cost of debt is ok.
- $\rightarrow$  Can we say cost of equity is NIL? X
- $\rightarrow$  Preferences w.r.t.  $\left[ \begin{array}{l} 1. \text{Dividend payment} \\ 2. \text{Liquidation of company} \end{array} \right.$
- $\uparrow$   
Cost of preference share capital - Dividend.
- $\rightarrow$  Cost of capital is used for a benchmark or hurdle rate.  
Past/Present/Future.
- $\rightarrow$  Can be used for comparing the performance of divisions inside the company.

Div.	A	B	C
	2000	2000	1000
	200	300	160
	10%	15%	16%

, say expected = 13%

$\downarrow$   
Economic profit = 15% - 13% = 2%

= Extra profit earned above and over CoC.

$\rightarrow$

2000	Equity	14%	CoC
3000	Debt	10%	

Tax = 0

Overall CoC =  $\frac{2}{5} \times 14\% + \frac{3}{5} \times 10\% = 11.6\%$



→ Next based return is called opportunity cost.

→ WACC → weighted average cost of capital.

→ 3 sources of finance:-

Debt

Preference Share Capital

Equity share capital or Equity  
(ESC + Reserves & Surplus)

~~Amount in~~

#	Type of capital	Amount in Rs. crore	Face Value	Market Value (Price)	$K_i$	<del>Weight</del>
1	Debt (10%, 8yrs)	1200	Rs. 1000	Rs. 1,050	6.825%	
2	12% preference share capital	600	Rs. 100	Rs. 90	13.82%	
3	ESC:					
	Paid up (PUC) capital	300	Rs. 10	Rs. 70	15.20%	
	Reserves & Surplus	800	—	—		

$T = 25\%$  (Tax)

Cost of debt:-

$$YTM = \frac{100 + \frac{1000 - 1050}{8}}{0.6 \times 1050 + 0.4 \times 1000} = 9.10\%$$

assume that there is tax benefit/loss on this also, spread over time.

Tax benefit on this

$$\uparrow K_d = 9.1 \times (1 - T) = 6.825\% \text{ (using Formula 1)}$$

Formula 2:-

$$\frac{\text{Int}(1 - T) + \frac{M - P}{n}}{0.6 \times P + 0.4 \times M} \quad \text{(without the assumption)}$$



$$\rightarrow \text{Pre-tax } K_d = 9.10\%$$

$$\text{Post-tax } K_d = 6.825\%$$

$\rightarrow$  But, cost of capital is always post-tax.

Cost of PSC:-

$$\frac{Div_p + \left[ \frac{M-P}{n} \right]}{0.6 \times P + 0.4 \times M}$$

$$= \frac{12 + \frac{100-90}{10}}{0.6 \times 90 + 0.4 \times 100}$$

$$= 13.82\%$$

Cost of Equity:-

$\rightarrow$  Rule of Thumb or Expert Opinion

$\rightarrow$  Dividend Discounting Model.

$$P_0 = \frac{D_1}{K_e - g} \quad (\text{Not often used})$$

$$\Rightarrow K_e = \frac{D_1}{P_0} + g$$

$\rightarrow$  CAPM

$$K_e = R_f + \beta(R_m - R_f)$$

$$R_m = 17\%, R_f = 8\%, \beta = 0.8$$

$$K_e = 15.2\%$$

	D	PSC	Equity	Total
Weight (BV)	$\frac{1200}{2900}$	$\frac{600}{2900}$	$\frac{1100}{2900}$	2900
	= 0.4138	= 0.2069	= 0.3793	
Weight (MV)	$1.20 \times 1050$	$6 \times 90$	$30 \times 70$	3900
	= 1260	= 540	= 2100	
	$\frac{1260}{3900}$	$\frac{540}{3900}$	$\frac{2100}{3900}$	



WACC using BV weights  
 $= 11.4489\%$

#	Weight (BV)	$K_i \times W_i$ (BV)	Weight (MV)	$K_i \times W_i$ (MV)
1	0.4138	2.8242%	0.3230	2.2045%
2	0.2069	2.8593%	0.1385	1.9141%
3	0.3793	5.7654%	0.5385	8.1852%
	<u>1.0000</u>	<u>11.4489%</u>	<u>1.0000</u>	<u>12.3038%</u>

WACC using MV weights

$= 12.3038\%$  (by default, when nothing else is mentioned)

→ Suppose the company has three different divisions.

To evaluate the performance of each division should the company use?

Uniform CoC, i.e., 12.3037%? No.

→ CoC for each division should be calculated separately.

→ Marginal Cost.

Loan: Rs. 500 cr 12%

Rs. 700 cr 13%

CoC can vary as the company requires more capital.

WMCC - weighted marginal cost of capital.



20/3/23

→ WACC

Capital Type (i)	%	Range of i <sup>th</sup> capital	K <sub>i</sub> (post-tax)
Equity	50%	0 - 1000	18%
		1000 - ∞	20%
Debt	30%	0 - 500	8%
		500 - 1500	10%
		1500 - ∞	12%
Preference share Capital	20%	0 - 600	16%
		600 - ∞	11%

→ Change points:-

$$\frac{1000}{0.50} = 2000$$

$$\frac{500}{0.3} = 1667$$

$$\frac{600}{0.2} = 3000$$

first break.

$$\frac{1500}{0.3} = 5000$$

(WACC).

→ upto 1667, CoC remains same.

$$WACC = 0.5 \times 0.18 + 0.3 \times 0.08 + 0.2 \times 0.10 = 13.4\%$$

→ B/w 1667 and 2000,

$$WACC = 0.5 \times 0.18 + 0.3 \times 0.10 + 0.2 \times 0.10 = 14.0\%$$

→ B/w 2000 and 3000,

$$WACC = 0.5 \times 0.20 + 0.3 \times 0.10 + 0.2 \times 0.10 = 15\%$$

→ B/w 3000 and 5000,

$$WACC = 0.5 \times 0.20 + 0.3 \times 0.10 + 0.2 \times 0.11 = 15.2\%$$



Above 5000,

$$WACC = 0.5 \times 0.20 + 0.3 \times 0.12 + 0.2 \times 0.11$$

$$= 15.8\%$$

Range of total capital

→ 0-1667

1667-2000

2000-3000

3000-5000

≥ 5000

WMCC

13.40%

14.00%

15.00%

15.20%

15.80%

Schedule of  
WMCC

→  $\beta$  calculated is always levered (financial risk only comes from debt)

$$\beta_u = \frac{\beta_L}{1 + \frac{D}{E}(1-T)}$$

$$\beta_L = \beta_u \cdot \left[ 1 + \frac{D}{E}(1-T) \right]$$

Avg. of unlevered  $\beta$  of similar companies is taken as a proxy of unlevered  $\beta$  for my unlisted company.

Calculation of  $\beta$  for unlisted companies

	$\beta_L$	D/E	$\beta_u$
→ Xuvraj	0.80	0.30	0.6531
Pooja	0.90	0.20	0.7826
Yash	1.10	0.40	0.8461
Sahil	0.60	0.10	0.5581
Dev	1.20	0.25	1.0105

$$\text{Avg} = 0.77$$

Tax = 25%

company Jai has D/E 0.35. Find  $\beta$

$$\beta_L = 0.77 [1 + 0.35 \times 0.75] = 0.9721$$



→

0	1	2	...	n
(5,00,000)	$x_1$	$x_2$		$x_n$

Rs. 5,00,000

IRR = 23%

A new project

Rs. 20,000  
consulting fee

↑  
have to pay this even if we do not take up the project.

Sunk cost - cannot recover it.

→ Do not consider sunk costs while considering cash flows.

Principles for estimation of cash flows for a project

→ Sunk cost - do not consider

→ Incremental Cash Flow

For expansion projects:-

	Y,
(30,000)	(20,000)
	$-x$
	↑ already being produced earlier

→ Relevant Cash Flow

→ Opportunity Cost