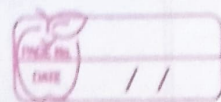


Cost of Capital



Manager 10,00,000 Project

Gives 10% return
ie 21,00,000

Capital kaise laya
ye

1) Equity
or

2) Retained earning
or

3) Prefsc
or

4) Debt

ESC 2L 15% Ke 30,000

RE 1L 15% Ke 15,000

PSC 2L 10% (Kp) 20,000

Debt 5L 15% (Kd) 40,000

10L

Capital

Cost

$$105000 \times 100 = 10.5\% \text{ Ko/WACC}$$

10L

But we get 10% return

∴ Nahi lena chahiye

Cap can be based on

- 1) Book value or
- 2) Market value

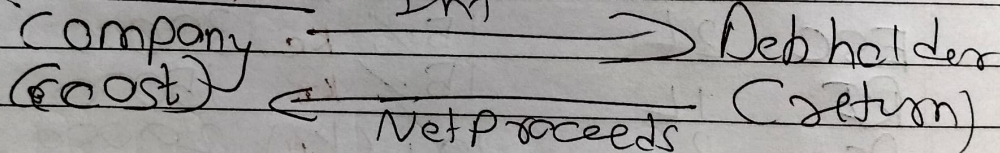
ICAT Method

		weight (w _i)	(w _i /w _j)	
Esc	2L	0.2	15	$1 \times 2 = 3$
PE	1L	0.1	15	3
BPSC	2L	0.2	10	1.5
Debt	5L	0.5	8	2
	<u>10L</u>	<u>1</u>		<u>4</u>
				10.5
				Ko/ WACC

cross multiply

1) Kd

i) Irredeemable Int



always on FV

$\frac{\text{Cost} \times 100}{\text{Capital}}$ ie

$$\boxed{\frac{\text{Int}(1-t)}{\text{Net proceeds}} \times 100}$$

What is Net proceeds?

Net proceeds

Face value

(+) Premium

(-) Discount

Issue value

(-) Floatation cost

Net proceeds

(MPS)

If old & new
mps given.
take new MPS

If given in %
calculate on issue
value

2) K_p

i) Irredeemable

$$\frac{\text{Pref Div} \times 100}{\text{Net proceeds}}$$

3) K_d

i) Redeemable

$n = \text{years}$

$RV = 110$

(IV-FC) NP = 90

(CFV x %) P = 10

t = 30%

$$K_d = I(1-t) + \left[\frac{RV - NP}{n} \right]$$

$$\left(\frac{RV + NP}{2} \right)$$

$$10(1-0.3) + \left[\frac{110-90}{10 \text{ yrs}} \right] \times 100$$

$$\left(\frac{110+90}{2} \right)$$

$$= 9\%$$

K_p

Redeemable

$$\frac{Pref Div + \left[\frac{RV - NP}{n} \right] \times 100}{\left(\frac{RV + NP}{2} \right)}$$

What is Redemption value

If convertible then

- 1) Cash value
 - 2) Value of Eq shares
- whichever is higher

K_e

1) Dividend approach

$$P_0 = 100$$

$$\frac{P_0 - 1\text{yr}}{100} = \frac{D_1}{10}$$

$$\therefore \frac{D_1 \times 100}{P_0} = 10\%$$

$$\frac{D_1 \times 100}{P_0 - P_1}$$

2) Dividend price + growth

$$P_0 = 100 \xrightarrow{g=20\%} P_1 = 120$$

$\xrightarrow{30\%} 130$

$$K_e = \left(\frac{D_1 \times 100}{P_0 - P_1} \right) + g$$

$$\left(\frac{10 \times 100}{100} \right) + 20$$

$$10 + 20$$

$$= 30\%$$

3)

Realised Yield Approach
(only sum on this)

$$K_e = \frac{D_1 + (P_1 - P_0) \times 100}{P_0}$$

★ 4)

Capital Asset Pricing Model

$$K_e = R_f + B(R_m - R_f)$$

Investor $\rightarrow$ Bank / Govt Bond

10%
Risk free rate (R_f)
4% (Market premium)
 $\rightarrow$ Market

14%
Market risk (R_m)

Beta Factor (B)

Agar market 10% se badhega
toh jis co. mai invest kiya
wo 20% se badhega
ie 2 times

$$K_e = 10 + 2(14 - 10) \\ = 10 + 8 = 18\%$$

Growth rate (g)

$$b \times r$$

(Retention % $\times$ Return on equity %)

↓
Kitna paisa bal rakhte hai
ie invest nhi karke

KR
All same as ko but isme floatation
cost nhi aayga

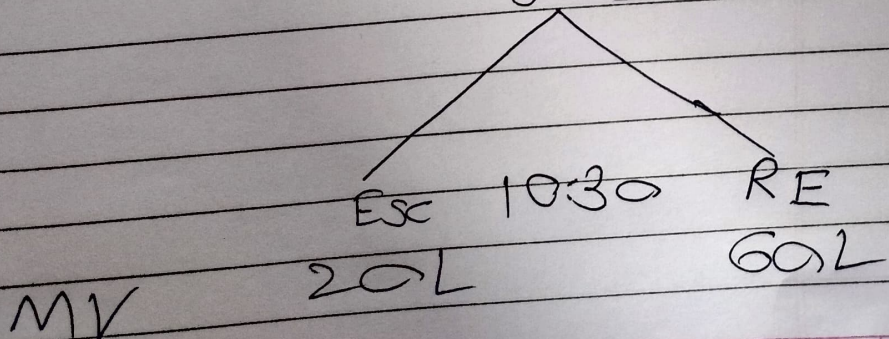
Market Value (WACC)

Co A	Co B
ES (10000 share) 10L	10L
RE	30L

MPS 500 (assume) 800

$$ES \times MPS$$

$$10000 \times 80 = 80L$$



∴ If WACC is computed as per MV

$$Eq \text{ shares} \times MPS = \text{Total market value}$$

↓ (Book value ratio) ↓

Equity Shares	Retained Earning
------------------	---------------------

Marginal WACC

Co. requires inv of ₹ 25 L
Cost of ₹ 25 L will be
Marginal WACC

Question 4

Capital structure of D Ltd. as on 31st March, 2023 is given below:

Particulars	₹
Equity share capital (₹ 10 each)	30,00,000
8% Preference share capital (₹ 100 each)	10,00,000
12% Debentures (₹ 100 each)	10,00,000

14

INTERMEDIATE EXAMINATION: MAY, 2023

- Current market price of equity share is ₹ 80 per share. The company has paid dividend of ₹ 14.07 per share. Seven years ago, it paid dividend of ₹ 10 per share. Expected dividend is ₹ 16 per share.
- 8% Preference shares are redeemable at 6% premium after five years. Current market price per preference share is ₹ 104.
- 12% debentures are redeemable at 20% premium after 10 years. Flotation cost is ₹ 5 per debenture.
- The company is in 40% tax bracket.
- In order to finance an expansion plan, the company intends to borrow 15% Long-term loan of ₹ 30,00,000 from bank. This financial decision is expected to increase dividend on equity share from ₹ 16 per share to ₹ 18 per share. However, the market price of equity share is expected to decline from ₹ 80 to ₹ 72 per share, because investors' required rate of return is based on current market conditions.

Required:

- Determine the existing Weighted Average Cost of Capital (WACC) taking book value weights.
- Compute Weighted Average Cost of Capital (WACC) after the expansion plan taking book value weights.

Interest Rate	1%	2%	3%	4%	5%	6%	7%
FVIF _{i,5}	1.051	1.104	1.159	1.217	1.276	1.338	1.403
FVIF _{i,6}	1.062	1.126	1.194	1.265	1.340	1.419	1.501
FVIF _{i,7}	1.072	1.149	1.230	1.316	1.407	1.504	1.606

(10 Marks)

Marginal

1) May 23 Pl

→ 1)

		weight(x)	cost(=)	WACC
ESC	30L	0.6	25%/-	0.15
8% Pref	10L	0.2	8%/-	0.016
12% Deb	10L	0.2	9.02%/-	0.018
	50L	1		0.184
				Ko = 18.4%

1) KP
PD + RV-NP
2.0

$$\frac{(RV + NP)}{2}$$

$$= 8 + \frac{(106 - 104)}{5}$$

$$\frac{106 + 104}{2}$$

$$= \frac{8.4}{105}$$

$$= 8\%$$

Teacher's Signature:.....

2) KD

$$\frac{\text{Int}(1-t) + \frac{RV - NP}{n}}{\frac{RV + NP}{2}}$$

$$\frac{12(0.6) + \frac{120 - 95}{10}}{\frac{120 + 95}{2}}$$

$$k_d = \frac{9.7}{107.5} = 9.02\%$$

$$k_c = \left(\frac{D_1 \times 100}{P_0 - f_c} \right) + g$$

$$= \left(\frac{16 \times 100}{80} \right) + 5\%$$

$$= 25\%$$

Growth

$$Pv(1+g)^n = Fv$$

$$\text{Growth} = Pv(1+g)^n = Fv$$

$$10(1+g)^7 = 14.07$$

$$(1+g)^7 = 1.407$$

$$= 5\%$$

22)

Revised ke

$$\left(\frac{D_1}{P_0} \times 100 \right) + 9$$

$$\left(\frac{18}{72} \times 100 \right) + 5$$

$$= 30\%$$

$$K_d = 15(1 - 0.4) = 9\%$$

		weight(X)	cost(=)	wACC
ESC	30L	0.375	30%	0.1125
8% Pref	10L	0.125	8%	0.01
12% Deb	10L	0.125	9.02%	0.0113
Loan	30L	0.375	9%	0.0338
	80L	1		0.1676
				16.75%
			Ko	16.75%

The following is the extract of the balance sheet of M/s KD Ltd.:

Particulars	Amount (₹)
Ordinary shares (Face value ₹10 per share)	5,00,000
Share premium	1,00,000
Retained profits	6,00,000
8% Preference Shares (Face value ₹25 per share)	4,00,000
12% Debentures (Face value ₹100 each)	6,00,000
	22,00,000

The ordinary shares are currently priced at ₹39 ex-dividend and preference share is priced at ₹18 cum-dividend. The debenture are selling at 120 percent ex-interest. The applicable tax rate to KD Ltd. is 30 percent. KD Ltd.'s cost of equity has been estimated at 19 percent. Calculate the WACC (weighted average cost of capital) of KD Ltd. on the basis of market value.

Nov 22

$$\Rightarrow K_e = \frac{D_1}{P_0} \times 100 = 19\%$$

MPS should be ex-dividend

~~$$K_p = \frac{PD}{\text{Net proceeds}} \times 100$$
$$=$$~~

Also if nothing is given MPS is issued value

$$\therefore 525 \times 8\% = 2$$

$$\begin{aligned} \therefore \text{Net proceeds} &= \text{MPS Cum. dividend} - \text{Div} \\ &= 18 - 2 \\ &= 16 \end{aligned}$$

$$\therefore k_p = \frac{2 \times 100}{16} = 12.5\%$$

$$k_d = \frac{I(1-t)}{NP} = \frac{12(1-0.3)}{120} \times 100 = 7\%$$

$\therefore$ No flotation cost

$$\therefore k_r = k_e$$

WACC

Shortcut when $k_r = k_e$

Particulars	MV	%	Cost
ESC (50000 share) $\times 39$			
	= 19.51	19%	

PSC			
(40000 $\times$ 16)	2.56L	12.5%	
25			

Deb	7.2L	7%	
-----	------	----	--

$$6L \times 120$$

100

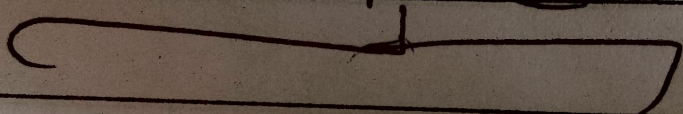
2926000

452900

$$\therefore \text{WACC} = \frac{452900 \times 100}{2926000} = 15.48\%$$

Longcut

19:56



E

RE

19 1/2

19 1/2

- (b) MR Ltd. is having the following capital structure, which is considered to be optimum as on 31.03.2022.

Equity share capital (50,000 shares)	₹ 8,00,000
12% Pref. share capital	₹ 50,000
15% Debentures	<u>₹ 1,50,000</u>
	₹ 10,00,000

PAPER 8: FINANCIAL MANAGEMENT AND ECONOMICS FOR FINANCE

13

The earnings per share (EPS) of the company were ₹ 2.50 in 2021 and the expected growth in equity dividend is 10% per year. The next year's dividend per share (DPS) is 50% of EPS of the year 2021. The current market price per share (MPS) is ₹ 25.00. The 15% new debentures can be issued by the company. The company's debentures are currently selling at ₹ 96 per debenture. The new 12% Pref. share can be sold at a net price of ₹ 91.50 (face value ₹ 100 each). The applicable tax rate is 30%.

You are required to calculate

- (a) After tax cost of
 - (i) New debt,
 - (ii) New pref. share capital and
 - (iii) Equity shares assuming that new equity shares come from retained earnings.
- (b) Marginal cost of capital,

How much can be spent for capital investment before sale of new equity shares assuming that retained earnings for next year investment is 50% of 2021? **(6 Marks)**

2) Marginal WACC

Particulars	BV	weight	%	Cost
Esc	8L	0.8	15	0.12
PSC	50k	0.05	13.11	0.6555
Debt	1.5L	0.15	10.94	1.641
	10L			14.2965
				$\therefore \sim 14.3\%$

3) Imp (चापास इसका video dekhna)

a) Retained earning

$$\text{No. of ES} \times \text{FPS} = 50000 \times 2.5$$

$$\text{Earning} = 125000$$

$$\text{Retained} = 125000 \times 50\% \\ = 62500$$

b) RE (E ₀)	0.8	62500
PSC	0.05	
Debt	0.15	
	1	<u>78125</u>

A company issues:

- 15% convertible debentures of ₹100 each at par with a maturity period of 6 years. On maturity, each debenture will be converted into 2 equity shares of the company. The risk-free rate of return is 10%, market risk premium is 18% and beta of the company is 1.25. The company has paid dividend of ₹12.76 per share. Five years ago, it paid dividend of ₹10 per share. Flotation cost is 5% of issue amount.
- 5% preference shares of ₹100 each at premium of 10%. These shares are redeemable after 10 years at par. Flotation cost is 6% of issue amount.

Assuming corporate tax rate is 40%.

(i) Calculate the cost of convertible debentures using the approximation method.

(ii) Use YTM method to calculate the cost of preference shares.

Year	1	2	3	4	5	6	7	8	9	10
PVIF _{0.03,t}	0.971	0.943	0.915	0.888	0.863	0.837	0.813	0.789	0.766	0.744
PVIF _{0.05,t}	0.952	0.907	0.864	0.823	0.784	0.746	0.711	0.677	0.645	0.614
PVIFA _{0.03,t}	0.971	1.913	2.829	3.717	4.580	5.417	6.230	7.020	7.786	8.530
	0.952	1.859	2.723	3.546	4.329	5.076	5.786	6.463	7.108	7.722

★ May 22 Imp(+)

1) RJ

a) Details

$$n = 6$$

$$NP = 100 - 5\% = 95 \quad R_v =$$

$$I = 15$$

$$t =$$

a) Cash = 100 (at par)

b) Equity - 130.56

Share - (65.28×2)

Higher 130.56

Teacher's Signature:.....

It's market risk premium

b) k_e

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

$$= 10 + 1.25(18 - 10)$$

$$= 20$$

$$= 32.5$$

Growth

$$P_0(1+g)^n = FV$$

$$10(1+g)^5 = 12.76$$

$$(1+g)^5 = 1.276$$

$$\therefore g = 5\%$$

$$D_1 = 12.76 + 5\% = 13.398$$

$$P_0 = \frac{D_1 \times 100}{k_e - g}$$

$$k_e - g = \frac{D_1 \times 100}{P_0}$$

$$P_0 = \frac{D_1 \times 100}{k_e - g}$$

$$P_0 = \frac{13.398 \times 100}{32.5 - 5}$$

$$P_0 = 48.72$$

$$P_0 = P_0 + \text{growth}$$

$$= 48.72(1+5\%)^6$$

$$= 65.28$$

$$kd = \frac{\frac{I(1-t)}{NP} + \frac{RV-NP}{n}}{\frac{RV+NP}{2}}$$

$$\frac{15(1-0.4) + \frac{130.58-95}{6}}$$

$$\frac{130.58+95}{2}$$

$$\frac{9 + 5.93}{2}$$

$$112.78$$

$$= 13.24\%$$

YTM table(format)

Year	cashflow	(lower)	(higher)
Year	cashflow	PVF	PV
1-10	✓	✓	✓
10	$(I(1-t) \text{ or } PD)$	✓	✓
	RV		
		✓	✓
		(✓)	(✓)
	Net proceed	✓	(✓)
	NPV		

$$\text{Internal rate of return (IRR)} = \text{Lower} + \frac{\text{Positive NPV} \times \Delta\%}{\Delta \text{NPV}}$$

2) KP

a) Details

$n = 3$
 $NP = (100 + 10\%) - 6\% = 103.4$ $RV = 100$
 $PD = 100 \times 5\% = 5$

1st in rough solve using formula

$$KP = PD + \frac{RV - NP}{n} = \frac{5 - 0.33}{1.017} \times 100$$

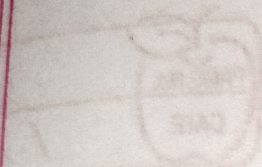
$$= \frac{RV - NP}{2} = 4.58\%$$

b) KP (YTM) / IRR

	Years	Cashflow	PVF	PV	PVF	PV
PD	1-10	5	8.530	42.65	7.722	38.61
RV	10	100	0.744	74.4	0.614	61.4
				117.05		100.01
				NP (103.4)		(103.4)
				NPV	13.65	(3.39)

$KP = 10\% + \frac{NPV}{\Delta NPV} \times 1\%$

$$3\% + \frac{13.65 \times 2}{17.04}$$


$$= 4.6 \%$$

Revision for CA Inter May'25 FM | CA Rahul Panchal (TRP Sir)

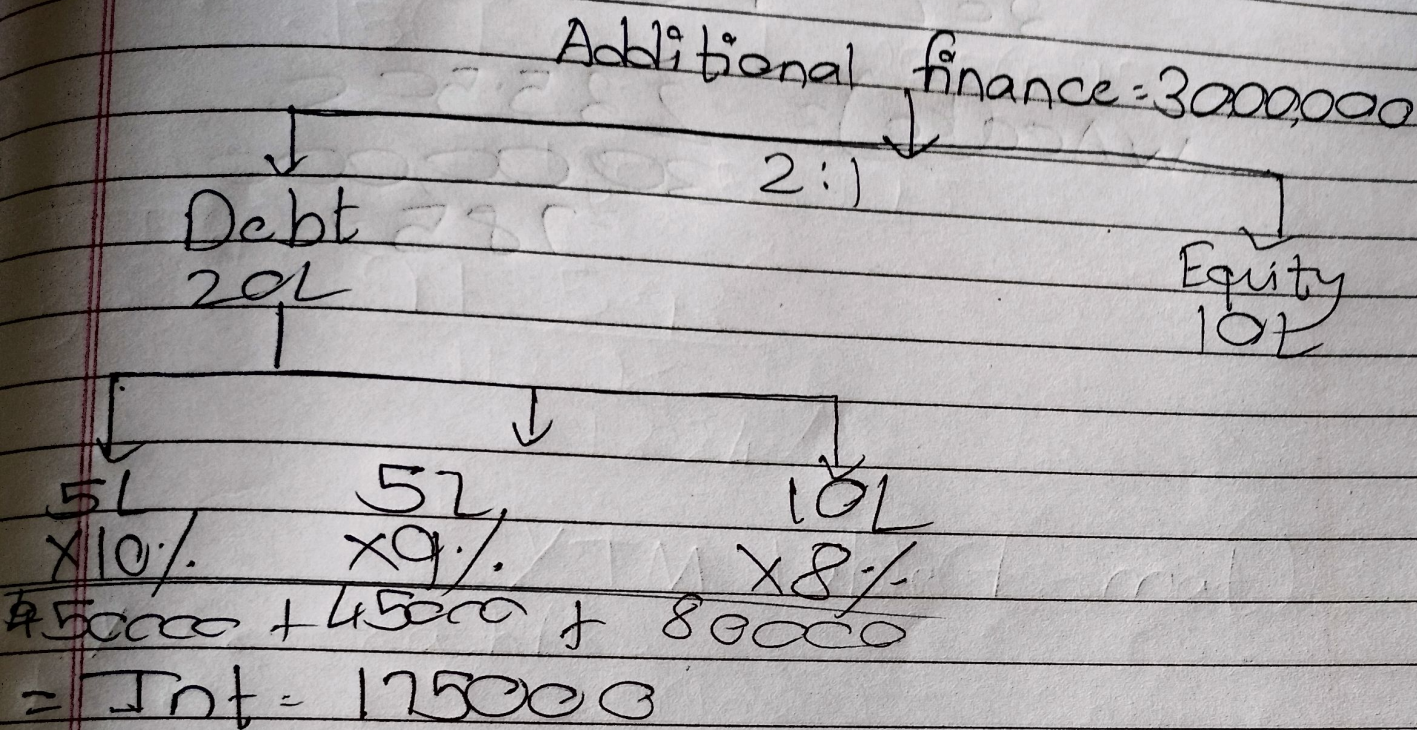
Earnings per share	₹10
Dividend per share	₹6
Expected growth rate in Dividend	6%
Current market price per share	₹120
Tax rate	30%
Requirement of Additional Finance	₹30 lakhs
Debt Equity Ratio (For additional finance)	2:1
Cost of Debt	
0 - 5,00,000	10%
5,00,001 - 10,00,000	9%
Above 10,00,000	8%

Assuming that there is no Reserve and Surplus available in TT Ltd. You are required to:

- Find the pattern of finance for additional requirement
- Calculate post tax average cost of additional debt
- Calculate cost of equity
- Calculate the overall weighted average after tax cost of additional finance

July 21

1) Pattern of finance



2) k_d (Post tax)

$$k_d = \frac{\text{Int}(1-t)}{\text{Net proceed}} \times 100$$
$$= \frac{1,75,000(1-0.3)}{20,00,000} \times 100$$
$$= 6.125$$

$$k_e = \left(\frac{D_1 \times 100}{P_0} \right) + g$$
$$= \left(\frac{6.36 \times 100}{120} \right) + 6 = 11.3\%$$

4) WACC Marginal WACC

\$Eq	101	\$ E.A	COST
Debt	3201	8 11.3	
	301	6.125	235500

$$WACC(k_a) = \frac{235500}{30,000,000} = 7.85\%$$