Total capital	12,000	12,000
10% Debt	3,000	–
Equity	9,000	12,000
ROE	5.83%	6.25%

Say, EBIT increases by 50%.

→ EBIT	1,500	1,500
Interest	300	–
EBT	1,200	1,500
Tax	300	375
	900	1125
ROE	10%	9.38%

$$\frac{\%\text{ change in PAT}}{\%\text{ change in EBIT}} \qquad \frac{71.4\%}{50\%} = 1.428 \qquad \frac{50\%}{50\%} = 1.00$$

→ $\frac{EBIT}{EBT}$ (1st case)

1,000 / 700	1,000 / 1,000
= 1.428	= 1.00

(DFL - Degree of ~~Operating~~ Financial Leverage)

DOL (2nd case) $\frac{1,500}{1,200}$

= 1.25

→ $DFL = \frac{\%\text{ change in PAT}}{\%\text{ change in EBIT}} = \frac{EBIT}{EBT}$

	S1		S2	
→	C1	C2	C1	C2
Sales	10,000	10,000	12,000	12,000
V.C.	3,000	4,000	3,600	4,800
C.M.	7,000	6,000	8,400	7,200
F.C.	2,000	1,200	2,000	1,200
EBIT	5,000	4,800	6,400	6,000

→ $\frac{\%\text{ change in EBIT}}{\%\text{ change in sales}}$ = DOL

C1 = $\frac{28\%}{20\%}$ = 1.40

C2 = $\frac{25\%}{20\%}$ = 1.25

(due to higher F.C. and lower V.C.)

CM% 70% 60%

If sales = 8000, break-even

> 8000, higher F.C. is good

< 8000, lower F.C. is good.

→ DOL = $\frac{CM}{EBIT}$

→ DTL = DOL × DFL

(Degree of Total Leverage) = $\frac{CM}{EBT}$

= $\frac{\%\text{ change in PAT}}{\%\text{ change in sales}}$

3/1/23

→

	Current Capital Structure	Proposed Capital Structure
Assets	Rs. 8000,000	Rs. 8000,000
Debt	Nil	4000,000
Equity	8000,000	4000,000
D/E	0	1:1
Share price	Rs. 20	Rs. 20
Interest Rate	10%	10%
Tax Rate	Nil	Nil
Shares outstanding	400,000	200,000

	Recession		Expected		Expansion	
	Current	Proposed	C	P	C	P
EBIT	500,000	500,000	1000,000	1000,000	1500,000	1500,000
Interest	–	400,000	–	400,000	–	400,000
Net Income	500,000	100,000	1000,000	600,000	1500,000	1100,000
RoE	6.25%	2.5%	12.5%	15%	18.75%	27.5%

Current → 6.25% – 18.75%

Proposed → 2.5% – 27.5% ⟶ Financial risk due to debt

Total Risk — Operating risk, Financial risk.

EPS	1.25	0.50	2.50	3.00	3.75	5.50

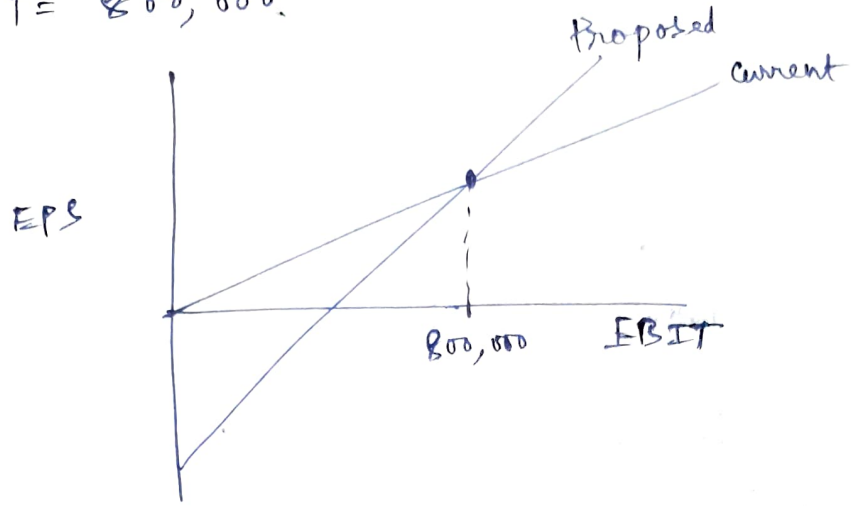
→ At what EBIT, $EPS_{CS} = EPS_{PS}$ (break-even)

$$\frac{(EBIT - Interest)(1-T) - Pref.\ Dividend}{\#\ of\ equity\ shares}$$

$$\frac{EBIT}{400,000} = \frac{EBIT - 400,000}{200,000}$$

$$\frac{EBIT}{2} = \frac{EBIT - 400,000}{200,000}$$

$\Rightarrow$ EBIT = 800,000.



→ An investor buys 100 shares in proposed C.S.

100 × Rs. 20 = Rs. 2,000

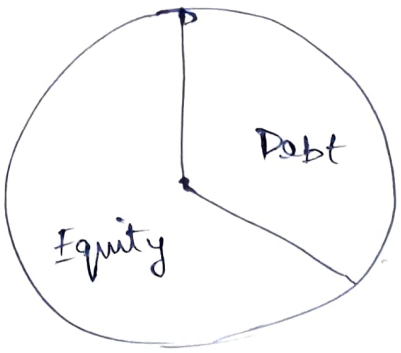
	Recession	Expected	Expansion
EPS	0.50	3.00	5.50
Total Earnings (100 shares)	Rs. 50	Rs. 300	Rs. 550

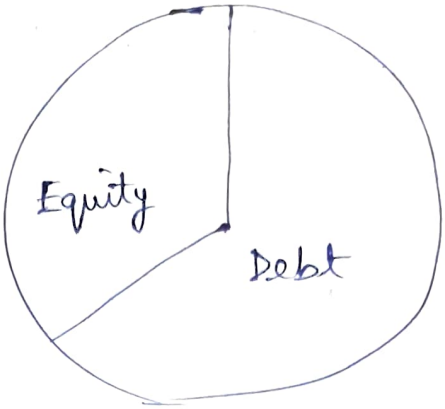
Original C.S., but Investor borrows Rs. 2000 @ 10% to invest in another 100 shares.

EPS	1.25	2.50	3.75
Total Earnings from 200 shares	250	500	750
Less Interest	200	200	200
	50	300	550

↑ Home-made leverage.

→ Modeliani Miller.





→ M & M Theory of Capital Structure

→ Version - I No corporate taxes

→ Proposition - I : The Pie remains the same.

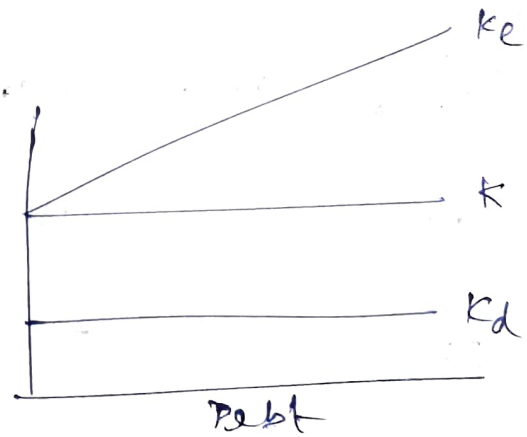
$$V_L = V_u$$

$$V = \frac{CF}{K}$$

$$K = \text{WACC} = K_d \times \frac{D}{V} + K_e \times \frac{E}{V}$$

$\frac{EBIT}{K}$ → overall return expected for the firm

$K_e > K_d$



→ If debt = 0,

$K_0 = K_e$

→ If debt > 0,

$$K_e = \frac{V \cdot K - D \cdot K_d}{E}$$

$$K_e = \frac{(D+E)K - D \cdot K_d}{E} \qquad (V = D + E)$$

$$K_e = \frac{D(K_0 - K_d)}{E} + K_0$$

$$\Rightarrow \boxed{K_e = K_0 + (K_0 - K_d)\frac{D}{E}}$$

← Proposition - II in Version - I.

→ Version - II : Corporate Taxes exist -

Debt Rs. 1000 – 9% interest
Corporate tax – 25%.

EBIT	300	300
Int	0	90
EBT	300	210
Tax	75	52.5
	225	157.5

Savings in tax = 22.5 = 25% of 90
Debt Tax Shield (DTS)

PV of DTS = $\frac{22.5}{0.0675}$ → 9 × (1 − 0.25)

= 333.33