LECTURE 1

FM BOOSTER BATCH

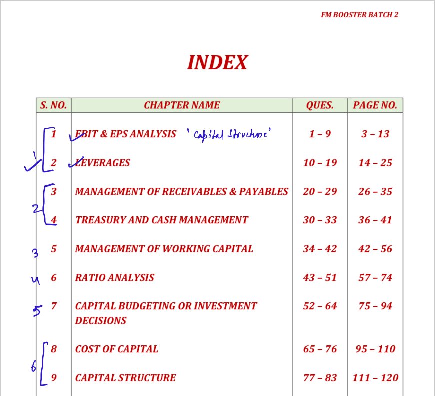
FOR NOV 2023

By

CA Namit Arora Sir

This book is dedicated to my Wife

CS. RUCHI MAM



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CHAPTER 1 – EBIT & EPS ANALYSIS

1. **EBIT & EPS Analysis:** Finance manager has to select best Capital Structure or Financing Plan which provides highest EPS & MPS out of many financing Plans.

2. **Proforma Statement Showing EBIT, EPS & MPS:**

Particulars	₹
Sales	XXX
Less: Variable Cost	(XXX)
Contribution	XXX
Less: Fixed Cost	(XXX)
Operating Profit or EBIT	XXX
Less: Interest on long term debt	(XXX)
EBT	XXX
Less: Tax	(XXX)
EAT	XXX
Less: Preference Dividend	(XXX)
Earnings available for Equity Shareholders	XXX
÷ No. of Equity shares	÷ XX
EPS	XXX
× PE Ratio	× XX
MPS	XXX

Note:

- MPS = EPS × PE Ratio
- Number of Equity Shares = Existing Shares + New Shares
- New Equity Shares = $\frac{\text{Additional Funds Raised through Equity}}{\text{Net Proceeds from One Equity Share}}$
- Net Proceeds from Share = Issue Price – Issue Expenses

$\frac{50L}{50} = 1L$

60 − 10

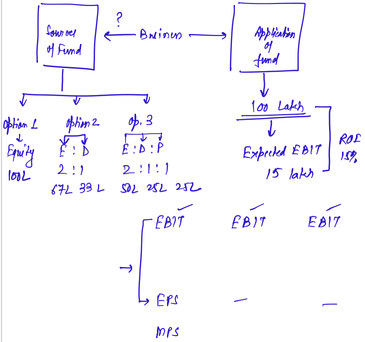
Note: If nothing is specified in the question, MPS is assumed to be Issue Price.

Note: If nothing is specified in the question and we have both MPS & EPS then decision should be based on MPS.

3. **Selection of plan on the basis of EPS or MPS (New company):**

Statement of EPS & MPS

Particulars	Alternatives		
	Equity	Equity - Debt	Equity - Preference
EBIT	XXX	XXX	XXX
Less: Interest	-	(XXX)	-
EBT	XXX	XXX	XXX
Less: Tax	(XXX)	(XXX)	(XXX)
EAT	XXX	XXX	XXX
Less: Preference Dividend	-	-	(XXX)
Earning For Equity	XXX	XXX	XXX
÷ No. of Equity shares	÷ XX	÷ XX	÷ XX
EPS	XXX	XXX	XXX
MPS (EPS × PE Ratio)	XXX	XXX	XXX



	EPS	MPS
A	₹5	₹25
B	₹7 ↑	₹20 ↓

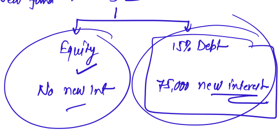
4. **Selection of plan on the basis of EPS or MPS (Existing company):**

Statement of EPS & MPS

Particulars	Alternatives		
	Equity	Debt	Preference
EBIT	XXX	XXX	XXX
Less: Interest: Existing New	 (XXX) -	 (XXX) (XXX)	 (XXX) -
EBT	XXX	XXX	XXX
Less: Tax	(XXX)	(XXX)	(XXX)
EAT	XXX	XXX	XXX
Less: Preference Dividend: Existing New	 (XXX) -	 (XXX) -	 (XXX) (XXX)
Earning For Equity	XXX	XXX	XXX
÷ No. of Equity shares (Existing + New)	÷ XX (XX + XX)	÷ XX (XX + NIL)	÷ XX (XX + NIL)
EPS	XXX	XXX	XXX
MPS (EPS × PE Ratio)	XXX	XXX	XXX

Existing :- ESC 10,000 shares @100 10L
15% Debt 10L
1,50,000 Existing Int

New fund :- 5L

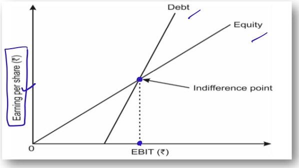


5. **Indifference Point:** Indifference point refers the level of EBIT at which EPS under two different options are same.

EPS under option 1 = *EPS under option 2*

$$\frac{(EBIT - I_1)(1 - t) - PD_1}{N_1} = \frac{(EBIT - I_2)(1 - t) - PD_2}{N_2}$$

$$EPS = \frac{[(EBIT - I)(1-t)] - PD}{N}$$



Ind. Point 5L

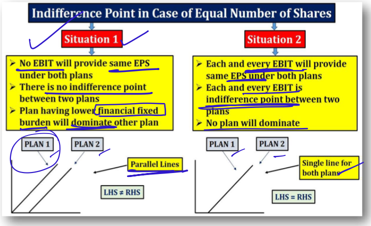
Course of Action:

Situations	Action
Expected EBIT < Indifference Point	Select option having lower Fixed Financial Burden
Expected EBIT = Indifference Point	Select any option
Expected EBIT > Indifference Point	Select option having higher Fixed Financial Burden

6. **Financial Break Even Point:** *It is the level of EBIT at which EPS will be zero.*

$$EBIT = Interest + \frac{\text{Preference Dividend}}{(1 - t)} + Nil$$

7. **Indifference Point in case of Equal Number of Share:**



Indifference Point in Case of Equal Number of Shares

Situation 1

- No EBIT will provide same EPS under both plans
- There is no indifference point between two plans
- Plan having lower financial fixed burden will dominate other plan

Situation 2

- Each and every EBIT will provide same EPS under both plans
- Each and every EBIT is indifference point between two plans
- No plan will dominate

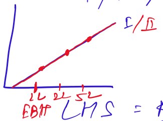
$$\frac{(EBIT - 1L)(1 - .5)}{\cancel{50,000}} = \frac{(EBIT - Nil)(1 - .5) - 50,000}{\cancel{50,000}}$$

$$\cancel{.5EBIT - 50,000} = \cancel{.5EBIT - 50,000}$$

$$\cancel{EBIT \neq EBIT}$$

$$\cancel{1 = 1}$$

LHS ≠ RHS



LHS = RHS

PRACTICAL PROBLEMS

BBQ 1

The particulars related to Raj Ltd. for the year ended 31st March, 2022 are given as follows:

Output (units at normal capacity)	1,00,000	+ 50% = 1,50,000 units
Selling price per unit	₹40	
Variable cost per unit	₹20	− 15% = 17 P.U.
Fixed cost	₹10,00,000	+ 5L = 15L

1,50,000 × 40 = 60L
17 − 25.5L
15L
EBIT 19,50,000

The capital structure of the company as on 31st March, 2022 is as follows:

Particulars	₹
Equity Share Capital (1,00,000 shares of ₹10 each) Reserves and Surplus	10,00,000 5,00,000
Current Liabilities	5,00,000
Total	**20,00,000**

Raj Ltd. has decided to undertake an expansion project to use the market potential that will involve ₹20,00,000. The company expects an increase in output by 50%. Fixed cost will be increased by ₹5,00,000 and variable cost per unit will be decreased by 15%. The additional output can be sold at the existing selling price without any adverse impact on the market.

The following alternative schemes for financing the proposed expansion program are planned:

Alternative		Debt	Equity Shares
1 50,m	5L	₹5,00,000 ✓ X10% = 50,m	15L ÷ 200 Balance 7,5m
2 75,m	5L	₹10,00,000	10L ÷ 200 Balance 5,m
3		₹14,00,000	6L ÷ 200 Balance 3,m

5L = 50,m
5L = 75,m
4L = 80,m

Slab wise interest rate for fund borrowed is as given follows:

Fund Limit		Applicable Interest Rate
Upto ₹5,00,000	First 5L	10%
Over ₹5,00,000 and upto ₹10,00,000	Next 5L	15%
Over ₹10,00,000	Above 10L	20%

Current market price per share is 200.

Find out which of the above mentioned alternatives would you recommend for raj Ltd. with reference to the EPS, assuming a corporate tax rate is 40%?

Answer

Statement of EPS

Particulars	Alternatives		
	1	2	3
Expected output in units (1,00,000 + 50%)	1,50,000	1,50,000	1,50,000
Sales @ ₹40 per unit	60,00,000	60,00,000	60,00,000
Less: Variable Cost @ ₹17 (₹20 - 15%) per unit	25,50,000	25,50,000	25,50,000
Contribution	34,50,000	34,50,000	34,50,000
Less: Fixed Cost (₹10,00,000 + ₹5,00,000)	15,00,000	15,00,000	15,00,000
Earnings before interest and tax	19,50,000	19,50,000	19,50,000
Less: Interest:			
@ 10% on first ₹5,00,000	50,000	50,000	50,000
@ 15% on ₹5,00,001 to ₹10,00,000	-	75,000	75,000
@ 20% on above ₹10,00,000	-	-	80,000
EBT	19,00,000	18,25,000	17,45,000
Less: Tax @ 40%	7,60,000	7,30,000	6,98,000
EAT	11,40,000	10,95,000	10,47,000
÷ No. of Equity shares			
Existing	1,00,000	1,00,000	1,00,000
New	7,500	5,000	3,000
	(15,00,000/200)	(10,00,000/200)	(6,00,000/200)
EPS	***₹10.60***	***₹10.43***	***₹10.17***

Decision: The earning per share is higher in alternative I i.e. if the company finance the project by raising debt of ₹5,00,000 & issue equity shares of ₹15,00,000. Therefore, the company should choose this alternative to finance the project.

Debt × Rate = Int
12% 120,m

BBQ 2

EBIT

Earnings before interest and tax of a company are ₹4,50,000. Currently the company has 80,000 equity shares of ₹10 each, retained earnings of ₹12,00,000. It pays annual interest of ₹1,20,000 on 12% Debentures. The company proposes to take up an expansion scheme for which it needs additional fund of ₹6,00,000. It is anticipated that after expansion, the company will be able to achieve the same rate of return on investment as at present. It can raise fund either through debts at rate of 12% p.a. or by issuing Equity shares at par. Tax rate is 40%.

6L

E.C 80,m X 10 = 8L New 6L
R.E. = 12L
Debt 120,m / 12% = 10L
30L

$\frac{4,50,m}{30,m,m} \times 100$
= 15% ✓
36L × 15% = 540,m EBIT

Compute the earning per share if:

(a) The additional funds were raised through debt.
(b) The additional funds were raised by issue of Equity shares.

→ ***Advise whether the company should go for expansion plan and which sources of finance should be preferred.***

Answer

Statement of EPS

Particulars	Alternatives	
	Debt Plan (i)	Equity Plan (ii)
Earnings before interest and tax @ 15% of ₹36,00,000	5,40,000	5,40,000
Less: Interest:		
Existing	1,20,000	1,20,000
New (12% on ₹6,00,000)	72,000	-
EBT	3,48,000	4,20,000
Less: Tax @ 40%	1,39,200	1,68,000
EAT	2,08,800	2,52,000
÷ No. of Equity shares		
Existing	80,000	80,000
New	-	60,000
EPS	***₹2.61***	***₹1.80***

Yes

Advise to the company: Since EPS after expansion under debt plan is higher (₹2.61) than Existing EPS (₹2.475), company should go for expansion plan and choose debt source of finance.

$$\text{EPS before expansion} = \frac{(\text{EBIT} - \text{I})(1 - \text{T})}{\text{N}} = \frac{(4,50,000 - 1,20,000)(1 - 0.4)}{80,000} = \boxed{₹2.475}$$

Working notes:

1. ***Calculation of capital employed before expansion plan:***

Equity share capital (80,000 shares × ₹10)	₹8,00,000
Retained earnings	₹12,00,000
Debentures (₹1,20,000/12%)	₹10,00,000
Total capital employed	***₹30,00,000***

2. ***Return on capital employed (ROCE) or Return on Investment:***

$$\text{ROCE} = \frac{\text{EBIT}}{\text{Capital Employed}} \times 100 = \frac{4,50,000}{30,00,000} \times 100 = 15\%$$

3. ***Capital employed after expansion*** = ***₹36,00,000 (₹30,00,000 + ₹6,00,000)***

BBQ 3

The following information pertains to CIZA Ltd.:

Capital Structure:	₹
Equity share capital (`10 each) 80,000 shares	8,00,000
Retained earnings	20,00,000
9% Preference share capital (`100 each) 108,000 P.D.	12,00,000
12% Long-term loan 1,20,000 Int	10,00,000
Interest coverage ratio	8
Income tax rate	30%
Price- earnings ratio	25

Int. Conv. = $\frac{EBIT}{Int.} = 8$

1,20,000

EBIT = 9,60,000
6,15,000
15,75,000

The company is proposed to take up an expansion plan, which requires an additional investment of ₹34,50,000. Due to this proposed expansion, earnings before interest and taxes of the company will increase by ₹6,15,000 per annum. The additional fund can be raised in following manner:

(a) By issue of equity shares at present market price, or
(b) By borrowing 16% Long-term loans from bank.

$\frac{10L}{40L + 34.5L} \times 100 = 13.42\%$

You are informed that Debt-equity ratio (Debt/Shareholders' fund) in the range of 50% to 80% will bring down the price-earnings ratio to 22 whereas; Debt-equity ratio over 80% will bring down the price-earnings ratio to 18.

$\frac{10L + 34.5L}{40L} \times 100 = 111.25\%$

Advise which option is most suitable to raise additional capital so that the Market Price per Share (MPS) is maximized.

9,60,000
− 1,20,000
8,40,000
− 30%
5,88,000
− 1,08,000
4,80,000
÷ 80,000
EPS ₹ 6
PE 25
MPS 150

Answer

Statement of Market Value Per Share (MPS)

Particulars	Equity Plan	Debt Plan
EBIT (9,60,000 + 6,15,000)	15,75,000	15,75,000
Less: Interest: Existing	1,20,000	1,20,000
New (16% of ₹34,50,000)	-	5,52,000
EBT	14,55,000	9,03,000
Less: Tax @ 30%	4,36,500	2,70,900
PAT	10,18,500	6,32,100
Less: Preference dividend (9% of ₹12,00,000)	1,08,000	1,08,000
Earning for Equity shareholders	9,10,500	5,24,100
÷ No. of Equity shares (Existing + New)	1,03,000	80,000
EPS	₹8.84	₹6.55
× PE Ratio	25 Times	18 Times
MPS	***₹221.00***	***₹117.90***

Advise: Company should raise additional capital through Equity plan to maximize MPS.

Working notes:

1. Debt Equity Ratio if ₹34,50,000 is raised as Equity:

$$= \frac{10,00,000}{74,50,000\ (8,00,000 + 34,50,000 + 20,00,000 + 12,00,000)} \times 100 = 13.42\%$$

As the debt ratio is less than 50% the P/E ratio in this case will remain at 25 times in Plan 1.

2. Debt Ratio if ₹34,50,000 is raised as debt:

$$= \frac{10,00,000 + 34,50,000}{40,00,000\ (8,00,000 + 20,00,000 + 12,00,000)} \times 100 = 111.25\%$$

As the debt ratio is more than 80% the P/E ratio will be brought down to 18 in Plan 2

3. Existing EBIT:

$$\text{Interest coverage ratio} = \frac{EBIT}{Interest} = \frac{EBIT}{1,20,000} = 8$$

$$\text{Existing EBIT} = 9,60,000$$

4. Existing EPS

$$= \frac{(EBIT - I)(1 - t) - PD}{N}$$

$$= \frac{(9,60,000 - 1,20,000)\ (1 - 0.3) - 1,08,000}{80,000} = ₹6$$

5. Present MPS = EPS × PE ratio = ₹6 × 25 = ***₹150***

6. Number of Equity Shares to be issued in Plan 1 = $\frac{34,50,000}{150}$ = ***23,000 shares***

BBQ 4

Alpha Ltd. requires funds amounting to ₹80,00,000 for its new project. To raise the funds, the company has following two alternatives:

60,000 20L

(1) To issue Equity Shares of ₹100 each (at par) amounting to ₹60,00,000 and borrow the balance amount at the interest of 12% p.a.; or
(2) To issue Equity Shares of ₹100 each (at par) and 12% Debentures in equal proportion.

40L 40,000 sh. 40L

Find out the point of indifference between two modes of financing and state which option will be beneficial in different situations assuming tax rate 30%.

Answer

Calculation of Indifference two modes of financing:

$$\frac{(EBIT - I)(1 - T)}{N_1} = \frac{(EBIT - I)(1 - T)}{N_2}$$

$$\frac{(EBIT - 12\%\ \text{of}\ 20\ \text{lakhs})(1 - 0.30)}{60,000} = \frac{(EBIT - 12\%\ \text{of}\ 40\ \text{lakhs})(1 - 0.30)}{40,000}$$

$$EBIT = ₹9,60,000$$

$$\frac{EBIT - 2.4L}{3} = \frac{EBIT - 4.8L}{2}$$

$$2EBIT - 4.8L = 3EBIT - 14.4L$$

$$EBIT = 9.6L$$

Course of action:

(a)	If expected EBIT is less than ₹9,60,000	:	Alternate 1
(b)	If expected EBIT is equal to ₹9,60,000	:	Alternate 1 or 2
(c)	If expected EBIT is more than ₹9,60,000	:	Alternate 2

BBQ 5

Aaina Ltd. is considering a new project which requires a capital investment of ₹9 crores. Interest on term loan is 12% and Corporate Tax rate is 30%. Calculate the point of indifference for the project considering the Debt Equity ratio insisted by the financing agencies being 2 : 1.

6cr. 3cr.

I	II	
9 cr.	6cr. D	3cr. E

Answer

The capital investment can be financed in two ways i.e.

(i) By issuing equity shares only worth ₹9 crores or

(ii) By raising capital through taking a term loan of ₹6 crores and ₹3 crores through issuing equity shares (as the company has to comply with the 2 : 1 Debt Equity ratio insisted by financing agencies).

Calculation of point of Indifference:

$$\frac{(\text{EBIT}-\text{I})\ (1-\text{T})}{\text{N}_1} = \frac{(\text{EBIT}-\text{I})\ (1-\text{T})}{\text{N}_2}$$

$$\frac{(\text{EBIT}-\text{Nil})\ (1-0.30)}{90{,}00{,}000} = \frac{(\text{EBIT}-12\%\text{ of }6{,}00{,}00{,}000)\ (1-0.30)}{30{,}00{,}000}$$

$$\text{EBIT} = 3 \times (\text{EBIT} - 72{,}00{,}000)$$

$$\text{EBIT} = 2{,}16{,}00{,}0000 \div 2 = \mathbf{1{,}08{,}00{,}000}$$

$$\frac{(EBIT-I)(1-t)}{N_1} = \frac{(EBIT-I)(1-t)}{N_2}$$

$$\frac{(EBIT-0)\cancel{(1-.3)}}{\cancel{90L}_{\,3}} = \frac{(EBIT-72L)\cancel{(1-.3)}}{\cancel{30L}_{\,1}}$$

Note: The face value of the equity shares is assumed as ₹10 per share.

~~BBQ~~ 6

Int 3,60,000

Yoyo Limited presently has ₹36,00,000 in debt outstanding bearing an interest rate of 10 per cent. It wishes to finance a ₹40,00,000 expansion programme and is considering three alternatives: additional debt at 12 per cent interest, preference shares with an 11 per cent dividend, and the issue of equity shares at ₹16 per share. The company presently has 8,00,000 shares outstanding and is in a 40 per cent tax bracket. 2.5L

(a) If earnings before interest and taxes are presently ₹15,00,000, what would be earnings per share for the three alternatives, assuming no immediate increase in profitability?

(b) Analyse which alternative do you prefer? Compute how much would EBIT need to increase before the next alternative would be best?

Answer

(a) Statement of EPS

Particulars	*Alternatives*		
	Debt	*Preference*	*Equity*
Earnings before interest and tax	15,00,000	15,00,000	15,00,000
Less: Interest:			
Existing @ 10% on ₹36,00,000	3,60,000	3,60,000	3,60,000
New 12% on ₹40,00,000	4,80,000	-	-
EBT	6,60,000	11,40,000	11,40,000
Less: Tax @ 40%	2,64,000	4,56,000	4,56,000
EAT	3,96,000	6,84,000	6,84,000
Less: Preference Dividend	-	4,40,000	-
Earnings Available for Equity Shareholders	3,96,000	2,44,000	6,84,000
÷ No. of Equity shares	8,00,000	8,00,000	10,50,000
EPS	*₹0.495*	*₹0.305*	*₹0.651*

(b) For the present EBIT level, equity share is clearly preferable. EBIT would need to increase by ₹8,76,000 (₹23,76,000 – ₹15,00,000) before next alternative i.e. debt would be best.

+1 +1

Working Note:

Indifference point between Equity (best option) and Debt (second best option) of financing:

$$\frac{(\text{EBIT}-\text{I})(1-\text{T})}{\text{N}_1} = \frac{(\text{EBIT}-\text{I})(1-\text{T})}{\text{N}_2}$$

$$\frac{(\text{EBIT}-3{,}60{,}000)(1-0.40)}{1{,}05{,}0000} = \frac{(\text{EBIT}-8{,}40{,}000)(1-0.40)}{80{,}0000}$$

Equity −1 Equity Debt +1 Debt

$$\textit{EBIT} = \boxed{\textit{₹23,76,000}}$$

~~BBQ~~ 7

Ganapati Limited is considering three financing plans. The key information is as follows:

(a) Total investment to be raised ₹2,00,000.

(b) Financing proportion of Plans:

Plans	*Equity* Sh	*Debt* 8%	*Preference Shares*
A	100% 2L 10,000	-	-
B	50% 1L 5,000	50% 1L	-
C	50% 1L 5,000	-	50% 1L

8,000 Int 8% P.D. 8,000

(c) Cost of debt is 8%
Cost of preference shares is 8%

(d) Tax rate 50%

(e) Equity shares of the face value of ₹10 each will be issued at a premium of ₹10 per share

(f) Expected EBIT is ₹80,000.

You are required to determine for each plan:

(1) Earnings per share

(2) Financial break-even-point

(3) Indicate if any of the plans dominate and compute the EBIT range among the plans for indifference.

$EBIT = 0$

$EBIT = 8{,}000$

$EBIT = \frac{8{,}000}{1-.5} = 16{,}000$

Answer

(1) Statement of EPS

Particulars	*Alternatives*		
	A	*B*	*C*
Earnings before interest and tax	80,000	80,000	80,000
Less: Interest @ 8% on ₹1,00,000	-	8,000	-
EBT	80,000	72,000	80,000
Less: Tax @ 50%	40,000	36,000	40,000
EAT	40,000	36,000	40,000
Less: Preference Dividend @ 8% on ₹1,00,000	-	-	8,000
Earning Available for Equity Shareholders	40,000	36,000	32,000
÷ No. of Equity shares (Issue price ₹20)	10,000	5,000	5,000
EPS	*₹4.00*	*₹7.20*	*₹6.40*

(2) Financial Break Even Point (EBIT equals to fixed financial cost):

Proposal A Financial B.E.P. = No Fixed Financial Cost = ***Zero***

Proposal B Financial B.E.P. = Interest on Debt = $\boxed{\textit{8,000}}$

Proposal C Financial B.E.P. = $\dfrac{\text{Preference Dividend}}{(1-\text{t})}$

$$= \frac{8{,}000}{1-0.50} = \boxed{\textit{16,000}}$$

(3) Indifference Point:

Between Proposal A & B:

$$\frac{(\text{EBIT}-\text{I})\ (1-\text{T})}{\text{N}_\text{A}} = \frac{(\text{EBIT}-\text{I})\ (1-\text{T})}{\text{N}_\text{B}}$$

$$\frac{(\text{EBIT}-0)\ (1-0.50)}{10{,}000} = \frac{(\text{EBIT}-8{,}000)\ (1-0.50)}{5{,}000}$$

B ↓ 8,000 C ↑ 16,000

$$\textit{EBIT} = \text{₹}16{,}000$$

Between Proposal A & C:

$$\frac{(EBIT-I)\,(1-T)}{N_A} = \frac{\{(EBIT-I)\,(1-T) - PD\}}{N_C}$$

$$\frac{(EBIT-0)\,(1-0.50)}{10{,}000} = \frac{\{(EBIT-0)\,(1-0.50) - 8{,}000\}}{5{,}000}$$

$$\textit{EBIT} = \text{₹}32{,}000$$

Between Proposal B & C:

$$\frac{(EBIT-I)\,(1-T)}{N_B} = \frac{\{(EBIT-I)\,(1-T) - PD\}}{N_C}$$

$$\frac{(EBIT-8{,}000)\,(1-0.50)}{5{,}000} = \frac{\{(EBIT-0)\,(1-0.50) - 8{,}000\}}{5{,}000}$$

$$0.5\,EBIT - 4{,}000 \neq 0.5\,EBIT - 8{,}000$$

There is no indifference point between the financial plans B and C. It can be seen that Financial Plan B dominates Plan C. Since, the financial break-even point of the former is only ₹8,000 but in case of latter it is ₹16,000.

BBQ 8

Xylo Ltd. is considering the following two alternative financing plans:

80,m 80,m

Particulars	Plan A	Plan B
Equity Shares of ₹10 each	8,00,000	8,00,000
12% Debentures 48,m	4,00,000	-
? Preference Shares of ₹100 each	-	4,00,000
	12,00,000	**12,00,000**

The indifference point between the plans is ₹4,80,000. Corporate tax rate 30%.

Calculate the rate of dividend on preference shares.

Answer

$$\textit{Rate of dividend} = \frac{\text{Preference Dividend}}{\text{Preference Share Capital}} \times 100 = \frac{33{,}600}{4{,}00{,}000} \times 100 = 8.40\%$$

Working Notes:

Calculation of preference dividend:

$$\frac{(EBIT - I)(1 - T)}{N_1} = \frac{[(EBIT - I)(1 - T)] - PD}{N_2}$$

$$\frac{(4{,}80{,}000 - 48{,}000)(1 - 0.30)}{80{,}000} = \frac{[(4{,}80{,}000 - \text{Nil})(1 - 0.30)] - PD}{80{,}000}$$

$$3{,}02{,}400 = 3{,}36{,}000 - PD$$

$$\textit{Preference dividend (PD)} = \text{₹}33{,}600$$

BBQ 9

RM Steels Limited requires ₹10,00,000 for the construction of new plant. It is considering three financial plans:

(1) The Company may issue 1,00,000 ordinary shares at ₹10 per share.

(2) The Company may issue 50,000 ordinary shares at ₹10 per share and 5,000 debentures of ₹100

SL SL

denomination bearing 8% rate of interest. SL SL

(3) The Company may issue 50,000 ordinary shares at ₹10 per share and 5,000 preference shares at ₹100 per share bearing a 8% rate of dividend.

E E E/D D.

If RM Steels Limited's earnings before interest and taxes are ₹20,000, ₹40,000, ₹80,000, ₹1,20,000 and ₹2,00,000. Tax rate is 50%.

D ***You are required to compute the earning per share under each of the three plans? Which alternative would you recommend for RM Steels and why?***

Answer

1. Statement showing EPS with respect to various plans & different EBIT:

a. Equity Financing

Particulars	₹	₹	₹	₹	₹
EBIT	20,000	40,000	80,000	1,20,000	2,00,000
Less: Interest	0	0	0	0	0
EBT	20,000	40,000	80,000	1,20,000	2,00,000
Less: Tax @ 50%	(10,000)	(20,000)	(40,000)	(60,000)	(1,00,000)
EAT	10,000	20,000	40,000	60,000	1,00,000
÷ No. of Equity Shares	÷ 1,00,000	÷ 1,00,000	÷ 1,00,000	÷ 1,00,000	÷ 1,00,000
EPS	***₹0.10***	***₹0.20***	***₹0.40***	***₹0.60***	***₹1.00***

b. Debt - Equity Mix

Particulars	₹	₹	₹	₹	₹
EBIT	20,000	40,000	80,000	1,20,000	2,00,000
Less: Interest	(40,000)	(40,000)	(40,000)	(40,000)	(40,000)
EBT	(20,000)	0	40,000	80,000	1,60,000
Less: Tax @ 50%	*10,000	0	(20,000)	(40,000)	(80,000)
EAT	(10,000)	0	20,000	40,000	80,000
÷ No. of Equity Shares	÷ 50,000	÷ 50,000	÷ 50,000	÷ 50,000	÷ 50,000
EPS	***(₹0.20)***	***₹0.00***	***₹0.40***	***₹0.80***	***₹1.60***

*10,000 is the tax saving in case of loss.

c. Preference Share - Equity Mix

Particulars	₹	₹	₹	₹	₹
EBIT	20,000	40,000	80,000	1,20,000	2,00,000
Less: Interest	0	0	0	0	0
EBT	20,000	40,000	80,000	1,20,000	2,00,000
Less: Tax @ 50%	(10,000)	(20,000)	(40,000)	(60,000)	(1,00,000)
EAT	10,000	20,000	40,000	60,000	1,00,000
Less: Preferential Dividend	**(40,000)	**(40,000)	(40,000)	(40,000)	(40,000)
EAT after Pref. Dividend	(30,000)	(20,000)	0	20,000	60,000
÷ No. of Equity Shares	÷ 50,000	÷ 50,000	÷ 50,000	÷ 50,000	÷ 50,000
EPS	***(₹0.60)***	***(₹0.40)***	***₹0.00***	***₹0.40***	***₹1.20***

**In case of cumulative preference shares, the company has to pay cumulative dividend to preference shareholders, when company earns sufficient profits, so deducted here even in case of insufficient profit to reach right decision.

2. Recommendation:

(a) If expected EBIT is less than ₹80,000 : Equity Finance (Alternative 1)

(b) If expected EBIT is equal to ₹80,000 : Equity or Debt - Equity Mix (Alternative 1 or 2)

(c) If expected EBIT is more than ₹80,000 : Debt – Equity Mix (Alternative 2)

CHAPTER 2 - LEVERAGES

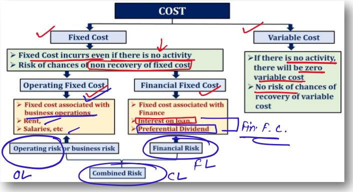
1. **Leverage Technique:** *The term leverage represents influence or power. Leverage is the technique which is used to evaluate risk associated with any business organisation. The term Leverage in general refers to a **relationship** between two **interrelated variables.** In financial analysis it represents the **influence** of one financial variable over some other related financial variable. These financial variables may be **costs, output, sales revenue, Earnings Before Interest and Tax** (EBIT), **Earning per share (EPS) etc.***

2. **Types of Risk:** *There are two types of risk: (a) Business Risk and (b) Financial Risk:*

   (a) **Business Risk:** *It refers to the risk associated with firm's operations. It is the uncertainty about the future operating income (EBIT).*

   (b) **Financial Risk:** *It refers to the additional risk placed on the firm's equity shareholders because of use debt, preference shares or both. It is the uncertainty about the future EPS.*

3. **Types of Cost and Risk:**



COST

Fixed Cost
- Fixed Cost incurrs even if there is no activity
- Risk of chances of non recovery of fixed cost

Operating Fixed Cost
- Fixed cost associated with business operations
- Rent,
- Salaries, etc

Financial Fixed Cost
- Fixed cost associated with Finance
- Interest on loan.
- Preferential Dividend

Variable Cost
- If there is no activity, there will be zero variable cost
- No risk of chances of recovery of variable cost

Operating risk or business risk

Financial Risk

Combined Risk

4. **Understanding of Various Leverage**

Particulars	₹	Relationship
Sales	XXX	
Less: Variable Cost	(XXX)	
Contribution	XXX	OL
Less: Fixed Cost (Operating Risk)	(XXX)	
Operating Profit or EBIT	XXX	
Less: Interest (Financial Risk)	(XXX)	
EBT	XXX	CL
Less: Tax	(XXX)	
EAT	XXX	FL
Less: Preference Dividend (Financial Risk)	(XXX)	
Earning for Equity	XXX	
÷ No. of Equity shares	÷ XX	
EPS	XXX	

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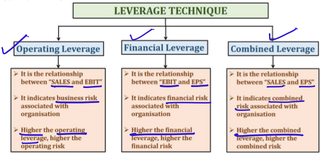
5. **Types of Leverages:**



LEVERAGE TECHNIQUE

Operating Leverage
- It is the relationship between "SALES and EBIT"
- It indicates business risk associated with organisation
- Higher the operating leverage, higher the operating risk

Financial Leverage
- It is the relationship between "EBIT and EPS"
- It indicates financial risk associated with organisation
- Higher the financial leverage, higher the financial risk

Combined Leverage
- It is the relationship between "SALES and EPS"
- It indicates combined risk associated with organisation
- Higher the combined leverage, higher the combined risk

6. **Degree of Operating Leverage or Operating Leverage:** *Operating leverage is used to measure operating or business risk associated with any business organisation, DOL indicates **% change in EBIT** occurs due to a given **% change in Sales.***

   - *If OL is 2.5 times, 1% increase in sales would result in 2.5% increase in EBIT.*

Formulae:

Formula 1	Operating Leverage	=	$\frac{\text{Contribution}}{\text{EBIT}}$
Formula 2	Operating Leverage	=	$\frac{\%\text{ Change in EBIT}}{\%\text{ Change in Sales}}$
Formula 3	Operating Leverage	=	$\frac{\text{Combined Leverage}}{\text{Financial Leverage}}$
Formula 4	Operating Leverage	=	$\frac{1}{\text{MOS Sale Proportion}}$

Notes:

- *OL can never be between 0 and 1.*
- *Higher the **fixed cost,** higher the **BEP,** Higher the **OL and** higher the operating **risk.***
- ***No operating fixed cost** means **no operating risk.***
- *Higher **the proportion of MOS,** lower the **OL and lower operating ris**k.*

7. **Degree of Financial Leverage or Financial Leverage:** *Financial leverage is used to measure financial risk associated with any business organisation. DFL indicates % change in EPS occurs due to a given % change in EBIT.*

   - *If FL is 5 times, 1% increase in EBIT would result in 5% increase in EPS.*

Formulae:

Formula 1	Financial Leverage	=	$\frac{\text{EBIT}}{\text{EBT} - \frac{\text{PD}}{1-\text{T}}}$
Formula 2	Financial Leverage	=	$\frac{\%\text{ Change in EPS}}{\%\text{ Change in EBIT}}$

Formula 3 *Financial Leverage* = $\frac{\text{Combined Leverage}}{\text{Operating Leverage}}$

Notes:

- *FL can never be between 0 and 1.*
- *Higher the Financial fixed cost (interest and preference dividend), higher the Financial BEP, Higher the FL and higher the Financial risk.*
- *No Financial fixed cost means no Financial risk.* Unlevered (100% Equity firm)

8. ***Degree of Combined Leverage or Combined Leverage:*** *Combined leverage is used to measure combined risk associated with any business organisation. DCL indicates % change in EPS occurs due to a given % change in Sales.*

- *If CL is 2 times, 1% increase in Sales would result in 2% increase in EPS.*

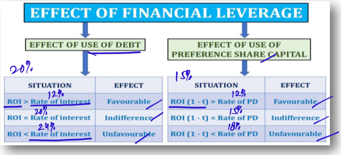
Formulae:

Formula 1 *Combined Leverage* = $\frac{\text{Contribution}}{\text{EBT} - \frac{\text{PD}}{1-\text{T}}}$

Formula 2 *Combined Leverage* = $\frac{\text{\% Change in EPS}}{\text{\% Change in Sales}}$

Formula 3 *Combined Leverage* = OL × FL

9. ***Effect of Financial Leverage on Equity Investors:***



EFFECT OF FINANCIAL LEVERAGE

EFFECT OF USE OF DEBT

SITUATION	EFFECT
ROI > Rate of interest	Favourable
ROI = Rate of interest	Indifference
ROI < Rate of interest	Unfavourable

EFFECT OF USE OF PREFERENCE SHARE CAPITAL

SITUATION	EFFECT
ROI (1 - t) > Rate of PD	Favourable
ROI (1 - t) = Rate of PD	Indifference
ROI (1 - t) < Rate of PD	Unfavourable

10. ***Financial Leverage as a 'Double edged Sword':*** *When the cost of 'fixed cost fund' is less than the return on investment, financial leverage will help to increase return on equity and EPS. The firm will also benefit from the saving of tax on interest on debts etc. However, when cost of debt will be more than the return it will affect return of equity and EPS unfavourably and as a result firm can be under financial distress. Therefore, financial leverage is also known as "double edged sword".*

11. ***Trading on Equity:*** *A firm is known to have a positive/favourable leverage when its earnings are more than the cost of debt. If earnings are equal to or less than cost of debt, it will be an negative/unfavourable leverage. When the quantity of fixed cost fund is relatively high in comparison to equity capital it is said that the firm is "trading on equity".*

PRACTICAL PROBLEMS

BBQ 10

Betatronics Ltd. has the following balance sheet and income statement information:

Balance Sheet as on 31st March, 2023

Liabilities	₹	Assets	₹
Equity Capital (₹10 per share)	8,00,000	Net Fixed Assets	10,00,000
Retained Earnings	3,50,000	Current Assets	9,00,000
10% Debentures	6,00,000		
Current Liabilities	1,50,000		
	19,00,000		**19,00,000**

EPS = $\frac{104,000}{80,000}$ = ₹1.3

Income Statement for the year ending 31st March, 2023

Particulars	₹
Sales	3,40,000
Less: Operating Expenses (including ₹60,000 depreciation)	1,20,000
EBIT	***2,20,000***
Less: Interest @ 10% of 6,00,000	60,000
EBT	***1,60,000***
Less: Taxes	56,000
EAT	***1,04,000***

-VC 3,40,000
60,000
C 2,80,000
-FC 60,000
EBIT

→60,000 other V
→60,000 Dep F

OL = $\frac{2.8L}{2.2L}$ = 1.27

FL = $\frac{2.2L}{1.6L}$ = 1.375

CL = OL × FL = 1.75

+1% Sales ⟷ EPS +1.75%

+20% FL 1.75 +35%
-20% -35%

(a) Determine the degree of operating, financial and combined leverages at the current sales level, if all operating expenses, other than depreciation, are variable costs.

(b) If total assets remain at the same level, but sales *(i)* increase by 20 percent and *(ii)* decrease by 20 percent, what will be the earnings per share at the new sales level?

Answer

(a) Calculation of Degree of Operating (DOL), Financial (DFL) and Combined leverages (DCL):

Degree of Operating Leverage = $\frac{\text{Contribution}}{\text{EBIT}}$ = $\frac{3,00,000 - 60,000}{2,20,000}$ = ***1.27***

Degree of Financial Leverage = $\frac{\text{EBIT}}{\text{EBT}}$ = $\frac{2,20,000}{1,60,000}$ = ***1.38***

Degree Combined Leverage = DOL × DFL = 1.27 × 1.38 = ***1.75***

(b) Earnings per share at the new sales level:

EPS if sales level increases by 20% = Existing EPS + increase (% increase in sales × CL)
= ₹1.30 + 35% (20% × 1.75 times) = ***₹1.755***

EPS if sales level decreases by 20% = Existing EPS - decrease (% decrease in sales × CL)
= ₹1.30 - 35% (20% × 1.75 times) = ***₹0.845***

Working Notes:

(i) Variable Costs = ₹60,000 (total cost – depreciation)

(ii) Variable Costs at:

~~(a) Sales level, ₹4,08,000 = ₹72,000 (increase by 20%)~~
~~(b) Sales level, ₹2,72,000 = ₹48,000 (decrease by 20%)~~

BBQ 11

Following information is given for X Ltd:

CL = OL×FL

Total contribution (₹)	4,25,000
Operating leverage	3.125
15% Preference shares (₹100 each)	1,000
Number of equity shares	2,500
Tax rate	50%

1,00,m PD 15,m

Calculate EPS of X Ltd., if 40% decrease in sales will result EPS to zero. wipe out

Answer

EPS of X Ltd. = {EBT (1 – t) – PD} ÷ No of Equity Shares
= {2,00,000 (1 – 0.5) – 15,000} ÷ 2,500 = ***₹34***

Working Note:

Calculation of CL and EBT:

Question says that 40% decrease in sales will result in 100% decrease in EPS:

$$\text{Combined Leverage} = \frac{\%\text{ Change in EPS}}{\%\text{ Change in Sales}} = \frac{100\%}{40\%} = \textit{2.5 times}$$

$$= \frac{\text{Contribution}}{\text{EBT} - \frac{\text{Preference Dividend}}{1-\text{Tax}}} = \frac{4{,}25{,}000}{\text{EBT} - \frac{15{,}000}{1-0.50}}$$

$$2.5 = \frac{4{,}25{,}000}{\text{EBT} - 30{,}000}$$

2.5 EBT – 75,000 = 4,25,000

EBT = 2,00,000

Sales — 40%

CL

EPS — 100%

$$CL = \frac{\%\ EPS}{\%\ sales} = \frac{\downarrow 100\%}{\downarrow 40\%} = 2.5\ times$$

BBQ 12

Calculate the operating leverage, financial leverage and combined leverage from the following data under situations I and II and financial plans A and B:

Installed capacity	4,000 units
Actual production and sales	75% of the Capacity
Selling price	₹30 per unit
Variable cost	₹15 per unit

3,000 units

Fixed cost:

Under situation I	₹15,000
Under situation II	₹20,000

Capital structure:

	Plan A	***Plan B***
Equity	₹10,000	₹15,000
Debt (rate of interest at 20%)	₹10,000	₹5,000
Capital Employed	***₹20,000***	***₹20,000***

Int 2,000 Int 1,000

Answer

Statement Showing OL, FL and CL

Particulars	***Situation I***		***Situation II***	
	Plan A	***Plan B***	***Plan A***	***Plan B***
Sales (3,000 × ₹30)	90,000	90,000	90,000	90,000
Less: Variable cost	45,000	45,000	45,000	45,000
Contribution	***45,000***	***45,000***	***45,000***	***45,000***
Less: Fixed Cost	15,000	15,000	20,000	20,000
EBIT	***30,000***	***30,000***	***25,000***	***25,000***
Less: Interest	2,000	1,000	2,000	1,000
EBT	***28,000***	***29,000***	***23,000***	***24,000***
OL (Contribution ÷ EBIT)	***1.5***	***1.5***	***1.8***	***1.8***
FL (EBIT ÷ EBT)	***1.07***	***1.03***	***1.09***	***1.04***
CL (Contribution ÷ EBT)	***1.61***	***1.55***	***1.96***	***1.88***

OL × FL CL

BBQ 13 1L shares

The capital structure of the Progressive Corporation consists of an ordinary share capital of ₹1,00,00,000 (share of ₹100 par value) and ₹10,00,000 of 10% debentures. 1L Int

Sales increased by 20% from 1,00,000 units to 1,20,000 units, the selling price is ₹10 per unit; variable cost amounts to ₹6 per unit and fixed expenses amount to ₹2,00,000. The income tax rate is assumed to be 50%.

You are required to calculate the following:

- *(i)* The percentage increase in earnings per share;
- *(ii)* The degree of operating leverage at 1,00,000 units and 1,20,000 units.
- *(iii)* The degree of financial leverage at 1,00,000 units and 1,20,000 units.
- *(iv)* Comment on the behavior of operating and financial leverages in relation to increase in production from 1,00,000 units to 1,20,000 units.

Answer

(i) Calculation of % increase in EPS

Particulars	***1,00,000 units***	***1,20,000 units***
Sales @ ₹10 per unit	10,00,000	12,00,000
Less: Variable cost	6,00,000	7,20,000
Contribution	***4,00,000***	***4,80,000***
Less: Fixed cost	2,00,000	2,00,000
Profit before interest and tax	***2,00,000***	***2,80,000***
Less: Interest @ 10% of ₹10 lacs	1,00,000	1,00,000
Profit before tax	***1,00,000***	***1,80,000***
Less: Tax @ 50%	50,000	90,000
Profit after tax	***50,000***	***90,000***
÷ No. of shares	1,00,000	1,00,000
Earning per share	***₹0.50***	***₹0.90***
% increase in EPS [(0.90 – 0.50) ÷ 0.50] × 100	*-*	***+80%***

OL 2 FL 2 1.71 1.56

(ii) Degree of Operating Leverage $= \frac{\text{Contribution}}{\text{EBIT}}$

At 1,00,000 units $= \frac{4{,}00{,}000}{2{,}00{,}000}$ = ***2 times***

At 1,20,000 units $= \frac{4{,}80{,}000}{2{,}80{,}000}$ = ***1.71 times***

(iii) Degree of Financial Leverage $= \frac{\text{EBIT}}{\text{EBT}}$

At 1,00,000 units $= \frac{2{,}00{,}000}{1{,}00{,}000}$ = ***2 times***

At 1,20,000 units $= \frac{2{,}80{,}000}{1{,}80{,}000}$ = ***1.56 times***

(iv) Increase in production and sales will result in decrease in risk.

BBQ 14 7 times

A Company had the following Balance Sheet as on March 31, 2006

Liabilities	₹(in Crores)	Assets	₹(in Crores)
Equity Share Capital	10	Fixed Assets (net)	25
(1 Crores Shares of ₹10 each)		Current Assets	15
Reserve and Surplus	2		
15% Debentures Int 3 cr.	20		
Current Liabilities	8		
	40	Sales = 2.5 × 40	40

= 100 Cr.

The additional information given is as under:

Fixed costs per annum (excluding interest)	:	₹8 Crores
Variable operating costs ratio	:	65% of sales
Total Assets turnover ratio	:	2.5 times
Income tax rate	:	40%

$\frac{Sales}{40\ cr.\ T.A} = 2.5$

Calculate (i) Earnings per share, ***(ii)*** Operating Leverage, ***(iii)*** Financial Leverage, ***(iv)*** Combined Leverage.

Answer

(i) Statement of EPS

Particulars	₹(in Crores)
Sales @ (2.50 times of ₹40 Crores)	100.00
Less: Variable cost @ 65%	65.00
Contribution	35.00
Less: Fixed cost	8.00
EBIT	27.00
Less: Interest @ 15% of 20 Crores	3.00
EBT	24.00
Less: Tax @ 40%	9.60
EAT	14.40
÷ No. of Equity Shares	÷ 1
EPS	***₹14.40***

OL 1.296
× FL 1.125
= CL 1.458

(ii) Operating Leverage = $\frac{\text{Contribution}}{\text{EBIT}}$ = $\frac{35\ \text{Crores}}{27\ \text{Crores}}$ = ***1.296 times***

It indicates fixed cost in cost structure. It indicates sensitivity of earnings before interest and tax (EBIT) to change in sales at a particular level.

(iii) Financial Leverage = $\frac{\text{EBIT}}{\text{EBT}}$ = $\frac{27\ \text{Crores}}{24\ \text{Crores}}$ = ***1.125 times***

The financial leverage is very comfortable since the debt service obligation is small vis-a-vis EBIT.

(iv) Combined Leverage = OL × FL = 1.296 × 1.125 = ***1.458 times***

The combined leverage studies the choice of fixed cost in cost structure and choice of debt in capital structure. It studies how sensitive the change in EPS is vis-a-vis change in sales.

The leverages - operating, financial and combined are measures of risk.

BBQ 15

From the following information, prepare Income Statement of Company A & B:

$OL = \frac{1}{MOS}$

Particulars	Company A	Company B
Margin of safety	0.20	0.25
Interest	₹3,000	₹2,000

$A = \frac{1}{.20} = 5$

$B = \frac{1}{.25} = 4$

$Sales = \frac{Cont^n}{}$ $\quad$ $Cont^n$

Profit volume ratio	25%	33.33%
Financial Leverage	4	3
Tax rate	45%	45%

Answer

Income Statement

Particulars	Company A	Company B
Sales (iii)	80,000	36,000
Less: Variable cost (b.f.)	60,000	24,000
Contribution (ii)	20,000	12,000
Less: Fixed cost (b.f.)	16,000	9,000
Profit before interest and tax (i)	4,000	3,000
Less: Interest	3,000	2,000
Profit before tax	1,000	1,000
Less: Tax @ 45%	450	450
Profit after tax	550	550

Working Notes (Company A):

(a) ***Company A:***

Financial Leverage = EBIT/(EBIT - Interest)
= EBIT/(EBIT – ₹3,000) = 4 times
EBIT = 4 EBIT – ₹12,000
EBIT = ***₹4,000***

$\frac{EBIT}{EBIT-3{,}000} = 4$

$EBIT = 4EBIT - 12{,}000$

$-3EBIT = -12{,}000$

4,000

Company B:

Financial Leverage = EBIT/(EBIT - Interest)
= EBIT/(EBIT – ₹2,000) = 3 times
EBIT = 3 EBIT – ₹6,000
EBIT = ***₹3,000***

(b) ***Company A:***

Operating Leverage = 1/Margin of Safety = 1/0.20 = 5 times
Operating Leverage = Contribution/EBIT
= Contribution/₹4,000 = 5 times
Contribution = ***₹20,000***

Company B:

Operating Leverage = 1/Margin of Safety = 1/0.25 = 4 times
Operating Leverage = Contribution/EBIT
= Contribution/₹3,000 = 4 times
Contribution = ***₹12,000***

(c) ***Company A:***

Sales = Contribution/PV Ratio = ₹20,000/0.25 = ***₹80,000***

Company B:

Sales = Contribution/PV Ratio = ₹12,000/0.33 = **₹36,000**

EBT

POL = $\frac{1}{.2}$ = 5

Q = MOS = .20 × 1.25 = 0.25

OL = $\frac{1}{.25}$ = 4

P = 1.5L

Q = 1.5L − $\frac{1}{3}$ of 1.5L

= 1L

BBQ 16

Company P and Q are having same earnings before tax. However, the margin of safety of Company P is 0.20 and, for Company Q, is 1.25 times than that of Company P. The interest expense of Company P is ₹1,50,000 and, for Company Q, is 1/3rd less than that of Company P. Further, the financial leverage of Company P is 4 and, for Company Q, is 75% of Company P. Other information is given as below:

FL P = 4

Q = 3

Particulars	Company P	Company Q
Profit volume ratio Sales	25%	33.33%
Tax rate	45%	45%

You are required to prepare Income Statement for both the companies.

Answer

Income Statement

Particulars	Company P	Company Q
Sales	40,00,000	18,00,000
Less: Variable cost b.f.	30,00,000	12,00,000
Contribution	10,00,000	6,00,000
Less: Fixed cost b.f.	8,00,000	4,50,000
Profit before interest and tax	2,00,000	1,50,000
Less: Interest	1,50,000	1,00,000
Profit before tax	50,000	50,000
Less: Tax @ 45%	22,500	22,500
Profit after tax	27,500	27,500

Working Notes:

(a) Margin of Safety:

For Company P = 0.20

For Company Q = 0.20 × 1.25 = ***0.25***

(b) Interest Expenses:

For Company P = ₹1,50,000

For Company Q = ₹1,50,000 - 1/3 of ₹1,50,000 = ***₹1,00,000***

(c) Financial Leverage:

For Company P = 4

For Company Q = 4 × 75% = ***3***

(d) EBIT:

For Company A

Financial Leverage = EBIT/(EBIT- Interest)

4 = EBIT/(EBIT- ₹1,50,000)

4 EBIT – ₹6,00,000 = EBIT

3 EBIT = ₹6,00,000

EBIT = ***₹2,00,000***

For Company B

Financial Leverage = EBIT/(EBIT - Interest)

3 = EBIT/(EBIT – ₹1,00,000)

3 EBIT – ₹3,00,000 = EBIT

2 EBIT = ₹3,00,000

EBIT = ***₹1,50,000***

(e) Contribution:

For Company A

Operating Leverage = 1/Margin of Safety = 1/0.20 = 5

Operating Leverage = Contribution/EBIT

5 = Contribution/₹2,00,000

Contribution = ***₹10,00,000***

For Company B

Operating Leverage = 1/Margin of Safety = 1/0.25 = 4

Operating Leverage = Contribution/EBIT

4 = Contribution/₹1,50,000

Contribution = ***₹6,00,000***

(f) Sales:

For Company A

Profit Volume Ratio = 25%

Profit Volume Ratio = (Contribution/Sales) × 100

25% = ₹10,00,000/Sales

Sales = ₹10,00,000/25%

Sales = ***₹40,00,000***

For Company B

Profit Volume Ratio = 33.33%

Therefore, Sales = ₹6,00,000/33.33%

Sales = ***₹18,00,000***

BBQ 17

Information of A Ltd. is given below:

Earnings after tax	:	5% of sales
Income tax rate	:	50%
Degree of Operating leverage	:	4 times
10% Debenture in capital structure	:	₹3 lakhs 30,000
Variable costs	:	₹6 lakhs

Required:

(i) From the given data complete following statement:

Sales	XXXX 12L
Less: Variable Costs	₹6,00,000
Contribution	XXXX 6L
Less: Fixed costs	XXXX 4.5L
EBIT	XXXX 1.5L
Less: Interest expenses	XXXX 30,000
EBT	XXXX 1,20,000
Less: Income tax @ 50%	XXXX 60,000
EAT	XXXX 60,000

(ii) Calculate Financial Leverage and Combined Leverage.

(iii) Calculate percentage change in earning per share, if sales increased by 5%.

Answer

(i) Statement of EAT

Particulars	₹
Sales	12,00,000
Less: Variable Costs	6,00,000
Contribution	6,00,000
Less: Fixed costs	4,50,000
EBIT	1,50,000
Less: Interest expenses @ 10% of ₹3 lakhs	30,000
EBT	1,20,000
Less: Income tax	60,000
EAT @5% of ₹12,00,000	**₹60,000**

(ii) Financial Leverage = $\frac{\text{EBIT}}{\text{EBT}}$ = $\frac{1,50,000}{1,20,000}$ = ***1.25 times***

Combined Leverage = OL × FL = 4 × 1.25 = ***5 times***

(iii) % change in EPS = % change in Sales × CL = 5% × 5 = ***25% Increased***

Working Notes:

(a) Operating Leverage = $\frac{\text{Contribution}}{\text{EBIT}}$ = $\frac{\text{Contribution}}{\text{Contribution} - \text{Fixed cost}}$ = 4

Contribution = 4 Contribution – 4 Fixed cost

- 3 Contribution = - 4 Fixed cost

75% ¾ Contribution = Fixed cost

Contribution = Sales – Variable cost = Sales – ₹6,00,000

∴ Fixed cost = ¾ or 75% of contribution = 75% (Sales - ₹6,00,000)

= 75% Sales - ₹4,50,000

75% Sales − 4,50,000

(b) EAT = 5% of Sales

EBT = EAT ÷ (1 - t) = 5% Sales ÷ (1 – 0.5)

= 10% Sales

(c) EBT = Sales – Variable cost – Fixed cost – Interest

10% Sales = Sales - ₹6,00,000 – (75% Sales - ₹4,50,000) - ₹30,000

10% Sales = Sales - ₹6,00,000 – 75% Sales + ₹4,50,000 - ₹30,000

10% Sales = 25% Sales - ₹1,80,000

15% Sales = ₹1,80,000

Sales = ₹1,80,000 ÷ 15% = ***₹12,00,000***

(d) EBT = 10% of Sales = 10% of ₹12,00,000 = ***₹1,20,000***

(e) EBIT = EBT + Interest = ₹1,20,000 + ₹30,000 = ***₹1,50,000***

(f) Fixed cost = 75% of Contribution = 75% of ₹6,00,000 = ***₹4,50,000***

BBQ 18

The following information is available for SS Ltd.

Profit volume (PV) ratio	-	30%
Operating leverage	-	2.00
Financial leverage	-	1.50
Loan	-	₹1,25,000
Post-tax interest rate	-	5.6%
Tax rate	-	30%
Market Price per share (MPS)	-	₹140
Price Earnings Ratio (PER)	-	10

EPS × PE = MPS

EPS = $\frac{\text{MPS}}{\text{PE}} = \frac{140}{10}$ = ₹14

Pre tax/before = $\frac{5.6\%}{1 - .30}$ = 8%

You are required to

(1) Prepare the Profit-Loss statement of SS Ltd. and

(2) Find out the number of equity shares.

FL = 1.5

Interest = 8% of 1,25,000
= 10,000

14 EPS = $\frac{14{,}000 \text{ E for Eq.}}{\text{No of Shares}}$

Answer

(1) Profit-Loss Statement

Particulars	Company A
Sales (iii)	2,00,000
Less: Variable cost (b.f.)	1,40,000
Contribution (ii)	60,000
Less: Fixed cost (b.f.)	30,000
Earnings before interest and tax (EBIT) (i)	30,000
Less: Interest	10,000
Profit before tax	20,000
Less: Tax @ 30%	6,000
Profit after tax	14,000

(2) Number of Equity Shares = PAT/EPS = ₹14,000/₹14 = ***1,000 Shares***

EPS = $\frac{\text{PAT } 14{,}000}{\text{N. }}$ 14

= 1,000

Working Notes:

(a) Financial Leverage = EBIT/(EBIT - Interest)

= EBIT/(EBIT – ₹10,000*) = 1.5

EBIT = 1.5 EBIT – ₹15,000

EBIT = ***₹30,000***

*Interest = Loan × Pre-tax interest rate

= ₹1,25,000 × 8% [5.6% ÷ (1 – 0.3)] = ₹10,000

(b) Operating Leverage = Contribution/EBIT

= Contribution/30,000 = 2.00

Contribution = ***₹60,000***

(c) Sales = Contribution/PV Ratio

= ₹60,000/0.30 = ***₹2,00,000***

(d) EPS = MPS/PE Ratio

= ₹140/10 times = ***₹14***

BBQ 19

The following summarizes the percentage changes in operating income (EBIT), percentage changes in revenue (Sales), and Beta factors for four pharmaceutical firms.

Name of Firm	Change in Revenue (Sales)	Change in Operating Income (EBIT)	Beta Factor
PQR Ltd	27%	25%	1.00
RST Ltd	25%	32%	1.15
TUV Ltd	23%	36%	1.30
WXY Ltd	21%	40%	1.40

Calculate the degree of operating leverage for each of these firms. Comment also.

Answer

(i) Calculation of operating leverage

Particulars	PQR Ltd	RST Ltd	TUV Ltd	WXY Ltd
Degree of Operating Leverage $\left(\frac{\%\text{ Change in operating income}}{\%\text{ change in Revenue}}\right)$	$\frac{25\%}{27\%}$ 0.93	$\frac{32\%}{25\%}$ 1.28	$\frac{36\%}{23\%}$ 1.57	$\frac{40\%}{21\%}$ 1.91

WXY Ltd is operating its business with higher business risk.