Ch-4 Operating Leverage and Financial Leverage

Sum-1

Particulars	A Co. ₹	B Co. ₹	C Co. ₹
Earning before interest and taxes (25% on asset) 10,00,000 × 25%	2,50,000	2,50,000	2,50,000
Less - Interest on Debentures	40,000	50,000	-
Earning before Tax (EBT)	2,10,000	200,000	2,50,000
Less - Tax @ 50%	1,05,000	1,00,000	1,25,000
Earning After Tax (EAT)	1,05,000	1,00,000	1,25,000
Earning Per Share (EPS) (Dividend)			
= Profit available for Equity	105000	100,000	125000
No. of equity shares	6,00,000	5,00,000	10,00,000
=	17.5%	20%	12.5%

-> In the above Sum there is no debt finance used in company 'C' so EPS Ratio is only 12.5%. Company 'A' used ₹ 4,00,000 and 'B' used ₹ 5,00,000 as debt finance in capital Structure So, its EPS Ratio is greater than 'C' i.e. 17.5% and 20% respectively. 'B' used more debt finance than 'A' So it gets more benefit of trade on Equity.

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Q.

Particulars	A Co. ₹.	B Co. ₹.	C Co. ₹.
Earning Befor interest and Tax (EBIT) 25% of Asset	2,50,000	2,50,000	2,50,000
Less - Interest on Debenture	16,000	24,000	32,000
Earning before Tax (EBT)	234,000	226,000	218,000
Less - Tax @ 50%	117,000	113,000	109,000
Earning after Tax (EAT)	117,000	113,000	109000
Less - Preference dividend	30000	20000	10,000
Earning Per Share (EPS) :-	87,000	93,000	99,000
= Profit available for equity / no. of equity Shares	87,000 / 5,00,000	93,000 / 5,00,000	99,000 / 500,000
=	17.4%	18.6%	19.8%

In the given question capital employed is same with ₹ 10,00,000. But, capital structure of all these companies are different. Each company uses mixed capital structure of Equity, Preference and debenture. Among these companies company 'C' used more fixed return capital source i.e. debenture than other. So, 'C' got more 19.8 EPS, 'B' got 18.6% EPS and 'A' got 17.4% EPS respectively.

3.

Amount required of dividend on equity @ 20% on ₹ 10,00,000	2,00,000
Add:- Preference dividend (15% of 10,00,000)	1,50,000
Earning After Tax :-	3,50,000
Add:- Tax @ 50% ($350000 \times \frac{50}{50}$)	3,50,000
Earning before tax :-	7,00,000
Add:- Interest 12% on debenture of ₹ 5,00,000	60,000
=> Earning before interest and Tax =>	₹ 7,60,000

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4.

* Earning before interest and Tax 30,000
- interest on debenture @ 12% of 50,000 6000
24000
Less Tax @ 60% $\frac{24000 \times 60}{100}$ 14400
Earning after Tax 9600

$$EPS = \frac{EAT}{\text{No. of shares}}$$

$$= \frac{9600}{5000} = ₹\ 1.92$$

* Degree of Financial Leverage $= \frac{EBIT}{EBT}$

$$= \frac{30000}{24,000}$$

$$= 1,25$$

*

* If EBIT increase by 50%.

30000 + 50% = 45,000

EPS = ?

EBIT	45000
- Interest	6000
E. Before Tax	39,000
- Tax @ 60%	23,400
Earning after Tax	15,600

$$EPS = \frac{EAT}{\text{No. of Shares}}$$

$$= \frac{15,600}{5000}$$

$$= ₹\ 3.12$$

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5.

* Earning before interest and tax 4000

Less interest @ 10% on 20000	2000
Earning before tax	2000
Less Tax @ 60% × 2000	1200
Earning after tax	600

$$EPS = \frac{EAT}{\text{No. of shares}} = \frac{600}{1000} = \boxed{₹0.60}$$

* Degree of financial Leverage

$$DFL = \frac{EBIT}{EBT}$$

$$= \frac{4000}{2000}$$

$$\boxed{DFL = 2}$$

* If EBIT increase 100%, EPS = ?

Earning before interest and Tax	8000
Less interest @ 10% on 20000	2000
Earning before tax	6000
Less Tax @ 60% × 6000	3600
Earning after tax	2400

$$EPS = \frac{EAT}{No.\ of\ Shares} = \frac{2400}{1000} = ₹2.4$$

* EPS If only Equity shares are there in capital Employed.

Earning before interest and Tax	4,000
- Less Interest @ 10%	-
Earning before tax	4000
- Less Tax @ 60% × 4000	2400
Earning after Tax	1600

$$EPS = \frac{EAT}{No\ of\ Shares} = \frac{1600}{3000} = ₹0.533$$

(Note: Text Book માં answer 0.27 આપેલ છે જે Debenture interest કોઈ લે તો તે answer આવે અને (4) માં whole Equity (બધા) છે તેથી answer (0.533) આવે.)

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6.

Sales (3000 × ₹200)	6,00,000
Less Fixed Cost	2,60,000
	3,40,000
Less variable cost (3000 × ₹80)	2,40,000
Operating Profit (EBIT)	1,00,000

Operating profit when sales is increased by 50%

Sales (3000 × 50% × ₹200)	9,00,000
Less Fixed cost	2,60,000
	6,40,000
Less variable cost (4500 × 80₹)	3,60,000
	2,80,000

* Difference in EBIT = After - Before
= 280000 - 100000
= 180000

* % change in EBIT = $\frac{180000}{100000} \times 100$

= 180%

* Degree of Operating leverage =
$\frac{\% \text{ change in EBIT}}{\% \text{ change in Sales}} = \frac{180}{50}$

DOL = 3.6

7. Sales = 5000 unit × ₹ 300 = 15,00,000

Contribution = Sales - variable cost

= 15,00,000 - 1500000 × 60%

= 15,00,000 - 9,00,000

= 6,00,000

* Degree of Operating Leverage

$$= \frac{\text{Total Contribution}}{\text{Total contribution - Fixed cost (i.e. EBIT)}}$$

$$= \frac{6,00,000}{600000 - 3,00,000}$$

$$= \frac{6,00,000}{3,00,000}$$

DOL = 2

6. Find out Rate of Dividend

Particulars	Alt. - 1	Alt. - 2
Earning before interest and Tax	4,00,000	4,00,000
- Less Interest @ 10%	50,000	60,000
	3,50,000	3,40,000
- Less Tax @ 50%	175000	1,70,000
Earning after tax	1,75,000	1,70,000
Less Preference share Dividend @ 12%	60,000	48,000
	1,15,000	1,22,000
Earning Per Share = PAT / No. of shares (Profit)	115000 / 10000	122000 / 10,000
	= 11.5	= 12.2

Note: Second Alternative to be selected.

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9.

* Sales 3000 units × ₹100	3,00,000
less Fixed cost	50,000
	2,50,000
less variable cost (3000 units × 50₹)	1,50,000
Earning before interest and Tax	1,00,000 ✓

* Earning before interest and Tax	1,00,000
- less interest on debentures @ 10%	20,000
Earning before Tax	80,000 ✓
- less Tax @ 50%	40,000
Earning after Tax	40,000

(i) EPS = $\frac{\text{Earning After Tax}}{\text{No. of Equity Shares}}$

$= \frac{40,000}{30,000} = \boxed{₹1.33}$

(2) DFL = $\frac{EBIT}{EBT} = \frac{100000}{80,000} = \boxed{1.25}$

OR

(3) DOL = $\frac{\text{Contribution (S - V)}}{\text{Contribution} - \text{Fixed Cost}}$

$= \frac{300000 - 150000}{1,50,000 - 50000}$

$$= \frac{1,50,000}{1,00,000} = \boxed{1.5}$$

(4) Combined Leverage = $\frac{\text{Contribution}}{\text{EBT}}$

$$= \frac{1,50,000}{60,000} = \boxed{1.875}$$

OR

Combined Leverage =

$$= \frac{\text{EBIT}}{\text{EBT}} \times \frac{\text{Contribution}}{\text{EBIT}}$$

$$= \frac{1,50,000}{80000} = \boxed{1.875}$$

OR

Combined Leverage = DFL × DOL

$$= 1.25 \times 1.5$$

$$= \boxed{1.875}$$

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Particulars	(5) If 50% sales increase	(6) If 50% sales decrease	(7) If V. cost increase 20%
Sales	4,50,000	1,50,000	3,00,000
Less Fixed cost	50000	50,000	50,000
	4,00,000	1,00,000	2,50,000
Less variable cost	2,25,000	75000	1,80,000
* Earning before Interest and Tax	1,75,000	25,000	70,000
Less interest	20000	20000	20,000
Earning before Tax	1,55,000	5,000	50,000
Less Tax @ 50%	77,500	2500	25,000
Earning after Tax = EAT	77,500	2,500	25,000
EPS = EAT / No. of Shares	77500 / 30,000	2500 / 30,000	25000 / 30,000
	₹ 2.58	₹ 0.083	₹ 0.83

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(A) Financial Leverage = $\frac{EBIT}{EBT}$

$= \frac{2,20,000}{1,60,000}$

$= 1.375$

Operating Leverage = $\frac{\text{Contribution}}{\text{Contribution - Fixed cost}}$

Sales − variable cost

Contribution = 340000 − 60000

= 280,000

Fixed exp. = 60000 (interest on Debenture)

DOL = $\frac{280000}{280000-60000}$ = **1.273**

* Combined Leverage = DFL × DOL

= 1.375 × 1.273

= **1.75**

(3) when sales increase / decrease @ 20%

(i) Variable cost if 20% Increase

340000 60000

408000 ?

= 72000

+ 60000

132000 + Admin exp.

(ii) variable cost if 20% decrease

340000 60000

272000 ?

= 48000

60000

→ 1,08,000

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Particulars	if sales 20% Increase	if 20 Decrease
Sales	4,08,000	2,72,000
Less Admin exp.	1,32,000	1,08,000
Operating Profit (EBIT)	2,76,000	1,64,000
Less Interest	60000	60000
Earning before tax	2,16,000	1,04,000
Less Tax @ 50%	1,08,000	52000
Net Profit	1,08,000	52000
	1,08,000	52000
EPS = Net Profit / No. of Shares	60,000	80,000
	= 1.35	= 0.65

11. * EBIT 20% of Assets.

Particulars	A	B
Earning before interest and Tax	1,00,000	1,00,000
Less Interest	-	22500
Earning before tax	1,00,000	77,500
less Tax @ 50%	50,000	38750
Profit after Tax =>	50000	38750
EPS = Profit / Shares =>	50000/50000 = 1	38750/50000 = 1.55

* EBIT 6% of assets:-

Particulars	A	B
EBIT	30,000	30,000
- Interest	-	22500
EBT	30,000	7,500
- Tax @ 50%	15000	3,750
Net Profit	15,000	3750
EPS = Profit / No. of shares	15000/50000 = 0.30	3750/25000 = 0.15

12. Ahuja T.V. Company

Particulars	Normal EBIT	EBIT inc. 20%
EBIT	4,00,000	4,80,000
- Interest	80,000	80000
EBT	3,20,000	4,00,000
- Tax @ 55%	176000	2,20,000
PAT before Pref. dividend	1,44,000	1,80,000
~~EPS~~ = ~~PAT~~ / No. of shares	144000	
- Preference dividend	44000	44000
Net Profit	100000	136000

$EPS = \frac{\text{Net Profit}}{\text{No. of shares}}$

$\frac{100000}{100000} = \boxed{1.0}$ $\qquad \frac{136000}{100000} = \boxed{13.6}$

$DFL = \frac{EBIT}{EBT}$

$= \frac{400000}{320000}$ $\qquad = \frac{480000}{400000}$

$= \boxed{1.25}$ $\qquad = \boxed{1.2}$

$= 125\%$ $\qquad = 120\%$

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13.

Sales (800000 × 60)	48,00,000
- Fixed cost	6,40,000
	41,60,000
- Variable cost (70% on sales)	33,60,000
EBIT	8,00,000
- Interest	72000
EBT	7,28,000

(i) DFL = EBIT / EBT = 800000 / 728000 = **1.098**

(ii) DOL = Total contribution / Contribution − Fixed cost

= Sales − v. cost / (Sales − v. cost) − Fixed cost

= 4800000 − 3360000 / 1440000 − 640,000

= 1440000 / 1440000 − 640,000 = 1440000 / 800000 = **1.8**

14.

DFL = EBIT / EBT

= ₹1120 Lakh / ₹320 Lakh

= **3.5**

$$DOL = \frac{\text{Total contribution}}{\text{Contribution} - \text{Fixed cost}}$$

Total contribution = EBIT + Fixed cost
= 1120 + 700
= 1820 lakh

$$= \frac{1820 \text{ lakh}}{1820 - 700} = \frac{1820}{1120} = \boxed{1.625}$$

15. Sales — 10,00,000
- Fixed cost — 2,00,000
— 8,00,000
- Variable cost — 5,00,000
→ EBIT — 3,00,000
- Interest — 25,000
→ EBT — 2,75,000
- Tax @ 50% — 1,37,500
1,37,500

(i) $EPS = \frac{137500}{20000} = \boxed{₹6.875}$

(ii) $DFL = \frac{300000}{275000} = \boxed{1.090}$

(iii) $DOL = \frac{1000000 - 500000}{500000 - 200000} = \frac{500000}{300000} = \boxed{1.666}$

(iv) Combined leverage = DFL × DOL = $1.090 \times 1.666 = \boxed{1.816}$

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Sales	5,00,000
- Fixed cost	1,40,000
	3,60,000
- variable cost	2,90,000
⇒EBIT	70,000
- Less Interest	14,000
⇒EBT	56,000
Less Tax @ 50%	28,000
	28000

(i) $EPS = \frac{EAT}{\text{No. of shares}} = \frac{28000}{20,000} = \boxed{1.40₹}$

(ii) $DFL = \frac{EBIT}{EBT} = \frac{70000}{56000} = \boxed{1.25}$

(iii) $DOL = \frac{\text{Total contribution}}{\text{Contribution - Fixed cost}}$

$= \frac{5,00,000 - 2,90,000}{2,10,000 - 1,40,000} = \frac{2,10000}{70000} = \boxed{3}$

(iv) Combined Leverage $= \frac{\text{Contribution}}{EBT}$

$= \frac{2,10,000}{56000} = \boxed{3.75}$

OR

DFL x DOL $= 1.25 \times 3 = \boxed{3.75}$

17.

Particulars	Normal sale	10% Increase
Sales	12,00,000	13,20,000
- Fixed exp	60,000	60,000
	11,40,000	12,60,000
- variable exp	6,40,000	9,24,000
EBIT	3,00,000	3,36,000
- Interest	1,20,000	1,20,000
EBT	1,80,000	2,16,000
- Tax @ 40%	56,000	86400
EAT	1,24,000	129600
	124000	129600
EPS = EAT / No. of shares	50,000	50,000
	= 2.48	= 2.592

(1) $DFL = \frac{EBIT}{EBT}$ — 10% increase

$= \frac{300000}{180,000} = 1.666$ $\quad \frac{336000}{216000} = 1.555$

(2) $DOL = \frac{\text{Total contribution}}{\text{Contribution} - \text{Fixed cost}}$

$= \frac{360000}{30000} = 1.2$ $\quad \frac{396000}{336000} = 1.178$

(3) Combined Leverage $= DFL \times DOL$

$= 1.666 \times 1.2$

$= 1.999$

$= 1.555 \times 1.178$

$= 1.832$

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18 Table showing calculation of Dividend.

Particulars	A	B
EBIT	1,00,000	1,00,000
- Interest	-	15,000
EBT	1,00,000	85,000
- Tax @ 50%	50,000	42500
EAT	50,000	42,500
EPS = EAT / No of shares	50,000 / 40,000 = [1.25₹]	42,500 / 2500 = [17₹]

*B company Enjoys financial leverage.

19.

Particulars	Alternative A	Alter. B
EBIT	1,60,000	1,60,000
- Interest (Slabwise)	20,000	74,000
EBT	1,40,000	86,000
- Tax @ 50%	70,000	43,000
EAT	70,000	43,000
EPS = EAT / No. of shares	70000 / 80000 =	43000 / 40,000 =
	0.88 P	₹ 1.075

*calculation of Interest on borrowed capital

(A) 100000 x 8% = 8000
100000 x 12% = 12000
₹ 20000

(B) 100000 x 6% = 6000
400000 x 12% = 48000
100000 x 18% = 18000
₹ 74,000

20 Bharat Ltd.

Particulars	Amt.
Sales	9,00,000
- Fixed cost	1,60,000
	7,40,000
- variable cost	5,40,000
EBIT	2,00,000
- Interest	12,000
EBT	1,88,000
- Tax @ 50%	94,000
PAT	94000

* Financial Leverage = $\frac{EBIT}{EBT}$

$= \frac{200000}{188000} = \boxed{1.063}$

* Operating Leverage = $\frac{\text{Total contribution}}{\text{contribution} - \text{Fixed cost}}$

$= \frac{360000}{200000} = \boxed{1.8}$

* Combined Leverage = $\frac{\text{Contribution}}{EBT}$

$= \frac{360000}{188,000} = \boxed{1.914}$

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21. * In the given Sum all related information is provided except EBIT, So, Here we have to assume any Percentage of EBIT for necessary calculation.

* Suppose EBIT is 25% of Assets

Particulars	A	B
EBIT	25,000	1,25,000
- Interest	9,000	60,000
EBT	16,000	65,000
- Tax @ 40%	6400	26000
PAT	9,600	39000

Financial Leverage = $\frac{EBIT}{EBT}$

$A = \frac{25000}{16000} = \boxed{1.562}$

$B = \frac{1,25,000}{65,000} = \boxed{1.923}$

Higher the leverage higher the risk. So, Company B is more risky for shareholders.

22.

Particulars	Twinkle	Ishu
EBIT	2,00,000	2,00,000
- Interest	12,000	48,000
EBT	1,88,000	1,52,000
- Tax @ 50%	94,000	76,000
EAT	94,000	76,000

$$EPS = \frac{EAT}{\text{No. of Shares}}$$

₹ Twinkle Ltd. $= \frac{94000}{40000} = \boxed{₹ 2.35}$

Ishu Ltd. $= \frac{76000}{10,000} = \boxed{₹ 7.6}$

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23 Uranee Ltd.

Particulars	90,000 units	1,25,000 units
Sales	22,50,000	31,25,000
- Fixed cost	3,00,000	3,00,000
	19,50,000	28,25,000
- Variable cost (Per unit 16)	14,40,000	20,00,000
* EBIT ✓	5,10,000	8,25,000
- Interest	1,35,000	1,35,000
EBT ✓	3,75,000	6,90,000
- Tax @ 40%	1,50,000	2,76,000
EAT	2,25,000	4,14,000
EPS = EAT / No. of Shares	225000 / 400000	414000 / 400000
	= 0.56	= 1.04

* Financial Leverage = EBIT / EBT = 5,10,000 / 3,75,000 = 8,25,000 / 6,90,000
= 1.36 = 1.19

* Operating Leverage = Total contribution / Contribution - Fixed cost
= 8,10,000 / 5,10,000 = 11,25,000 / 8,25,000
= 1.59 = 1.36

* Combined Leverage = $\frac{\text{Contribution}}{\text{EBT}}$

$= \frac{810000}{375000}$ $= \frac{11,25,000}{6,90,000}$

$= \boxed{2.16}$ $= \boxed{1.63}$

* (Note: (i) Please Refer C. Jammadas Text book for explanation Illustrations and details.

(ii) calculation done as Per information given in the Practice Sums from 1 to 23.

Best of Luck

- Amit Vegad

10/05/2020