* Leverage Analysis

Capital structure

↓

Sources of Finance

- Equity (Owner's Funds)
  - ↓
  - Equity sh. Cap.
  - Retained Earning
- Debt (Outsiders' / Borrowed Funds)
  - ↓
  - → Debentures → Int.
  - → Loans → Int
  - → Pref. shares → Div.

← Fixed Burden.

Operation Cost

- Fixed
- Variable

↓

Degree of operating Leverage

↓

Degree of Financial Leverage → Combined Leverage.

* Degree of Operating Leverage (DOL)

→ This exists due to existance of Fixed Cost in a firm's Revenue stream.

→ OL means the ability of a firm to use fixed operating costs to magnify the effect of Changes in sales on changes in Profit Before Interest & Taxes (PBIT)

$$DOL = \frac{\%\ \Delta \text{ in PBIT}}{\%\ \Delta \text{ in sales}} > 1$$

OR

$$DOL = \frac{\text{Total contribution}}{\text{EBIT (Operating Profit)}} = \frac{\text{Qty.} \times (\text{S.P.} - \text{V.C.})}{[\text{Qty.} \times (\text{S.P.} - \text{V.C.})] - \text{F.C.}}$$

Assume sales = 1,00,000 units.

1. Sales	600 lakh	→ P.U. = 600	(600 x 1,00,000)
– Variable Cost	(360) lakh	→ P.U. = 360	(360 x 1,00,000)
Contribution	240 lakh		
– Fixed cost	(140 lakh)	→ Total 140.	
Operating Profit/PBIT	100 lakh		

(a) $DOL = \frac{\text{Total contribution}}{PBIT}$

$= \frac{240 \text{ lakh}}{100 \text{ lakh}} = 2.4 \text{ times}$

$= \frac{\text{Qty. (S.P. – V.C)}}{[\text{Qty} \times (\text{S.P.} - \text{V.C})] - \text{F.C.}}$

$= \frac{1,00,000\ (600 - 360)}{[1,00,000 \times (600 - 360)] - 2140}$

$= \frac{240}{100} = 2.4 \text{ times}$

b) DOL = 2.4 means, for every 1% Δ in sales, the PBIT will change by 2.4%.

(c) If sale ↑ by 10%.

$$DOL = \frac{\%\ \Delta \text{ in PBIT}}{\%\ \Delta \text{ in sales}}$$

$$\therefore \quad 2.4 = \frac{\%\ \Delta \text{ in PBIT}}{10\%}$$

$$\therefore \quad \%\ \Delta \text{ in PBIT} = \boxed{24\%}$$

(d) ↓ 10%.

$$DOL = \frac{\%\ \Delta \text{ in PBIT}}{\%\ \Delta \text{ in sales}}$$

$$2.4 = \frac{\%\ \Delta \text{ in PBIT}}{-10\%}$$

$$\therefore \quad \%\ \Delta \text{ in PBIT} = \boxed{-24\%}$$

* Degree of Financial Leverage (DFL)

→ DFL shows the presence of Fixed Financial cost in Revenue stream

→ DFL shows the changes in EBIT on changes in EPS

Earnings Per Share

$$DFL = \frac{\%\ \Delta \text{ in EPS}}{\%\ \Delta \text{ in EBIT}} > 1$$

$$DFL = \frac{EBIT}{EBIT - Int - \frac{Pref.Div.}{(1-t)}}$$

$$EPS = \frac{\text{Profit Avail to Eq. sh holders}}{\text{No. of Eq. Shares}}$$

$$= \text{Profit Available of Eq. sh holders}$$

DOL

Sales ✓

− V.C. (V) ✓

Contribution ✓

− F.C (W) → Operations ✓

EBIT ✓

DFL

− Int. (Loan + Debentures) (✓) → Financing

PBT ✓

− Tax (✓) ✓

PAT ✓

− Pref. Div. (✓) → Financing ✓

3.

3. Project Cost = 8 Cr. Earnings = 1 Cr. (PBIT)

Alternative – I (100% Equity)

(10 lakh Eq. Sh of 80 Each.)

		Earnings Δ% = 50% ↑ ↓
PBIT	1 Cr	1.5 Cr
– Int.	0	0
PBT	1 Cr	1.5
– Tax	0	0
PAT	1 Cr	1.5
– Pref. Div.	0	0
Profit Available to Eq. sh. holders	1 Cr	1.5
EPS = Profit for Eq. sh / No. of Eq. sh	1,00,00,000 / 10,00,000	1.5 Cr / 10 lakh
	= 10₹	= 15₹

Alternative – II (50% Loan & 50% Equity) 5 lakh shares

(50% × 8 Cr.)

	Current	50% ↑
PBIT	1 Cr	1.50 Cr
– Int (10% × 4Cr)	(0.40) Cr	(0.40) Cr
PBT	0.60	1.10
– Tax	0	0
PAT	0.60	1.10
– Pref. Div.	0	0
Profit for Eq.	0.60 Cr	1.10 Cr.
EPS	= 60,00,000 / 5,00,000	= 1,10,00,000 / 5,00,000
	= 12₹	= 22.₹

* Indifference Point: The level of EBIT at which EPS under two diff. alternatives will be same.

→ Funding Required for Expansion. = ₹ 30,00,000

Tax Rate = 35% = 0.35 Face Value of Equity Share = ₹100

(i) ₹ 30,00,000 through Equity OR ₹ 15,00,000 through 10% Deb. & ₹ 15,00,000 throught Equity.

No. of shares = $\frac{30,00,000}{100}$

N_1 = 30,000

No. of Eq. shares if Financing is only Through Equity.

No. of shares = $\frac{15,00,000}{100}$

N_2 = 15,000

No. of Eq. shares if financing is done through Equity & Debt.

Indifference Point

Equity V/s Equity & Debt

EBIT = (X) ?

Int. = 10% × 15,00,000
= 1,50,000

$$\frac{X(1-t)}{N_1} = \frac{(X - Int.)(1-t)}{N_2}$$

$$\therefore \frac{X(1-0.35)}{30,000} = \frac{(X - 1,50,000) \times (1-0.35)}{15,000}$$

$$\therefore \frac{0.65X}{30,000} = \frac{0.65X - 97,500}{15,000}$$

$$\therefore 9.75X = 19.5X - 29,25,000$$

$$\therefore 9.75X = 29,25,000$$

$$\therefore X = \frac{29,25,000}{9.75}$$

$$\therefore X = 3,00,000$$

EBIT

	Equity	Eq. & Debt
EBIT	3,00,000	3,00,000
− Int	—	1,50,000
EBT	3,00,000	1,50,000
− Tax @ 35%	1,05,000	52,500
EAT	1,95,000	97,500
− Pref. Div.	—	—
Profits Avail. to Eq. sh. h.	1,95,000	97,500
No. of sh.	30,000	15,000
EPS	₹ 6.5	₹ 6.5

ii) ₹ 30 lakh Through Equity v/s & 13% Pref. sh. for ₹ 10 lakh

↓

No. of Equity shares = 30,000

Eq. Cap. for ₹ 20 lakh.

No. of Eq. = 20,000 = 20,00,000 / 100

Pref. Div. = 13% × 10,00,000

= 1,30,000

$$\frac{X(1-t)}{N_1} = \frac{X(1-t) - \text{Pref. Div.}}{N_2}$$

$$\therefore \quad \frac{0.65X}{30,000} = \frac{0.65X - 1,30,000}{20,000}$$

$$\therefore \quad 1.3X = 1.95X - 3,90,000$$

$$\therefore \quad 0.65X = 3,90,000$$

$$\therefore \quad X = \frac{3,90,000}{0.65} = \boxed{6,00,000}$$

EBIT

	Equity	Equity & Pref
EBIT	6,00,000	6,00,000
− Int.	—	—
EBT	6,00,000	6,00,000
− Tax @ 35%	(2,10,000)	(2,10,000)
EAT	3,90,000	3,90,000
− Pref. Div.	—	(1,30,000)
Profit for Eq-sh. holders	3,90,000	2,60,000
No. of sh.	30,000	20,000
EPS	13	13