

SECTION - 3

OPERATING AND FINANCIAL LEVERAGES

This Section includes

- **Operating Leverage**
- **Financial Leverage**
- **Combined Leverage**

3.1 OPERATING LEVERAGE

- 3.1.1 Operating Leverage arises from the presence of fixed operating costs. The fixed operating costs considered here include costs such as depreciation, salaries, property taxes, and advertising expenses, but do not include interest charges or financing costs.
- 3.1.2 With fixed operating expenses, a small change in sales will result in more than equal change in PBIT.
- 3.1.3 Consider the following example:

Assume that a company has the following projected income statement (given earlier in Chapter 1):

	Rs.
Sales	100,000
Less: Variable expenses	<u>60,000</u>
Contribution margin	40,000
Less: Fixed expenses	<u>30,000</u>
Income before taxes	10,000
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Degree of Operating Leverage (DOL) = $\text{Rs.}40,000 / \text{Rs.}10,000 = 4.0$

Now suppose that sales are 25% higher than projected. What is the percentage change in profits?

Percentage change in profits = DOL x percentage change in sales

Percentage change in profits = $4.0 \times 25\% = 100\%$

Verification:

	Rs.
Sales	125,000
Less: Variable expenses	<u>75,000</u>
Contribution margin	50,000
Less: Fixed expenses	<u>30,000</u>
Income before taxes	20,000
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CAPITAL BUDGETING

3.1.4 Operating leverage is measured by Degree of Operating Leverage (DOL).

$$DOL = \frac{\text{Percentage Change in PBIR}}{\text{Percentage Change in Output}}$$

$$= \frac{Q(P - V)}{Q(P - V) - F}$$

$$= \frac{\text{Contribution}}{\text{PBIT}}$$

3.1.5 As we know, PBIT is nothing but Profit Before Interest and Tax. This can be expressed by the following equation:

$$PBIT = Q \times (P - V) - F$$

Where, Q denotes the quantity produced and sold, P the selling price per unit, V the variable cost per unit, and F the fixed cost.

3.1.6 DOL and Business Risk: Business Risk here is basically the variability in PBIT, that may be caused by variability in sales and production costs.

3.2 FINANCIAL LEVERAGE

3.2.1 Financial leverage arises from the use of fixed cost financing. With fixed cost financing, a small change in PBIT will result in more than equal change in EPS (earnings per share).

3.2.2 Consider the following example:

Company	A	B	C		
Debt	0	5000	7000	8%	Interest
Equity	10000	5000	7000	50%	Tax
Total	10000	10000	10000		
PBIT	1000	1000	1000		
Interest	0	400	560		
PBT	100	600	440		
Tax	500	300	220		
PAT	500	300	220		
ROE	5.00%	6.00%	7.33%		

3.2.3 Financial leverage is measured by Degree of Financial Leverage (DFL).

$$DFL = \frac{\text{Percentage Change in EPS}}{\text{Percentage Change in PBIT}}$$



3.2.4 It flows from the definition of PBIT given above that PAT (Profit After Tax) can be represented as follows:

$$\begin{aligned}\text{PAT} &= (\text{PBIT} - I) (1 - T) \\ &= [Q \times (P - V) - F - I] (1 - T)\end{aligned}$$

3.2.5 It is well known that EPS is given by the following equation:

$$\text{EPS} = \frac{\text{PAT}}{N}$$

Where, N = Number of outstanding equity shares.

In case there is any preferred dividend D_p , then,

$$\text{EPS} = \frac{\text{PAT} - D_p}{N}$$

3.2.6 DFL and Financial Risk: Financial Risk here is basically the variability in EPS, that may be caused by financial leverage, which itself is due to the variability in PBIT.

3.3 COMBINED LEVERAGE

3.3.1 Combined or total leverage refers to the combination of operating and financial leverages.

3.3.2 Combined / Total leverage is measured by Degree of Total Leverage (DTL).

$$\text{DTL} = \frac{\text{Percentage Change in EPS}}{\text{Percentage Change in output}}$$

$$\text{DTL} = \text{DOL} \times \text{DFL}$$

3.3.3 DTL and Total organization Risk: The Operating and Financial Leverages may be combined in different proportions to off-set the negative of each and achieve an overall desirable level of risk exposure.