CHAPTER - 10

LEVERAGES

The capital structure decision is a significant managerial decision. It influences the debt-equity mix of the company, which ultimately affects the shareholder's return and risk. If the proportion of borrowed funds is more than owners' funds in the total capital structure, the return as well as the risk of the shareholders will be high. On the other hand, if the proportion of owners' funds is more than the borrowed funds in the total capital structure, the return as well as the risk of the shareholders will be much less. The leverage analysis is used by business firms to quantify risk-return relationship of different alternative capital structures.

Concept of Leverage:

The term Leverage in general refers to a relationship between two interrelated variables. In financial analysis, leverage refers to the influence of one financial variable over some other related financial variable. These financial variables may be costs, output, sales revenue, EBIT, EPS etc.

James Horne has defined leverage as 'the employment of an asset or funds for which the firm pays a fixed cost or fixed return'. The fixed cost (also called fixed operating cost) and fixed return (also called financial cost) form the basis of leverage. If there are no fixed costs, there is no leverage. The fixed costs remain constant irrespective of the level of output or sales. Hence, the employment of an asset or source of funds for which the firm has to pay fixed cost or return has a considerable influence on the earnings of equity shareholders. It is pertinent to note that while leverage may help to increase the return to the shareholders, it also increases the risk. Higher is the degree of leverage, higher is the risk as well.

Types of Leverages: There are three types of leverages. They are:

a. Operating leverage **b.** Financial leverage **c.** Combined leverage

a. Operating leverage: Operating leverage refers to the use of fixed costs in the operations of a firm. A firm has to pay fixed costs irrespective of the volume of output or sales. As the fixed costs remain the same, even a small change in sales brings about a more than proportionate change in operating profit (EBIT). This occurence is known as operating leverage.

Operating leverage is defined as the firm's ability to use fixed operating costs to magnify the effect of changes in sales on its operating profit (E.B.I.T)

Degree of Operating Leverage: The degree of operating leverage measures the impact of changes in sales on operating income (EBIT). It is calculated as follows:

$$\text{D.O.L.} = \frac{\text{Percentage change in EBIT}}{\text{Percentage change in Sales}} \textbf{ (OR) } \frac{\text{Contribution}}{\text{EBIT}}$$

Degree of operating leverage shows the responsiveness of EBIT to changes in sales. For example, if DOL is 2.5, it means that 1 per cent increase in sales would lead to 2.5 per cent increase in EBIT. The following example shows the impact of operating leverage.

Illustration 1 : A firm sells a product for Rs.150 p.u. Currently the firm produces and sells 4,000 units. The variable cost per unit is Rs.100 and the fixed operating costs are Rs. 1,20,000. Assume the sales of the company increases by: (a) 1 % and (b) decreases by 1 %. What would be the impact on operating leverage?

Impact of Operating Leverage

	Present Position	Expected 1% Increase in sales	Expected 1% Decrease in sales
Sales (in units)	4,000	4,040	3,960
	Rs.	Rs.	Rs.
Sales (Rs.150 p.u.)	6,00,000	6,06,000	5,94,000
Less: V. Costs (Rs.100 p.u.)	4,00,000	4,04,000	3,96,000
Contribution	2,00,000	2,02,000	1,96,000
Less: Fixed operating costs	1,20,000	1,20,000	1,20,000
Operating Profit	80,000	82,000	76,000
Increase / Decrease in EBIT	Nil	(+) 2.5%	(-) 5%

From the above it is clear that 1 per cent increase in sales produces 2.5 per cent increase in EBIT. (2,000/80,000 x 100 = 2.5 %) Similarly, we find that 1 per cent decrease in sales from present situation, produces 5 per cent decrease in EBIT. (4,000 / 80,000 x 100 = 5%) .

A firm will not have an operating leverage if there are no fixed costs. In such cases, the operating profits or EBIT varies in direct proportion to the changes in sales level. This is illustrated as follows:

	Present Level 4000 units	Expected Level 1% Increase in sales 4040 units
	Rs.	Rs.
Sales (Rs. 150 p.u.)	6,00,000	6,06,000
Less: Variable costs	4,00,000	4,04,000
Contribution	2,00,000	2,02,000
Less: Fixed costs	Nil	Nil
Operating Profit	2,00,000	2,02,000
Increase in EBIT	Nil	+ 1%

From the above it is clear that 1 per cent increase in sales produces 1 per cent increase in EBIT(2,000 /2,00,000 x 100) This means that there is no operating leverage. Operating leverage occurs only when the quotient exceeds one.

The operating leverage at any level of sales is called its degree. The degree of operating leverage is also calculated as follows:

$$\text{Degree of operating leverage} = \frac{\text{Contribution}}{\text{EBIT}}$$

Illustration 2 : A firm sells a product at Rs.10 per unit. The firm produces and sells 400 units. The variable cost per unit is Rs.5. Calculate the operating leverage in each of the following situations:
1. When fixed costs are Rs.500 2. When fixed costs are Rs. 1,000 and
3. When fixed costs are Rs.1,500

Solution: **Statement showing Operating Leverage**

	Situation 1	Situation 2	Situation 3
Sales (400 x 10)	4,000	4,000	4,000
Less: V.Cost (400 x 5)	2,000	2,000	2,000
Contribution	2,000	2,000	2,000
Less: Fixed cost	500	1,000	1,500
Operating Profit (EBIT)	1,500	1,000	500
Operating Leverage =	2000/1500	2000/1000	2000/500
OPL =	1.33	2	4

Favourable and Unfavourable Operating Leverage: Operating leverage may be favourable or unfavourable. If the contribution (Sales minus Variable cost) is more than fixed costs, operating leverage is said to be favourable. On the other hand, if the contribution is less than the fixed costs, the operating leverage is said to be unfavourable.

High and Low Operating Leverage: The degree of operating leverage depends upon the amount of fixed cost element in the cost structure. A firm is said to have a high degree of operating leverage, if it employs a greater amount of fixed cost and a smaller amount of variable cost. On the other hand, a firm will have low operating leverage, if it employs a greater amount of variable cost and a smaller amount of fixed cost. A high operating leverage is highly risky because the margin of safety is very low. Hence, no firm likes to operate under conditions of a high degree of operating leverage. A low operating leverage, on the contrary, gives cushion to the management by providing high margin of safety against fluctuations in sales.

Significance of Operating Leverage: Analysis of operating leverage of a firm is very useful to the financial manager. It tells the impact of change in sales on operating income. A firm with a high operating leverage has a relatively greater effect on EBIT for small change in sales. A high degree of operating leverage can dramatically increase the operating profit. But if there is a decline in sales level, operating profit may be wiped out and a loss may occur. Therefore, high degree of operating leverage is good when sales are rising and bad when they are falling.

As stated earlier, operating leverage depends on fixed costs. If the fixed costs are higher, the higher would be the operating leverage as well as risks. The risk refers to the risk of the firm not being able to cover its fixed operating costs. If the operating leverage is high, it means that the break-even point would be reached at a high level of sales. Consequently, the margin of safety would be low. Therefore, it is preferred to operate sufficiently above the break-even point to avoid dangers of fluctuations in sales and profits.

a. Operating risk : Operating risk refers to variability of EBIT. The variability of EBIT may arise due to variability of sales and variability of expenses. In a given environment, operating risk cannot be avoided.

i. Variability of Sales: The variability of sales revenue is a major determinant of operating risk. The sales of the company may fluctuate on account various factors such as changes in general economic conditions, availability of raw materials, technological changes, competition, shifts in consumer preferences, change in company's management, change in investment policy, strike in the company etc.

ii. Variability of expenses: Variability of EBIT is further affected by the composition of fixed and variable expenses. Higher the proportion of fixed expenses relative to variable expenses, higher the degree of operating leverage. A high degree of operating leverage leads to faster increase in EBIT when sales are rising. In bad times when sales are falling, EBIT will decline at a faster rate than fall in sales. Operating leverage causes wide fluctuations in EBIT with varying sales. Variable expenses may also vary on account of changes in input prices and may also contribute to the variability of EBIT.

b. Financial Leverage: The use of long-term debt and preference share capital along with the owner's equity in the capital structure is called financial leverage or trading on equity. It signifies the presence of fixed interest and / or fixed dividend bearing securities in the capital structure of a firm. It is intended to increase or magnify the return to the equity shareholders.

Financial leverage is defined as the ability of a firm to use fixed financial charges to magnify the effects of changes in EBIT on EPS.

Degree of Financial Leverage: Degree of financial leverage measures the impact of changes in EBIT on EPS. It can be calculated as follows.

$$D.F.L. = \frac{\text{Percentage change in EPS}}{\text{Percentage change in EBIT}} \quad \textbf{(OR)} \quad \frac{\text{EBIT}}{\text{EPS}}$$

Degree of financial leverage shows the responsiveness of EPS to changes in EBIT. For example, if the degree of financial leverage is 2, it implies that one per cent increase in EBIT would lead to two per cent increase in EPS. The following example will highlight the effect of financial leverage.

Illustration 3 : A company has 1,00,000, 10% debentures and 5,000 equity share of Rs.10 each. It is in 50% tax bracket. Calculate the EPS for each of the following levels of EBIT (a) Rs.50,000, (b) Rs.30,000 (c) Rs.70,000.Calculate the degree of financial leverage taking EBIT level of Rs.50,000 as present level.

Solution: **EPS at various EBIT levels**

	Present level	Expected Levels	
		Case I (-) 40%	Case II (+) 40%
	Rs.	Rs.	Rs.
EBIT	50,000	30,000	70,000
Less: Interest	10,000	10,000	10,000
Earnings Before Tax	40,000	20,000	60,000
Less: Tax	20,000	10,000	30,000
Earnings After Tax	20,000	10,000	30,000
No. Equity Shares	5,000	5,000	5,000
EPS	4	2	6
Decrease / Increase in EPS	Nil	(-)50%	(+)50%

Comment: **Case I :** A 40% decrease in EBIT (from Rs.50,000 to Rs.30,000) leads to a 50% decrease in EPS (from Rs.4 to Rs.2)

Case II : A 40% increase in EBIT (from Rs.50,000 to Rs.70,000) results in 50% increase in EPS (from Rs.4 to Rs.6)

Favourable and Unfavourable Financial Leverage: Financial leverage may be favourable or unfavourable. If the company is able to generate a return which is higher than the cost of borrowings, the leverage is said to be favourable. On the other hand, if the company earns a return, which is less than the cost of borrowings, leverage is said to be unfavourable.

Trading on Equity and Financial Leverage:

The financial leverage is also sometimes termed as trading on equity. However, many of the authors on financial management are of the opinion that the term trading on equity should be used for the term financial leverage only when the financial leverage is favourable. The company resorts to trading on equity with the objective of earning more on fixed charges funds than their costs. For example, suppose a firm borrows Rs.10,000 at 8 % interest p.a. and earns a return of 12%. The excess of earnings over interest (12 % minus 8 %) 4 % belongs to the shareholders and this represent profit from financial leverage. On the other hand, if the firm could earn only 6 %, the loss to the shareholders would be 2% as they have to pay a fixed interest of 8 %. Thus, the leverage has the potential for increasing the earnings of shareholders as well as creating the risks of loss to them. Therefore, it is a double-edged sword.

High and Low Financial leverage: Every firm has to make its own decision regarding the quantum of funds to be borrowed. If the amount of borrowings (debt and preference share capital) is relatively large in proportion to equity share capital, the company is said to be trading on thin equity. On the other hand, if the amount of borrowed funds is comparatively low in relation to equity share capital, the company is said to be trading on thick equity.

Significance of Financial Leverage: Financial leverage helps the finance manager in designing the appropriate capital structure. One of the objectives of planning an appropriate capital structure is to maximise the return to the equity shareholders' funds or maximise the EPS.

Financial leverage is a double-edged sword. On one hand, it increases the earnings per share and on the other, it increases financial risk. A high financial leverage means high fixed financial costs and high financial risk i.e. as the debt component in capital structure increases, the financial leverage increases and at the same time financial risk increases i.e. risk of insolvency increases.

The finance manager, therefore, is required to trade off i.e. has to bring a balance between risk and return for determining the appropriate amount of debt in the capital structure of a firm.

Financial risk: Financial risk refers to the variability in EPS caused by the use of financial leverage. Financial risk arises due to excessive use of borrowed capital. Firms operating on larger amount of debt capital to total capital are usually exposed to such a risk. A totally equity financed firm will have no financial risk. Financial risk is, therefore, an avoidable risk if the firm decides not to use any debt in the capital structure. Two firms exposed to same degree of operating risk, can differ with respect to financial risk when they finance their assets differently.

Composite Leverage: Composite leverage is a combination of operating leverage and financial leverage.

Operating leverage affects the firm's operating profit which is the result of production. The degree of operating leverage shows the effect of changes in sales on EBIT.

Financial leverage affects the earnings of shareholders or EPS. It is the result of financial decision. The degree of financial leverage shows the effect of changes in EBIT on EPS.

As a result of the combination of operating and financial leverages, fluctuations are caused in EPS. The composite leverage measures the combined effect of operating leverage and financial leverage. It shows the effect of changes in sales on EPS.

Degree of Combined Leverage (DCL): It is calculated as follows:

$$DCL = DOL \times DFL$$

$$= \frac{\text{Contribution}}{\text{EBIT}} \times \frac{\text{EBIT}}{\text{EBT}} = \frac{\text{Contribution}}{\text{EBT}} \quad \textbf{(OR)}$$

$$= \frac{\text{Percentage change in EPS}}{\text{Percentage change in Sales}}$$

Degree of Combined Leverage shows the responsiveness of EPS to changes in Sales. For example, if DCL is 4, it means that one per cent change in sales would lead to 4 per cent change in EPS.

Significance of Combined Leverage:

The ratio of contribution to earnings before tax, given by combined leverage shows the combined effect of operating and financial leverage.

a. A high operating leverage and a high financial leverage combination is very risky. If the company is producing and selling at a high level, it will make huge profits for its shareholders. But even a small fall in the level of operations would result in a tremendous fall in EPS. A company must, therefore, maintain a proper balance between these two leverages.

b. A low operating leverage and a low financial leverage indicates that the company is following very cautious and conservative approach on both production front as well as financial front. Such a conservative approach may mean that the company is losing profitable opportunities. Moreover low debt financing will raise the overall cost of capital to the firm.

c. A high operating leverage and a low financial leverage reveals that the production policy is aggressive but so far as financing policy is concerned, a cautious approach is being followed. The higher amount of risk involved in high operating leverage is balanced by low financial leverage.

d. A low operating leverage and a high financial leverage shows a bold financial policy (a high debt-equity mix). Higher risk due to high financial leverage is counter balanced by a low operating leverage. This enables the management to pursue an aggressive production policy by way expansion or diversification, take the fullest possible advantage of growing business opportunities. A low operating leverage implies the company reaches its break-even point at a lower of sales. Therefore, the risk is minimised.

From the above it is clear that the management should avoid the combination of high OL and high FL or low OL and low FL as far as possible. From the shareholders' point of view, a low OL and a high FL combination is considered to be an ideal situation for the maximisation of profits.

Thus, leverages play a vital role in financial decision making. Both operating leverage and financial leverage should be paid due attention to have a balanced capital structure and maximise the return on shares. More dependence on high financial leverage without paying due attention to operating leverage results in lop sided capital structure,

high incidence of fixed charges, low profits and ultimately an early dissolution.

Test Questions

1. Explain the term leverage. What are its types?
2. What is operating leverage? Explain its significance.
3. What is financial leverage? Discuss its significance
4. What is composite leverage? How it is measured?
5. Define operating and financial leverage. How can you measure the degree of operating and financial leverage? Illustrate with an example.
6. What is financial risk? How it differs from operating risk?
7. Explain the impact of various combinations of operating and financial leverage? Which combination is considered to be an ideal situation for a company?