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CAIIB PAPER-3

Module-B Unit-2

ADVANCED BUSINESS & FINANCIAL MANAGEMENT (ABFM)

CAIIB Paper 3 (ABFM) Module B Unit 2: Financial And Operating Leverages

Financial Leverage

- The owners of a business (equity shareholders), aim to enhance return on their investment.
- The measure of this return is Earning Per Share (EPS).
- When they conduct business without any debt, they achieve a certain EPS in the normal course of business.
- If they bring more equity, the profit in absolute terms will increase but the EPS will remain the same.
- Financial leverage means enhancing EPS without shareholders bringing money themselves but by borrowing.
- Through debt, an organisation will acquire assets which will add value to the business.
- The assumption here is that the cost of the borrowed funds will be less than the value added by these additional assets, purchased through the debt/borrowing

Calculating Financial Leverage

There is no one standard formula to calculate financial leverage. The important common methods to calculate it are as under:

- **Debt- to- Assets ratio**: This is calculated as Total Debt/ Total Assets
- **Debt- to- Equity ratio**: This is calculated as Total Debt/ Total Equity
- **Debt-to EBIDTA ratio**: This is calculated as Total Debt /EBIDTA
- Du-Pont analysis uses the "equity multiplier" as a measure of financial leverage. **This is calculated as**: Equity Multiplier = Total assets/ Total Equity
- **Interest Coverage ratio**: This is calculated as EBIT/ Interest expense

Degree Of Financial Leverage And Its Behaviour

- Financial leverage is a double edged sword.
- It may enhance the return on equity and, beyond a point, affect it adversely too.
- The fundamental rule of moderate, optimal or over use will apply here.
- In a smaller scenario, the business can afford to go for use above optimal level since the risk or the loss, if any, being small can be controlled easily.
- An optimal level is one which is just the right mix of equity and debt.
- How one arrives at the 'right' is a matter of fact and realistic estimate of cost verses benefit, after the exercise of fund infusion is efficiently completed.
- The businessman will estimate the value of business or assets once the borrowed funds are repaid and determine whether that level could have been achieved without the leverage.
- A scientific conversion of modest, optimal and over use into numbers will give you the degrees of leverage.

- In a large project, one has to adopt a cautious approach because risks too will be very high and above optimal leverage can prove to be disastrous.
- For calculating the degree of financial leverage, we seek to establish correlation between the operating profit (EBIT) and the interest expense, which is assumed to be a fixed expense.

Degree of financial leverage is defined as ratio of percentage change in EPS and percentage change in EBIT, and can be mentioned as under:

$$\text{Degree of Financial Leverage (DFL)} = \frac{\text{Percentage change in earnings per share (EPS)}}{\text{Percentage change in earnings before interest and tax (EBIT)}}$$

$$DFL = \frac{\Delta EPS / EPS}{\Delta EBIT / EBIT}$$

- **Δ**EPS means change in EPS and
- ΔEBIT means change in EBIT.

This formula can be further refined in view of the fact that ΔEPS/ EPS is equal to ΔEBT/ EBT (as tax rate and number of shares, which correlate EPS and EBT are constants), as under:

- DFL = ΔEBT/ EBT ΔEBIT/ EBIT
- Further, any marginal change in EBT will be equal to same change in EBIT as interest (I) is assumed to be a fixed amount.
- For example; if EBIT = Rs. 100 and I = Rs. 20, change in EBIT to Rs. 101 from 100 will result in change in EBT to Rs. 81 from Rs. 80. Therefore, ΔEBIT is equal to ΔEBT. So the above formula can be modified as;

DFL = ΔEBT/ EBT / ΔEBIT/ EBIT Or, DFL = EBIT /EBT

Degree of Financial Leverage (DFL) = Earnings before interest and tax(EBIT) / Earnings before tax(EBT)
Where, EBIT = Sales - (Variable cost + Fixed cost excluding interest)
EBT = EBIT – Interest

ILLUSTRATION

A firm's details are as under:

Sales (@100 per unit) Rs. 24,00,000

Variable Cost 50%

Fixed Cost Rs. 10,00,000

It has borrowed Rs. 10,00,000 @ 10% p.a. and its equity share capital is Rs. 10,00,000 (Rs. 100 each).

Consider tax @ 50%.

Calculate its Degree of Financial Leverage

	(Rs.)
Sales	24,00,000
Less: Variable cost	12,00,000
Contribution	12,00,000
Less: Fixed cost	10,00,000
EBIT	2,00,000
Less: Interest	1,00,000
EBT	1,00,000
Less: Tax (50%)	50,000
EAT	50,000
No. of equity shares	10,000
EPS	5

$$\text{Degree of Financial Leverage} = \frac{\text{EBIT}}{\text{EBT}} = \frac{2,00,000}{1,00,000} = 2 \text{ times}$$

Operating Leverage

As discussed above, in financial leverage, we establish a correlation between the fixed financial cost i.e. interest and the profit of the business.

In operating leverage, we consider other fixed expenses except interest and correlate these to the profit.

Consider the example of a wholesaler, who has got very low fixed costs but low contribution (difference between sales price and purchase price).

This business will be in profit even if the sales level comes down substantially as the fixed costs are quite low.

On the other hand, a business with high fixed cost like a hospital, will find any substantial drop in business to be disastrous even though the variable costs are low and consequently the contribution is high.

Degree Of Operating Leverage and Its Behaviour

The formula used is:

Degree of Operating Leverage (DOL) = % Change in EBIT/ % Change in Sales

Mathematically:

DOL = ΔEBIT/EBIT Δ Sales Quantity/Sales Quantity

- Δ Denotes change
- This formula can be further refined in the light of the fact
- EBIT = Sales quantity (Price per unit- variable cost per unit) – Fixed costs and, therefore,
- Δ EBIT = Δ Sales quantity (Price per unit- variable cost per unit) as the Fixed cost is a constant amount.

The rewritten formula will be:

DOL = Sales quantity (Price per unit-variable cost per unit) / EBIT

DOL = Contribution / Earnings Before Interest and Taxes (EBIT)

Illustration 1: Calculate Degree of Operating Leverage when, a company

- sells 1000 units of product X at Rs. 50
- variable cost of Rs. 30 per unit and
- fixed cost of Rs. 15,000.

Solution

Particulars	Product X
	(Rs.)
Sales (50 x 1000 units)	50,000
Variable Cost (30 x 1000 units)	30,000
Contribution	20,000
Fixed Cost	15,000
Profit (EBIT)	5,000

$$\text{Degree of Operating Leverage} = \frac{\text{Contribution}}{\text{EBIT}} = \frac{20,000}{5,000} = 4 \text{ times}$$

Combined Or Total Leverage

This is a combination of financial and operative leverages. Here the fixed costsinclude both the operating fixed costs and financial fixed costs (interest). In such a situation, a marginal percentage change in revenue leads to disproportionate percentage change in EBT. For example, a 10% increase in revenue may increase EBT and consequently, the EPS by 15%. Similarly, a 10% fall in revenue may decrease EBT and consequently, the EPS by more than 10%. The following formula is used for calculating the degree of total leverage (DTL)

$$\text{Degree of Total leverage (DTL)} = \frac{\text{Percentage change in EBT}}{\text{Percentage change in Sales}}$$

It is a product of both financial and operating leverages and can be written as:

DTL = DFL × DOL

= EBIT/EBT × Contribution/ EBIT

= Contribution/EBT

ILLUSTRATION

A firm has sales of Rs. 10,00,000, variable cost of Rs. 7,00,000 and fixed costs of Rs. 2,00,000 and debt of Rs. 5,00,000 at 10% rate of interest. What are the operating, financial and combined leverages?

SOLUTION:

Statement of Profit	(Amt in Rs.)
Sales	10,00,000
Less: Variable Cost	7,00,000
Contribution	3,00,000
Less: Fixed Cost	2,00,000
EBIT	1,00,000
Less: Interest @ 10% on 5,00,000	50,000
Earnings before tax (EBT)	50,000

$$\text{Operating Leverage} = \frac{\text{Contribution}}{\text{EBIT}} = \frac{3,00,000}{1,00,000} = 3$$

$$\text{Financial Leverage} = \frac{\text{EBIT}}{\text{EBT}} = \frac{1,00,000}{50,000} = 2$$

$$\text{Combined Leverage} = \frac{\text{Contribution}}{\text{EBT}} = \frac{3,00,000}{50,000} = 6$$

ILLUSTRATION

Z Ltd has estimated that for a new product, the break-even point is 2,000 units, if the items are sold for Rs14 per unit. The Cost Accounting department has currently identified variable cost of Rs. 9 per unit. Calculate the degree of operating leverage for sales volume of 2,500 units and 3,000 units. What do you infer from the degree of operating leverage at the sales volumes of 2,500 units and 3,000 units and their difference if any?

Statement of Operating Leverage

Particulars	2,500 Units	3,000 Units
Sales @ Rs. 14 per unit	35,000	42,000
Variable cost @ Rs. 9 per unit	22,500	27,000
Contribution	12,500	15,000
Fixed cost Rs. [2,000 × (14 - 9)]	10,000	10,000
EBIT	2,500	5,000
Degree of Operating Leverage = $\frac{\text{Contribution}}{\text{EBIT}}$	$\frac{12,000}{2,500}$	$\frac{15,000}{5,000}$
Degree of Operating Leverage	5	3

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