**Practice Questions and Solutions for Virtual Coaching Classes**

**Paper 8A: Financial Management**

**Topic: Financing Decisions – Leverages**

**Illustration-1**

*A Company produces and sells 10,000 shirts. The selling price per shirt is ₹ 500. Variable cost is ₹ 200 per shirt and fixed operating cost is ₹ 25,00,000.*

*(a) CALCULATE operating leverage.*

*(b) If sales are up by 10%, then COMPUTE the impact on EBIT?*

**Solution:**

**(a)** Statement of Profitability

| | ₹ |
|---|---|
| Sales Revenue (10,000 × 500) | 50,00,000 |
| *Less:* Variable Cost (10,000 × 200) | 20,00,000 |
| Contribution | 30,00,000 |
| *Less:* Fixed Cost | 25,00,000 |
| EBIT | 5,00,000 |

$$\text{Operating Leverage} = \frac{\text{Contribution}}{\text{EBIT}} = \frac{₹\,30\,\text{lakhs}}{₹\,5\,\text{lakhs}} = 6\ \text{times}$$

**(b)** Operating Leverage (OL) $= \dfrac{\%\,\text{Change in EBIT}}{\%\,\text{Change in Sales}}$

$$6 = \frac{X / 5,00,000}{5,00,000/50,00,000}$$

$$X = ₹\ 3,00,000$$

$\therefore \Delta\text{EBIT} = ₹\ 3,00,000/5,00,000 = 60\%$

**Illustration-2**

*Continuing Illustration 1, the company also had taken loan of ₹ 7,00,000 at 10%.*

*Calculate Financial Leverage.*

**Solution:**

Statement of Profitability:

| | ₹ |
|---|---|
| Sales Revenue (10,000 × 500) | 50,00,000 |
| *Less:* Variable Cost (10,000 × 200) | 20,00,000 |
| Contribution | 30,00,000 |
| *Less:* Fixed Cost | 25,00,000 |
| EBIT | 5,00,000 |
| Less: Interest (7,00,000 x 10%) | 70,000 |
| EBT | 4,30,000 |

Financial Leverage = EBIT/EBT = 5,00,000/4,30,000 = 1.16 (approx.)

**Illustration-3**

*In Illustration 2, calculate combined Leverage.*

**Solution:**

Statement of Profitability:

| | ₹ |
|---|---|
| Sales Revenue (10,000 × 500) | 50,00,000 |
| *Less:* Variable Cost (10,000 × 200) | 20,00,000 |
| Contribution | 30,00,000 |
| *Less:* Fixed Cost | 25,00,000 |
| EBIT | 5,00,000 |
| Less: Interest (7,00,000 x 10%) | 70,000 |
| EBT | 4,30,000 |

Combined Leverage

= Contribution/EBT = 30,00,000/4,30,000 = 6.98 (approx.)

OR

= OL x FL = 6 x 1.16 = 6.96 (approx.)

**Illustration-4**

*A firm's details are as under:*

| | |
|---|---|
| *Sales (@100 per unit)* | *₹ 24,00,000* |
| *Variable Cost* | *50%* |
| *Fixed Cost* | *₹ 10,00,000* |

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

*Consider tax @ 50 %.*

*CALCULATE:*

*(a) Operating Leverage*

*(b) Financial Leverage*

*(c) Combined Leverage*

*(d) Return on Investment*

*(e) If the sales increases by ₹ 6,00,000; what will the new EBIT?*

**Solution:**

| | ₹ |
|---|---|
| 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 |

(a) Operating Leverage $= \frac{12,00,000}{2,00,000} = 6 \text{ times}$

(b) Financial Leverage $= \frac{2,00,000}{1,00,000} = 2 \text{ times}$

(c) Combined Leverage = OL × FL = 6 × 2 = 12 times.

(d) R.O. I $= \frac{50,000}{10,00,000} \times 100 = 5\%$

Here ROI is calculated as ROE i.e. $\frac{\text{EAT} - \text{Pref.Dividend}}{\text{Equity shareholders' fund}}$

(e) Operating Leverage = 6

$$6 = \frac{\Delta \text{EBIT}}{0.25}$$

$$\Delta \text{EBIT} = \frac{6 \times 1}{4} = 1.5$$

Increase in EBIT = ₹ 2,00,000 × 1.5 = ₹ 3,00,000

New EBIT = 5,00,000

**Illustration-5**

*From the following information, prepare Income Statement of Company A & B:*

| ***Particulars*** | ***Company A*** | ***Company B*** |
|---|---|---|
| *Margin of safety* | *0.20* | *0.25* |
| *Interest* | *₹ 3000* | *₹ 2000* |
| *Profit volume ratio* | *25%* | *33.33%* |
| *Financial Leverage* | *4* | *3* |
| *Tax rate* | *45%* | *45%* |

**Solution:**

**Income Statement**

***(Amount in ₹)***

| **Particulars** | **Company A** | **Company B** |
|---|---|---|
| Sales | 80,000 | 36,000 |
| *Less:* Variable Cost | 60,000 | 24,000 |
| Contribution | 20,000 | 12,000 |
| *Less:* Fix Cost | 16,000 | 9,000 |
| EBIT | 4,000 | 3,000 |
| *Less:* Interest | 3,000 | 2,000 |
| EBT | 1,000 | 1,000 |
| *Less:* Tax (45%) | 450 | 450 |
| | 550 | 550 |

**Working Notes:**

**(i) Company A**

Financial Leverage = EBIT/(EBIT- Interest)

4/1 = EBIT/(EBIT- ₹ 3,000)

4EBIT – ₹ 12,000 = EBIT

3EBIT = ₹ 12,000

EBIT = ₹ 4,000

**Company B**

Financial Leverage = EBIT/(EBIT - Interest)

3/1 = EBIT/ (EBIT – ₹ 2,000)

3EBIT – ₹ 6000 = EBIT

2EBIT = ₹ 6,000

EBIT = ₹ 3,000

**(ii) Company A**

Operating Leverage = 1/Margin of Safety

= 1/0.20 = 5

Operating Leverage = Contribution/EBIT

5 = Contribution/₹ 4,000

Contribution = ₹ 20,000

**Company B**

Operating Leverage = 1/Margin of Safety

= 1/0.25 = 4

Operating Leverage = Contribution/EBIT

4 = Contribution/₹ 3,000

Contribution = ₹ 12,000

**(iii) Company A**

Profit Volume Ratio = 25%(Given)

Profit Volume Ratio = Contribution/Sales * 100

25% = ₹ 20,000/Sales

Sales = ₹ 20,000/25%

Sales = ₹ 80,000

**Company B**

Profit Volume Ratio = 33.33%

Therefore, Sales = ₹ 12,000/33.33%

Sales = ₹ 36,000

**Illustration-6**

*A company had the following Balance Sheet as on 31st March, 2020:*

| ***Liabilities*** | ***(₹in crores)*** | ***Assets*** | ***(₹in crores)*** |
|---|---|---|---|
| *Equity Share Capital (50 lakhs shares of ₹10 each)* | *5* | | |
| *Reserves and Surplus* | *1* | *Fixed Assets (Net)* | *12.5* |
| *15% Debentures* | *10* | *Current Assets* | *7.5* |
| *Current Liabilities* | *4* | | |
| | ***20*** | | ***20*** |

*The additional information given is as under:*

| | |
|---|---|
| *Fixed cost per annum (excluding interest)* | *₹4 crores* |
| *Variable operating cost ratio* | *65%* |
| *Total assets turnover ratio* | *2.5* |
| *Income Tax rate* | *30%* |

*Required:*

*CALCULATE the following and comment:*

*(i) Earnings Per Share*

*(ii) Operating Leverage*

*(iii) Financial Leverage*

*(iv) Combined Leverage*

**Solution:**

Total Assets = ₹ 20 crores

Total Asset Turnover Ratio = 2.5

Hence, Total Sales = 20 × 2.5 = ₹ 50 crores

**Computation of Profit after Tax (PAT)**

| | (₹ in crores) |
|---|---|
| Sales | 50.00 |
| *Less*: Variable Operating Cost @ 65% | 32.50 |
| Contribution | 17.50 |
| *Less*: Fixed Cost (other than Interest) | 4.00 |
| EBIT | 13.50 |
| *Less*: Interest on Debentures (15% × 10) | 1.50 |
| PBT | 12.00 |
| *Less*: Tax @ 30% | 3.60 |
| PAT | 8.40 |

**(i) Earnings per Share**

$$EPS = \frac{8.40 \text{ crores}}{\text{Number of Equity Shares}} = \frac{8.40 \text{ crores}}{50,00,000} = ₹ 16.80$$

It indicates the amount the company earns per share. Investors use this as a guide while valuing the share and making investment decisions. It is also a indicator used in comparing firms within an industry or industry segment.

**(ii) Operating Leverage**

$$\text{Operating Leverage} = \frac{\text{Contribution}}{\text{EBIT}} = \frac{17.50}{13.50} = 1.296$$

It indicates the choice of technology and fixed cost in cost structure. It is level specific. When firm operates beyond operating break-even level, then operating leverage is low. It indicates sensitivity of earnings before interest and tax (EBIT) to change in sales at a particular level.

**(iii) Financial Leverage**

$$\text{Financial Leverage} = \frac{\text{EBIT}}{\text{PBT}} = \frac{13.50}{12.00} = 1.125$$

The financial leverage is very comfortable since the debt service obligation is small vis-à-vis EBIT.

**(iv) Combined Leverage**

$$\text{Combined Leverage} = \frac{\text{Contribution}}{\text{EBIT}} \times \frac{\text{EBIT}}{\text{PBT}}$$

Or,

= Operating Leverage × Financial Leverage

= 1.296 × 1.125 = 1.458

The combined leverage studies the choice of fixed cost in cost structure and choice of debt in capital structure. It studies how sensitive the change in EPS is vis-à-vis change in sales. The leverages operating, financial and combined are used as measurement of risk.

**Illustration-7**

*Betatronics Ltd. has the following balance sheet and income statement information:*

***Balance Sheet as on March 31st 2020***

| ***Liabilities*** | ***₹*** | ***Assets*** | ***₹*** |
|---|---|---|---|
| *Equity capital (₹ 10 per share)* | *8,00,000* | *Net fixed assets* | *10,00,000* |
| *10% Debt* | *6,00,000* | *Current assets* | *9,00,000* |
| *Retained earnings* | *3,50,000* | | |
| *Current liabilities* | *1,50,000* | | |
| | *19,00,000* | | *19,00,000* |

***Income Statement for the year ending March 31st 2020***

| ***Particulars*** | ***₹*** |
|---|---|
| *Sales* | *3,40,000* |
| *Operating expenses (including ₹ 60,000 depreciation)* | *1,20,000* |
| *EBIT* | *2,20,000* |
| *Less: Interest* | *60,000* |
| *Earnings before tax* | *1,60,000* |
| *Less: Taxes* | *56,000* |
| *Net Earnings (EAT)* | *1,04,000* |

*(a) DETERMINE the degree of operating, financial and combined leverages at the current sales level, if all operating expenses, other than depreciation, are variable costs.*

*(b) If total assets remain at the same level, but sales (i) increase by 20 percent and (ii) decrease by 20 percent, COMPUTE the earnings per share at the new sales level?*

**Solution:**

**(a) Calculation of Degree of Operating (DOL), Financial (DFL) and Combined leverages (DCL).**

$$DOL = \frac{₹\,3,40,000 - ₹\,60,000}{₹\,2,20,000} = 1.27$$

$$DFL = \frac{₹\,2,20,000}{₹\,1,60,000} = 1.38$$

DCL = DOL×DFL = 1.27×1.38 = 1.75

**(b) Earnings per share at the new sales level**

| | Increase by 20% | Decrease by 20% |
|---|---|---|
| | (₹) | (₹) |
| Sales level | 4,08,000 | 2,72,000 |
| *Less:* Variable expenses | 72,000 | 48,000 |
| *Less:* Fixed cost | 60,000 | 60,000 |
| Earnings before interest and taxes | 2,76,000 | 1,64,000 |
| *Less:* Interest | 60,000 | 60,000 |
| Earnings before taxes | 2,16,000 | 1,04,000 |
| *Less:* Taxes | 75,600 | 36,400 |
| Earnings after taxes (EAT) | 1,40,400 | 67,600 |
| Number of equity shares | 80,000 | 80,000 |
| EPS | 1.76 | 0.85 |

**Working Notes:**

(i) Variable Costs = ₹ 60,000 (total cost – depreciation)

(ii) Variable Costs at:

(a) Sales level, ₹ 4,08,000 = ₹ 72,000 (increase by 20%)

(b) Sales level, ₹ 2,72,000 = ₹ 48,000 (decrease by 20%)

**Illustration-8**

*CALCULATE the operating leverage, financial leverage and combined leverage from the following data under Situation I and II and Financial Plan A and B:*

| | |
|---|---|
| *Installed Capacity* | *4,000 units* |
| *Actual Production and Sales* | *75% of the Capacity* |
| *Selling Price* | *₹ 30 Per Unit* |
| *Variable Cost* | *₹ 15 Per Unit* |

*Fixed Cost:*

| | |
|---|---|
| *Under Situation I* | *₹ 15,000* |
| *Under Situation-II* | *₹ 20,000* |

*Capital Structure:*

| | ***Financial Plan*** | |
|---|---|---|
| | ***A (₹)*** | ***B (₹)*** |
| *Equity* | *10,000* | *15,000* |
| *Debt (Rate of Interest at 20%)* | *10,000* | *5,000* |
| | *20,000* | *20,000* |

**Solution:**

| **Operating Leverage:** | **Situation-I** | **Situation-II** |
|---|---|---|
| | **₹** | **₹** |
| Sales (S) | 90,000 | 90,000 |
| 3,000 units @ ₹ 30/- per unit | | |
| *Less:* Variable Cost (VC) @ ₹ 15 per unit | 45,000 | 45,000 |
| Contribution (C) | 45,000 | 45,000 |
| *Less:* Fixed Cost (FC) | 15,000 | 20,000 |
| Operating Profit (EBIT) | 30,000 | 25,000 |

**(i) Operating Leverage**

$$\frac{C}{EBIT} = ₹\frac{45,000}{30,000} \qquad ₹\frac{45,000}{25,000}$$

$$= 1.5 \qquad 1.8$$

**(ii) Financial Leverages**

| | A (₹) | B (₹) |
|---|---|---|
| **Situation I** | | |
| Operating Profit (EBIT) | 30,000 | 30,000 |
| *Less:* Interest on debt | 2,000 | 1,000 |
| EBT | 28,000 | 29,000 |

Financial Leverage = $\frac{\text{EBIT}}{\text{EBT}}$ = ₹$\frac{30,000}{28,000}$ = 1.07 ₹ $\frac{30,000}{29,000}$ = 1.034

| | A (₹) | B (₹) |
|---|---|---|
| **Situation-II** | | |
| Operating Profit (EBIT) | 25,000 | 25,000 |
| *Less:* Interest on debt | 2,000 | 1,000 |
| EBT | 23,000 | 24,000 |

Financial Leverage = $\frac{\text{EBIT}}{\text{EBT}}$ = ₹$\frac{25,000}{23,000}$ = 1.09 ₹ $\frac{25,000}{24,000}$ = 1.04

**(iii) Combined Leverages**

| | A | B |
|---|---|---|
| **Situation-I** | | |
| FL x OL | 1.5 × 1.07 = 1.61 | 1.5 × 1.034 = 1.55 |
| **Situation-II** | | |
| FL x OL | 1.8 × 1.09 = 1.96 | 1.8 × 1.04 = 1.872 |

**Illustration-9**

*The following data is available for Stone Ltd. :*

| | *(₹)* |
|---|---|
| *Sales* | *5,00,000* |
| *(-) Variable cost @ 40%* | *2,00,000* |
| *Contribution* | *3,00,000* |

| | |
|---|---|
| *(-) Fixed cost* | *2,00,000* |
| *EBIT* | *1,00,000* |
| *(-) Interest* | *25,000* |
| *Profit before tax* | *75,000* |

*Using the concept of leverage, find out*

*(i) The percentage change in taxable income if EBIT increases by 10%.*

*(ii) The percentage change in EBIT if sales increases by 10%.*

*(iii) The percentage change in taxable income if sales increases by 10%.*

*Also verify the results in each of the above case.*

**Solution:**

**(i)** Degree of Financial Leverage = $\frac{\text{EBIT}}{\text{EBT}} = \frac{₹\ 1,00,000}{₹\ 75,000}$ = **1.333 times**

So, If EBIT increases by 10% then Taxable Income (EBT) will be increased by 1.333 × 10 = **13.33% (approx.)**

***Verification***

| Particulars | Amount (₹) |
|---|---|
| New EBIT after 10% increase (₹ 1,00,000 + 10%) | 1,10,000 |
| *Less:* Interest | 25,000 |
| Earnings before Tax after change (EBT) | 85,000 |

Increase in Earnings before Tax = ₹ 85,000 - ₹ 75,000 = ₹ 10,000

So, percentage change in Taxable Income (EBT) = $\frac{₹\ 10,000}{₹\ 75,000} \times 100$ = **13.333%, hence verified**

**(ii)** Degree of Operating Leverage = $\frac{\text{Contribution}}{\text{EBIT}} = \frac{₹\ 3,00,000}{₹\ 1,00,000}$ = **3 times**

So, if sale is increased by 10% then EBIT will be increased by 3 × 10 = **30%**

***Verification***

| Particulars | Amount (₹) |
|---|---|
| New Sales after 10% increase (₹ 5,00,000 + 10%) | 5,50,000 |
| *Less:* Variable cost (40% of ₹ 5,50,000) | 2,20,000 |
| Contribution | 3,30,000 |
| *Less:* Fixed costs | 2,00,000 |

| | |
|---|---|
| Earnings before interest and tax after change (EBIT) | 1,30,000 |

Increase in Earnings before interest and tax (EBIT) = ₹ 1,30,000 - ₹ 1,00,000 = ₹ 30,000

So, percentage change in EBIT = $\frac{₹\ 30,000}{₹\ 1,00,000} \times 100$ = **30%, hence verified.**

**(iii)** Degree of Combined Leverage = $\frac{\text{Contribution}}{\text{EBT}} = \frac{₹\ 3,00,000}{₹\ 75,000}$ = **4 times**

So, if sale is increased by 10% then Taxable Income (EBT) will be increased by 4 × 10 = **40%**

***Verification***

| **Particulars** | **Amount (₹)** |
|---|---|
| New Sales after 10% increase (₹ 5,00,000 + 10%) | 5,50,000 |
| *Less:* Variable cost (40% of ₹ 5,50,000) | 2,20,000 |
| Contribution | 3,30,000 |
| *Less:* Fixed costs | 2,00,000 |
| Earnings before interest and tax (EBIT) | 1,30,000 |
| *Less:* Interest | 25,000 |
| Earnings before tax after change (EBT) | 1,05,000 |

Increase in Earnings before tax (EBT) = ₹ 1,05,000 - ₹ 75,000 = ₹ 30,000

So, percentage change in Taxable Income (EBT) = $\frac{₹\ 30,000}{₹\ 75,000} \times 100$ = **40%, hence verified.**