

Capital Structure

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Topics

- +Capital structure – meaning
- +Optimal capital structure
- +Leverage
- +Break even point
- +EBIT-EPS analysis
- +Numericals

Capital Structure

- + Two principal sources of finance: debt and equity
- + Proportion of debt and equity – how much financial leverage?
- + Choice of capital structure
- + Divide cash flows into two components: fixed component and residual component
- + What is the relationship between capital structure and firm value?
- + What is the relationship between capital structure and cost of capital?
- + Theories (MM, Durand etc)
- + Approaches (Net income approach, net operating income approach)

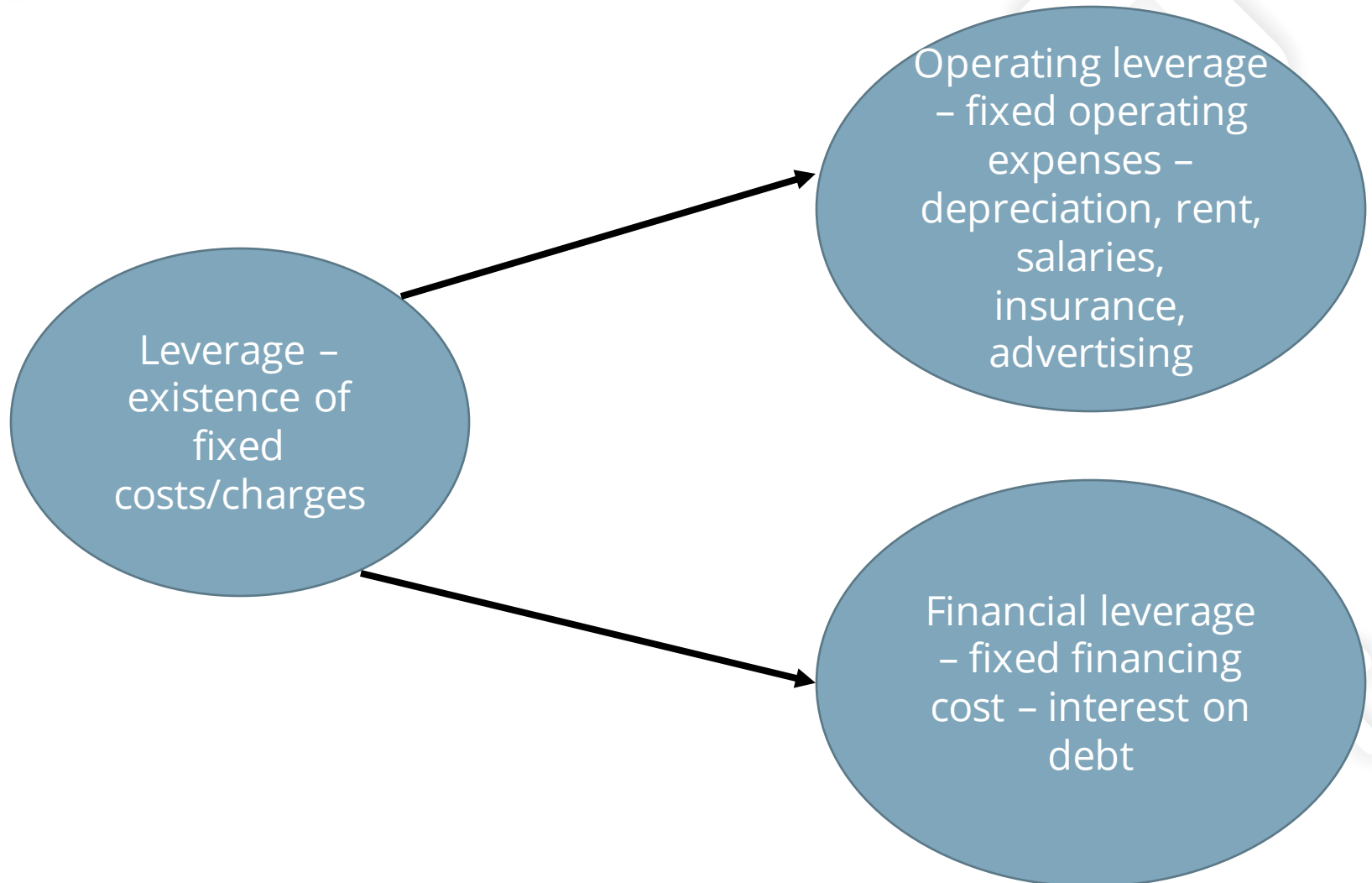
What is the Optimal Proportion?

- +Increases firm value
- +Value of firm is maximised when cost of capital is minimised
- +Depends on:
 1. Tax advantage of debt
 2. Financial distress cost
 3. Agency costs associated with debt
 4. Degree of information asymmetry

Optimal Capital Structure in Practice

1. Impact of alternative structure on EPS
 2. Impact of alternative structure on ROE
 3. Impact of operating, financial and total leverage
 4. Leverage ratios
 5. Level of debt that can be serviced by expected CFs of the firm
 6. What comparable firms are doing?
- +All the above provides partial answer to optimal proportion that increases firm value

Leverage Analysis



Structure of Income Statement

Particulars		Amount
Operating leverage	Revenues (price * quantity)	
	Less: variable cost	
	Contribution	
	Less: Fixed Operating expenses	
	Profit before interest and tax	
Financial leverage	Less: Interest	
	Profit before tax	Total leverage
	Less: tax	
	Profit after tax	
	Less: preference dividend (if any)	
	Profit available to equity shareholders	
	Earnings per share = Profit available to equity shareholders / No. of equity shares	

Operating Leverage

- + 1% change in sales would lead to more than 1% change in PBIT
- + Fixed operating costs magnify the impact of changes in revenues (both directions)

Sales (units)	500 units	600 units	400 units
Revenues @ Rs 1000	500000	600000	400000
Less variable cost @ 50%	250000	300000	200000
Contribution	250000	300000	200000
Less: fixed operating costs	200000	200000	200000
PBIT	50000	100000	---

% Change in sales 20%
 % Change in PBIT 100%
 Magnify the impact

Degree of Operating Leverage

- + Sensitivity of PBIT to change in sales
- + Contribution / PBIT

Financial Leverage

- + 1 % change in PBIT would lead to more than 1% change in PBT
- + Fixed interest expense magnify the impact of changes in PBIT

	A	B	C
PBIT	50000	60000	40000
Less interest	30000	30000	30000
PBT	20000	30000	10000
% change in PBIT 20% % change in PBT 50% Magnify impact			

Degree of Financial Leverage

- + Sensitivity of PBT to change in PBIT
- + PBIT / PBT

Total Leverage

- + Arises from fixed operating expenses and interest expenses
- + 1% change in revenues would lead to more than 1% change in PBT

Degree of Total Leverage

- + Contribution / PBT
- + DOL * DFL

Break Even Point

- + Sales level at which losses cease and profits begin or vice versa
- + Level of sales at which profits are zero and there is no loss
- + Actual sales $>$ BEP – profit
- + Actual sales $<$ BEP – loss

Sales

Less: variable cost

Contribution

Less: Fixed cost

Profit

Formula

- + Contribution (per unit) = Selling price per unit – variable cost per unit
- + BEP (units) = Fixed costs / contribution per unit
- + BEP (Rs) = Fixed costs / PV ratio
- + P/V Ratio = (Contribution per unit / selling price per unit) * 100

EBIT-EPS Analysis

- + Relationship between EBIT and EPS
- + Break even EBIT level (indifference point)

Relationship Between EBIT and EPS

+ $EPS = (EBIT - I) (1 - t) / n$

+ I – interest; t – tax rate; n – number of equity shares

+ If Preference Dividend

+ $EPS = (EBIT - I) (1 - t) - D_p / n$

+ D_p - Preference dividend

Example 1

- +Existing capital structure : 1 million equity shares of Rs 10 each
- +Tax rate – 50%
- +Additional requirement: Rs 10 million
- +Alternative 1: 1 million equity shares of Rs 10 each
- +Alternative 2: 14% Debentures
- +Calculate EPS for both the alternative if EBIT is Rs 2 Million and Rs 4 Million

	Alt 1	Alt 2	Alt 1	Alt 2
EBIT	2000000	2000000	4000000	4000000
Less interest	Nil	-1400000	nil	-1400000
EBT	2000000	600000	4000000	2600000
Less 50% tax	-1000000	-300000	-2000000	-13,00,000
EAT	10,00,000	3,00,000	20,00,000	13,00,000
No. of equity shares				
Existing	10,00,000	10,00,000	10,00,000	10,00,000
New	10,00,000	Nil	10,00,000	Nil
Total	20,00,000	10,00,000	20,00,000	10,00,000
EPS = EAT /No of equity shares	0.5	0.3	1	1.3

Break Even EBIT Level

- + Alternative financing plans
- + Level of EBIT for which EPS is the same under both the financing plans
- + Equate the EBIT-EPS equation for two alternative plans to calculate EBIT
- + Indifference point or indifference EBIT level
- + Probability of EBIT falling below indifference point – business risk
- + Business risk – operating leverage, cyclical variations, competition, life cycle stage, firm size, diversification, relative price fluctuations
- + Expected EBIT $>$ Indifference level – Debt is advantageous
- + Expected EBIT $<$ Indifference level – Equity is advantageous

Example 1 (break even EBIT level)

$$+(EBIT - I_1)(1-t) / n_1 = (EBIT - I_2)(1-t) / n_2$$

$$+(EBIT - 0) (1-0.5) / 2000000 = (EBIT - 1400000)(1-0.5)/1000000$$

$$+EBIT = 28,00,000$$

Leverage Ratios

- + Ratios to assess satisfactory capital structure
- + Interest coverage ratio = $\text{EBIT} / \text{interest on debt}$
- + Cash flow coverage ratio
- + $(\text{PBIT} + \text{Dep} + \text{Other non-cash charges}) / [\text{Interest on Debt} + \{\text{Loan repayment installment} / (1-t)\}]$
- + Debt service coverage ratio
- + $\Sigma (\text{PAT} + \text{Dep} + \text{Interest} + L) / \Sigma (\text{Interest} + \text{LRI} + L)$