

Capital Structure Planning and Designing

Getting an Exact optimal capital structure is near to impossible and efforts should be made to achieve the best approximation to the optimal capital structure. A capital structure for a firm should be planned -

- (a) To keep the financial risk of the firm to a minimum level,
- (b) To reflect the philosophy of the management regarding control over the firm,
- (c) To provide flexibility in the ability of the firm to raise additional capital funds whenever needed, and
- (d) To maximize the EPS of the equity shareholders.

Two basic techniques available to study the impact of a particular capital structure are - One from the point of view of the profitability and the other from the point of view of liquidity.

Profitability and Capital Structure: EBIT-EPS analysis

Financial leverage affects the pattern of distribution of operating profit among various types of investors and increases the variability of the EPS of the firm. Given a level of EBIT, EPS will be different under different financing mix depending upon the extent of debt financing. The effect of leverage on the EPS emerges because of the existence of fixed financial charge i.e. interest on debt financing or fixed dividend on preference share capital.

The effect of fixed financial charge on the EPS depends upon the relationship between the rate of return on assets and the rate of fixed charge. If the rate of return on assets is higher than the cost of financing, then the increasing use of fixed charge financing (i.e., debt and preference share capital) will result in increase in the EPS. This situation is also known as **favourable financial leverage or Trading on Equity**. On the other hand, if the rate of return on assets is less than the cost of financing, then the effect may be negative and therefore, the increasing use of debt and preference share capital may reduce the EPS of the firm.

The fixed financial charge financing may further be analyzed with reference to the choice between the debt financing and the issue of preference shares.

Theoretically, the choice is tilted in favour of debt financing because of two reasons:

(I) the explicit cost of debt financing i.e., the rate of interest payable on debt instruments or loans is generally lower than the rate of fixed dividend payable on preference shares, and

(II) Interest on debt financing is tax-deductible and therefore the real cost (after-tax) is lower than the cost of preference share capital.

EBIT- EPS analysis is of significant importance and if undertaken properly, can be an effective tool in the hands of a financial manager to get an insight into the planning and designing the capital structure of the firm. The profits of the firms vis-a-Vis the burden of debt financing should also be analyzed. The debt capacity or ability of the firm to service the debt can be analyzed in terms of the coverage ratio, which shows the relationship between EBIT and the fixed financial charge.

Interest coverage ratio may be calculated as follows:

Interest Coverage Ratio = EBIT / Interest.

Together with the EBIT EPS analysis for different levels of debt financing, interest coverage ratio may also be calculated for different levels of financial leverages.

Liquidity and Capital Structure: Cash Flow analysis

A company (although earning sufficient profits) may not be generating large enough cash surplus, perhaps due to the needs to re-invest heavily in working capital. Such a firm will find it difficult to service fixed interest and preference dividend. If it is so, then the firm may resort to equity financing where dividend tends to be lower and can be reduced or skipped if the cash is scarce. Companies which can generate large cash surplus from their operations will tend to opt for larger debt financing.

A finance manager, while evaluating different capital structure, should also find out the liquidity required for-

- (i) Interest on debt,
- (ii) Repayment of debt,
- (iii) Dividend on preference share capital, and
- (iv) Redemption of preference share capital

The requirement of liquidity should then be compared with the cash availability from operations of the firm as follows-

1. Debt Service Coverage Ratio (DSCR):

In the Debt Service Coverage Ratio (DSCR), the cash profits generated by the operations are compared with the total cash required for the service of the debt and the preference share capital.

$$\text{DSCR} = \frac{(\text{PAT} + \text{Depreciation} + \text{Interest} + \text{Non-Cash expenses})}{(\text{Pref. Dividend} + \text{Interest} + \text{Repayment obligation})}$$

In the above equation, Pref. Dividend may be taken as inclusive of the Corporate Dividend Tax. The DSCR helps in assessing the extent to which cash profits of the firm covers the cash obligations for revenue nature payments as well as the capital nature payments. The higher the DSCR, the better it is and the firm will face no financial difficulty in meeting its obligations.

2. Projected Cash flow Analysis:

The firm may also undertake the cash flow analysis for the period under consideration. This will enable the financial manager to assess the liquidity capacity of the firm to meet the obligations of interest payments and the repayment of principal obligations. A projected cash budget may be prepared to find out the expected cash inflows and cash outflows (including interest and repayments). If the inflows are comfortably higher than the outflow, then the firm can proceed with the debt financing. A firm may have three types of cash flows:

- (i) Those relating to operations of the firm.
- (ii) Cash flows relating to capital nature transactions and
- (iii) Financial flows relating to interest, dividend and repayments etc.

In the projected cash flow analysis, all these cash flows are to be considered.

Difference between the expected cash flows under different operating conditions and the cash outflows including those required for debt and preference capital servicing should be identified. If the differences are within specified limits, the firm may proceed with the proposed capital structure.

EBIT-EPS Analysis versus Cash flow Analysis (i.e. Profitability versus Liquidity)

EBIT – EPS Analysis	Cash Flow Analysis
Evaluated on the basis of profitability of shareholders. Capital structure which results in maximization of EPS is selected. Financial leverages at different levels are considered so as to find out their effect on the EPs.	Liquidity side of leverage is stressed. Capital structure is evaluated in the light of available liquidity. The firm need not face any liquidity problem in debt servicing.
It stresses the profitability of the proposed financing mix and analyses it from the point of view of equity shareholders.	It looks upon a financing mix and stresses the need for liquidity requirement of debt financing and thus, it emphasizes the debt investor.

Financial Distress

Financial distress is a situation when a firm finds it difficult to honour its commitment to creditors/ debt holders. With reference to capital structure, the financial distress refers to the Situation when the firm faces difficulties in paying interest and principal repayments to the debt investors. Financial distress arises when the fixed financial obligations of the firm affect firm's normal operations. For example, if a firm has to dispose-off some of its assets to meet the interest obligations, the firm is said to be in financial distress.

There are many degrees of financial distress. One extreme degree of financial distress is bankruptcy, a condition in which the firm is unable to meet its financial obligation and faces liquidation. However, still the debt financing is used almost unexceptionally because it brings benefits in the form of tax-shield. As a result, the firm should try to achieve a trade-off between the costs and benefits of debt financing - the cost being the financial distress and the benefits being the interest tax-shield. The cost of financial distress is reflected in the market value of the firm and can be measured through its effect on the value of the firm. Lower levels of leverage will have little effects, but as the financial leverage increases, the cost of financial distress increases and the market value of the debt as well as equity falls.

1. The income statement of ABC Ltd. is as follows:-

	Amount in Crores
Sales	500
Less: Cost of Goods sold (including Depreciation)	250
Less: Selling & Distribution Expenses	(50)
EBIT	200
Less: Taxes @50%	(100)
Net income - $EBIT(1 - t)$	100

The company's cost of capital is 12% and its net assets are worth Rs. 800 crores.

I. What is the conventional return on investment?

II. What is net addition to the wealth of shareholders in the current year in terms of Economic Value Added?

Solution

Conventional return on Investment = Net Income / Net Assets

$$= 100 / 800 = 0.125 = 12.5 \%$$

Economic Value added = Net Income – Cost of Capital employed

$$= 100 - (800 \times .12) = 4 \text{ Crore}$$

2. Tara industry is attempting to establish a current assets policy. Fixed assets are Rs. 20 lakhs and the firm plans to maintain a 50% debt-to-assets ratio. The interest rate is 10% on all debts. Three alternative current assets (CA) policies are under consideration- 20%, 30% and 40% of projected sales. The company expects to earn 15% before interest and taxes on sales of 50 lakhs. Effective tax rate is 50%. What is the expected return on equity under each alternative?

Solution

	40 % CA	50 % CA	60 % CA
Sales	50,00,000	50,00,000	50,00,000
Fixed Assets	20,00,000	20,00,000	20,00,000
Current Assets	10,00,000	15,00,000	20,00,000
Total Assets	30,00,000	35,00,000	40,00,000
Debt Asset Ratio	.50	.50	.50
Hence, Debt	15,00,000	17,50,000	20,00,000
Interest @ 10 %	1,50,000	1,75,000	2,00,000
EBIT @ 15 % of Sales	7,50,000	7,50,000	7,50,000

Less: Interest	(1,50,000)	(1,75,000)	(2,00,000)
EBT	6,00,000	5,75,000	5,50,000
Less: Tax @ 50 %	(3,00,000)	(2,87,500)	(2,25,000)
PAT	3,00,000	2,87,500	2,25,000
Equity	15,00,000	17,50,000	20,00,000
Return on Equity	0.2	.1643	.1125

Value of Equity = Total Assets – Debt

Expected Return on Equity = PAT / Value of Equity

Since value of Net Income is maximum in case of 20 % Current Asset scenario.
Hence Current Assets of 20 % of sales should be maintained.

3. Jiva Ltd is contemplating conversion of 500 - 15% convertible bonds of Rs. 1,000 each. Market price of the bond is Rs.1080. Bond indenture provides that one bond will be exchanged for 10 shares. Price earning ratio before redemption is 20:1 and anticipated price-earning ratio after redemption is 25:1. Number of shares outstanding prior to redemption are 10,000. EBIT amounts to Rs. 2,50,000. The company is in the 50 % tax bracket. Should the company convert bonds into shares? Give reasons.

Solution

	Present Scenario	After Conversion
EBIT	2,50,000	2,50,000
Less: Interest @ 15 %	(75,000)	-----
EBT	1,75,000	2,50,000
Less: Tax @ 50 %	(87,500)	(1,25,000)

PAT	87,500	1,25,000
No. of outstanding shares	10,000	15,000
EPS	8.75	8.33
P/E Ratio	20	25
Market Price (MPS)	175	208.33

EPS = PAT / Number of outstanding shares

P/E Ratio = MPS / EPS

Interest = 15 % of Rs. 5,00,00 (500 × Rs.1,000) = Rs. 75,000.

Yes, the company should opt for conversion of bonds into equity shares as this will result in increase in market price of the share from Rs. 175 to Rs. 208.33.

4. XYZ Ltd. has issued convertible debentures with interest rate of 15%. Every debenture has an option to convert to 25 equity shares now. Debentures will be redeemed at Rs. 102 on maturity after 5 years. An investor normally requires a rate of return of 10 % p.a. on a five years security. As an investor, would you exercise conversion at present if the market price of equity shares is (i) Rs. 4 (ii) Rs. 5 (iii) Rs. 6?

Solution

Value of Debentures in case of non-conversion –

Present Value (PV) of interest of Rs. 15 for 5 years at 10 % = Rs. 15 × PVA_{F0.1, 5}

= Rs. 15 × 3.791 = Rs. 56.87

PV of redemption value of Bond = Rs. 1020 × PVF_{0.1, 5} = Rs. 102 × .621 = Rs.63.34

Total PV of Bond = Rs. 56.87 + Rs.63.34 = Rs.120.21

Value of Equity Shares if debenture is converted now

Market Price of Shares	No. of shares for one debenture	Value of Share
4	25	100
5	25	125
6	25	150

Debenture conversion should be opted if market price of Share now is either Rs. 5 or Rs. 6 as in both cases, current market value of share is greater than present value of debenture.

5. Current situation of Vigyan Ltd, producer of turbine generators, is as follows:

EBIT	Rs. 50,00,000
Tax rate	50%
Debt	Rs. 30,00,000
Rate of Interest	10%
Cost of Equity (Ke)	15%
Number of Shares Outstanding	10,00,000
Book value per share	Rs. 10

Vigyan's product market is stable and the company expects no growth, all earnings are paid out as dividends. The debt consists of perpetual bonds. What are its Earning per Share (EPS) and its price per share? It can increase its debt by Rs. 45 lakhs, to a total of Rs. 75,00,000 to buy back and retire some of its shares at the current price. Its interest rate on debt will be 12% (it will have to call and

refund the old debt), and its cost of equity will rise from 15% to 17%. EBIT will remain constant. Should Vigyan change its capital structure?

Solution

Current Scenario: Calculation of EPS & MPS	
EBIT	50,00,000
Less: Interest	(3,00,000)
EBT	47,00,000
Less: Tax @ 50 %	(23,50,000)
PAT	23,50,000
No. of Shares	10,00,000
EPS or DPS = PAT/ No. of Shares	2.35
Market Price (MPS) = DPS/ K_e = 2.35/.15	15.67

If the company decides to increase debt by Rs. 45 lakhs, it has to buy back
 $45,00,000 / 15 = 2,87,173$ shares

Now total number of shares will be $10,00,000 - 2,87,173 = 7,12,827$

The market price of the share will be ascertained as follows:

Particulars	
EBIT	50,00,000
Less: Interest 12 % of 75,00,000	(9,00,000)
EBT	41,00,000
Less: Tax @ 50 %	(20,50,000)
PAT	20,50,000

No. of Shares	7,12,827
EPS or DPS as per the question	2.88
Market Price (MPS) = $DPS / K_e = 1.58 / .17$	16.94

As the price is expected to go up from Rs. 15.67 to Rs. 16.94, the company should change its current capital structure and adopt new financing mix.

6. Rajesh Ltd. is engaged in expansion of its production capacity which is expected to increase its operating profits from 15 % to 20 %. The proposal requires additional funds of Rs. 1,00,00,000 for which different alternatives of raising funds are being evaluated. These are:

	Option I	Option II	Option III	Option IV
14% Pref. Sh. Capital	20 Lakh	20 Lakh	-----	10 Lakh
Equity Share Capital (FV = Rs. 10)	40 Lakh	20 Lakh	20 Lakh	50 Lakh
14% Partly Conv. Debentures	-----	-----	30 Lakh	-----
16% Debentures	-----	20 Lakh	-----	40 Lakh
20% Term Loan (TL)	-----	40 Lakh	50 Lakh	-----
22% Term Loan (TL)	40 lakh	-----	-----	-----

Additional Information:

(i) The Company belongs to 50% tax bracket.

(i) 50% of partly convertible debentures are to be converted into Equity share capital at par at the end of 4th year.

Evaluate different options of raising the required funds in view of the fact that the firm wants to maximise the dividends to the shareholders (100% payment ratio) and the period of 3 years is considered sufficient for capital structure division.

Solution

In this case, the firm has different options of capital structure. In option II, partly convertible debentures are to be converted in equity shares only after 5 years. But the period of 3 years is considered sufficient for capital structure decision. Therefore, conversion of partly convertible debentures after 5 years becomes irrelevant. The return to equity shareholder under different options can be calculated as follows-

	Option I	Option II	Option III	Option IV
Capital employed	1,00,00,000	1,00,00,000	1,00,00,000	1,00,00,000
EBIT @ 20 %	20,00,000	20,00,000	20,00,000	20,00,000
Less: Int. on 14% partly convertible debenture			(4,20,000)	
Less: Int. on 16 % Deb.		(3,20,000)		(6,40,000)
Less: Int. on 20% TL		(8,00,000)	(10,00,000)	
Less: Int. on 22 % TL	(8,80,000)			
EBT	11,20,000	8,80,000	5,80,000	13,60,000
Less: Tax @ 50%	(5,60,000)	(4,40,000)	(2,90,000)	(6,80,000)
PAT	5,60,000	4,40,000	2,90,000	6,80,000
Less: Pref. Dividend	(2,80,000)	(2,80,000)		(1,40,000)
Earnings available for ESH	2,80,000	1,60,000	2,90,000	5,40,000
No. of Equity Shares	4,00,000	2,00,000	2,00,000	5,00,000
DPS	.7	.8	1.45	1.08

Option III is best because the dividend payable to Equity Shareholders (ESH) is highest in this case. Result indicates that the firm has an opportunity to avail maximum benefit of cheaper debt financing using third option.