Unit: 3 Leverage and Capital Structure Theories

Teacher - VS

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LEVERAGE:

Leverage is the action of a lever or the mechanical advantage gained by it. In other words, we understand by the term 'Leverage' that it is meeting a fixed cost or paying a fixed return for employing resources or funds. The higher the degree of leverage, the greater is the risk. But at the same time, it also increase the opportunity of higher return.

Types of Leverage:

There are three types of leverage.

i.) Operating Leverage
ii.) Financial Leverage
iii.) Combined Leverage

i.) **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 earnings before interest and taxes.

Measurment of Operating Leverage:

The percentage change in earning before interest and tax (EBIT) due to one percent change in the amount of sales, is called Degree of Operating Leverage (DOL). That is

$$DOL = \frac{\% \text{ Change in EBIT}}{\% \text{ Change in Sales}}$$

$$= \frac{\text{Total Contribution}}{\text{EBIT}}$$

ii) Financial Leverage :

The ability of a firm to use fixed financial charges to magnify the effects of changes in EBIT on the earnings per share. In other words, financial leverage involves the use of funds obtained at a fixed cost in the hope of increasing the return to the shareholders.

Measurement of Financial Leverage :

The percentage change in earning per share (EPS) due to one percent change in earning before interest and tax (EBIT), is called Degree of Financial Leverage (DFL). That is

$$DFL = \frac{\% \text{ change in EPS}}{\% \text{ change in EBIT}}$$

$$= \frac{EBIT}{EBT}$$

iii) Combined Leverage :

We have seen that operating leverage explains the operating risk and financial leverage explains the financial risk of a business. However, a complete analysis would demand analysis of the total risk of the firm where, total risk = operating risk and financial risk. Combined leverage is the total leverage and the risk associated with combined leverage is known as total risk. Combined leverage is closely concerned with determining the ability to cover fixed charges i.e. fixed operating costs in case of operating leverage and fixed financial costs in case of financial leverage.

Measurement of Combined Leverage :

$$DCL = \frac{\% \text{ change in EBIT}}{\% \text{ change in Sales}} \times \frac{\% \text{ change in EPS}}{\% \text{ change in EBIT}} = \frac{\% \text{ change in EPS}}{\% \text{ change in Sales}}$$

$$= \frac{\text{Contribution}}{EBIT} \times \frac{EBIT}{EBIT - I} = \frac{\text{Contribution}}{EBIT - I}$$

$$= DOL \times DCL$$

where
DOL = Degree of Operating Leverage
DFL = Degree of Financial Leverage
DCL = Degree of Combined Leverage.

Determination of Contribution, EBIT, EBT and EPS

	₹
Sales	✓
Less: Variable Cost	✓
Contribution	✓
Less: Fixed Cost	✓
Earning before interest and tax (EBIT)	✓
Less: Interest	✓
Earning before tax (EBT)	✓
Less: Tax [EBT × tax rate (t)]	✓
Earning after tax (EAT)	✓
Less: Preference Dividend (P_d)	✓
Earning after interest, tax & Pref. dividend	✓

Earning per Share (EPS) = $\frac{\text{Earning after interest, tax \& Preference dividend}}{\text{No. of Equity Shares.}}$

Contribution = EBIT + Fixed Cost.

Q Consider the following information for S. Ltd:

	₹ in lakh
EBIT	1,120
EBT	320
Fixed Cost	700

Calculate the percentage of changes in EPS for increase in sales by 5%.

C.U. B.Com. (Hons) – 2012

Solution. Contribution = EBIT + Fixed Cost = ₹(1,120 + 700) lakhs = 1820 lakh.

$$DOL = \frac{\text{Contribution}}{EBIT} = \frac{1820}{1120} = 1.625$$

$$DFL = \frac{EBIT}{EBT} = \frac{1,120}{320} = 3.5$$

Now, DCL = DOL × DFL = 1.625 × 3.5 = 5.6875.

Here, DCL is 5.6875. These means that if the volume of sales changes by 1%, EPS will be changed by 5.6875%. Thus, if the volume of sales increases by 5%, EPS will be increased by (5.6875 × 5)% or 28.4375%.

EBIT-EPS Analysis :

EPS is considered as an important measure of profitability of a firm and firms as well as investors closely monitors EPS to analyse the performance. EBIT depends on investment in projects. With a change in economic conditions, EBIT may also change. Such change in EBIT also changes the EPS. Change in EPS may be favorable or unfavourable depending on (i) firms performance (EBIT) and (ii) capital mix. So, to make a decision under such an uncertain situation, firms pay close attention to the EPS. Usually, they select the financial plan which will give higher EPS for the expected EBIT. Is it always the right decision to accept the financial plan giving highest EPS? In some cases, the answer is yes and sometimes no. There exists an interesting relationship between EBIT and EPS depending on capital mix and we need to analyse that carefully before making financing decision of a firm.

A firm has various options regarding the combination of various sources of finance for its investment activities. The firm may option to be an all-equity firm or equity-preference firm or other combination of equity, preference and debt. Such patterns of financing have no bearing on firms sales level & EBIT, which are dependent on firms investment activities. The financing pattern will affect the returns to the shareholders. Given a level of EBIT, EPS will be different under different financing mix depending upon the extent of financing through fixed interest bearing capital. This happens due to the existence of fixed financial charges, that is, debenture, interest, preference dividend.

Further, it may happen that a particular financing plan may be better in terms of EPS upto a certain EBIT level and thereafter another financial plan may give higher EPS. Also it is necessary to know the minimum amount of EBIT that should be earned to pay-off fixed financial burden.

The analysis of the effect of different pattern of financing on the level of returns to the equity shareholders (EPS) under different assumptions or conditions of the EBIT is known as EBIT-EPS Analysis. Such analysis is of significant importance and can be used as an effective tool in designing the capital structure of the firm.

In equation from, EPS may be determined as follows:

$$EPS = \frac{(EBIT - I)(1-t) - P_d(1+t_d)}{N}$$

Where

t = Income tax rate applicable to be company

P_d = Preference dividend

t_d = Dividend distribution tax (DDT)

N = Number of equity shares.

Q Anurup Ltd. has Equity shares capital of ₹5,00,000 divided into shares of ₹100 each. It wishes to raise ₹3,00,000 for expansion cum-modernisation scheme. The company plans the following financing alternatives:

(i.) By issuing Equity shares of ₹100 each.

(ii.) ₹1,00,000 by issuing Equity shares of ₹100 each and ₹2,00,000 through issue of 10% Debentures.

(iii) By raising loan at 10% per annum.

(iv.) ₹1,00,000 by Equity shares of ₹100 each and ₹2,00,000 by issuing 8% Preference shares of ₹100 each.

You are required to suggest the best alternatives giving your comment assuming that the estimated earning before interest and taxes (EBIT) after expansion ₹1,50,000 and corporate rate of tax is 35%. C.U. B.Com - 2013.

Solution.

Particulars		Alternative Financial Plans I	II	III	IV
Capital Structure:					
Equity shares of ₹100 each	(₹)	8,00,000	6,00,000	5,00,000	6,00,000
8% Preference shares of ₹100 each	(₹)	–	–	–	2,00,000
10% Debentures	(₹)		2,00,000		
10% Loan	(₹)	–	–	3,00,000	–
	(₹)	8,00,000	8,00,000	8,00,000	8,00,000
EBIT	(₹)	1,50,000	1,50,000	1,50,000	1,50,000
Less: Interest on debenture	(₹)	–	20,000	–	–
Less: Interest on loan	(₹)	–	–	30,000	–
EBT	(₹)	1,50,000	1,30,000	1,20,000	1,50,000
Less: Tax @ 35%	(₹)	52,500	45,500	42,000	52,500
EAT	(₹)	97,500	84,500	78,000	97,500
Less: Preference Dividend	(₹)	–	–	–	16,000
Earning available to Equity Shareholders	(₹)	97,500	84,500	78,000	81,500
No. of equity shares		8,000	6,000	5,000	6,000
EPS = Earning to equity shareholders / No. of equity shares		₹12.19	₹14.08	₹15.60	₹13.58

Comment: It is clear from the above statement that earning per share (EPS) is highest in the case of alternative III. Hence, alternative III should be accepted by the company.

Q From the following information, compute sales:
DOL-2; DFL-3, Interest ₹3,00,000 and contribution is 40% of sales.
C.U. B.Com (Hons.)-2007.

Solution We know that, $DFL = \frac{EBIT}{EBT}$

or, $3 = \frac{EBIT}{EBT}$

or, $3 = \frac{EBIT}{EBIT - I}$ [$\because EBT = EBIT - I$]

or, $3 = \frac{EBIT}{EBIT - 3,00,000}$

or, $3EBIT - 9,00,000 = EBIT$

or, $3EBIT - EBIT = 9,00,000$

or, $2EBIT = 9,00,000$

or, $EBIT = \frac{9,00,000}{2}$

or, $EBIT = 4,50,000.$

Again, $DOL = \frac{Contribution}{EBIT}$

or, $2 = \frac{Contribution}{4,50,000}$

or, Contribution = 9,00,000

40% of Sales = 9,00,000 [$\because$ 40% of Sales = Contribution]

or, $Sales = 9,00,000 \times \frac{100}{40}$

or, Sales = 22,50,000

Hence, required sales is ₹22,50,000.