Analysis of Capital Structure Decisions

The capital structure decisions are long term and have impact on EPS. Many considerations go into the decision. The financing alternative would invariably have a bearing on resulting EPS due to impact of both operating leverage(due to changes in EBIT consequent to change in sales) as well as financial leverage (change in EPS due to change in EBIT)

ABC Company is an all equity company having 35 lakh shares in its capital structure contemplating an expansion programme that would require additional induction of Rs. 300 lakhs. It is considering two alternative plans.

PLAN I	PLAN II
EQUITY OPTION	DEBT OPTION
Issue 15 lakhs shares common shares @Rs.20 per share totaling Rs. 300 lakhs	Raise Rs. 300 lakhs Long term debt @ 10 % interest

Since changes in capital structure impacts EPS, we have to see the resulting EPS under estimated EBIT forecasts based on operating experience.

Required: Calculate EPS under both the financing options if EBIT levels are Rs. 75 Lakhs and Rs. 125Lakhs

Table below shows the calculation of EPS for both the options at assumed EBIT levels of Rs. 75 lakhs and Rs. 125 Lakhs respectively.

Calculation of EPS at different levels of EBIT under EQUITY financing plan

figures in lakhs of Rs.

EQUITY Financing (PLAN 1)			
EBIT	75.00	125.00	
Interest	—	—	
EBT	75.00	125.00	
Taxes (at 40%)	30.00	50.00	
EAT	45.00	75.00	
Shares outstanding	50.00	50.00	
EPS	**0.90**	**1.50**	In case of presence of Preference capital you need to deduct the preference dividend if any to arrive at earnings available to equity share holders
Percentage change in EBIT		66.67%	(125-75)/75
Percentage change in EPS		66.67%	(1.5-.90)/.90
DFL		1	dfl= (% CHANGE IN EPS)/ % change in EBIT)

Calculation of EPS at different levels of EBIT under Debt financing plan

***Debt Financing* (*Plan 2*)**			
EBIT	75.00	125.00	
Interest	30.00	30.00	
EBT	45.00	95.00	
Taxes @40%	18.00	38.00	
EAT	27.00	57.00	
number of outstanding Shares	35.00	35.00	
EPS	**0.77**	**1.63**	In case of presence of Preference capital you need to deduct the preference dividend if any to arrive at earnings available to equity share holders
Percentage change in EBIT		66.67%	
Percentage change in EPS		111.69%	(1.63-0.77)/0.77
DFL		1.68	dfl= (% CHANGE IN EPS)/ % change in EBIT)

Required: Determine the Indifference level of EBIT i.e. the level of EBIT at which the EPS under both the alternatives being considered is equal.

We use the following equation for arriving at Indifference level of EBIT:

EPS under option I = ((EBIT - Interest) (1-tax rate) – preference dividend if any) / number of common shares outstanding under option I

EQUALS

EPS under option II = ((EBIT - Interest) (1-tax rate) – preference dividend if any) / number of common shares outstanding under option II

$$\frac{(EBIT - 0)(1-0.4)-0}{50,00,000} = \frac{(EBIT - 30,00000)(1-.4) - 0}{35,00,000}$$

Indifference level of EBIT = 100,000

(You can cross check if EPS is same under both the financing options at the arrived indifference level of EBIT as below:

	equity option	debt option
EBIT	100.00	100.00
Interest	—	30.00
EBT	100.00	70.00
Taxes (at 40%)	40.00	28.00
EAT	60.00	42.00
number of outstanding Shares	50.00	35.00
EPS	**1.20**	**1.20**

Incorporating risk in capital structure decision

Expected EBIT is an estimate under normal working conditions. However it is subject to variability. Assuming normal distribution we can estimate the standard deviation of EBIT .

Suppose we estimate Rs. 125 lakhs as our EBIT with a standard deviation of Rs. 40 Lakhs.

Management can set criteria in order to make capital structure financing decision by analyzing the estimate in the context of risk it is willing to assume:

Suppose:

Criteria I : Management is willing to take 30% chance that EBIT will be less than indifference level

Criteria II: Only 10 % chance that the company will have losses

Let us attempt to check if the above **both** criterion are satisfied to accept the financing option of debt financing.

Criteria I

Find the probability that EBIT will be less than Indifference point i.e. in this case Rs. 100 lakhs

$$z = \frac{100,00,000 - 125,00,000}{40,00,000}$$

= -0.625 standard deviation from mean of 125,00,000 corresponding to between 25.78 and 27.43 of the curve. This means probability that the EBIT will be less than Rs. 125,00,000 lies between 25.78 % and 27.43%. Criteria I is fulfilled.
However management may assume lower risk and in that case the decision will be based on acceptable level of probability that EBIT is less than indifference point. (If the risk assumed in criteria I was 25% then the **condition I** is not met and debt financing would not be acceptable.

Criteria II
If EBIT is less than the required fixed charges such as interest and preference dividend etc. then

$$Z = \frac{30,00,000 - 125,00,000}{40,00,000}$$

= -2.375 corresponding to probability of 8.6%. Hence **criterion II is** also met as per management's fixation of condition. If the criterion was to assume 5% risk of losses, then obviously second criteria is not met.

Cash Insolvency Analysis

Deciding maximum amount of fixed charges such as interest on debt plus preference dividend , Sinking Fund Commitments Company can bear under recessionary conditions.

IMF has projected that we are going to going to have a recession due to COVID 2019. All companies are now expecting at least a year long recession. Then we have to check our cash flow before beginning of recession and likely cash flows expected during the year period of recession. The two added would give us an idea of cash flow at the end of recession. This would help us to see if can meet our commitments and possibly undertake capital structure modification in the light of our limitations of bearing the fixed charges on account of Loans.

Cash balance at the end of recession= beginning cash balance before recession + free cash flow during recession.

Remember free cash flows= cash flows after meeting all commitments such as interest, dividend and any sinking fund etc.

Suppose ABC Company has beginning cash balance of Rs. 40 lakhs and expects free cash flows during the recessionary period to be Rs. 80 lakhs with standard deviation of Rs. 45 lakhs . In our example our interest liability is Rs. 30 Lakhs. The expected cash balance at the end of the recession would be **Rs. 90 lakhs** *(Rs. 40 lakhs plus Rs. 80 lakhs –Rs. 30 lakhs).*

We may check if this leaves us with enough cushion to come out of recession. The probability of running out of cash during the recessionary period with existing level of commitments can be calculated by finding z.

Z= (0-90,00,000)/45,00,000
= - 2
Corresponding to 2.28 % probability of running out of cash with our existing liabilities and commitments.

If management feels it has the temperament to undertake more risk say 5% chance of running out of cash then we may determine the required ending cash balance to support our increased debt service burden.

5% chance of running out of cash corresponds to z value of -1.65.
Therefore -1.65 = ($\underline{0- CB_r}$)/ SD
= ($\underline{0- CB_r}$)/45
CB_r = 66 lakhs

Therefore we can increase our debt service burden of **interest** by amount equal to 40 +80-66 =54 lakhs as against 30 lakhs now, provided we can take the risk of 5% probability of running out of cash during recession caused by COVID 19. The 10% cost of interest debt will translate to assume 54/.10 = 540 lakhs of total debt in our case example.

Advisory: Based on the above input, students are advised to go through Chapter 12 of Financial Management and Policy, Van Horne , 12the edition and attempt questions 2,3,5,6 and 8.