

## Determinants of Capital Structure in DPSUs in India (BDL&BEL)

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### 1.0 Introduction

The capacity of a firm to operate its activities is based on the availability of funds. Normally, these funds in finance literature are termed as long term funds, which are contributed by owners (shareholders) and outsiders. The owners' funds are represented by equity contributions and internally generated financial resources. A unique characteristic of procuring funds is that a firm may tap any of these sources and hence the blend of these different sources of long term funds is termed as capital structure in finance literature. Capital structure ordinarily implies the proportion of debt and equity in the total capital of a firm. In the term, capital structure, 'capital refers to long term funds and structure refers to the proportion of debt and equity in capital. Further, capital is easily comprehended through accounting as the difference between total assets and current liabilities, and this residual difference is always represented by debt and equity.

This capital is supplied by long and short term borrowings, the sale of preferred and common stock and the reinvestment of earnings. He further states that, in analyzing the capital structure of an enterprise, short term debt is often excluded from considerations'. Many others include only long term sources of funds under the capital structure.

In this article, an attempt has been made to bring out the various determinants of Capital Structure of DPSUs in India. In the post liberalization and disinvestment era, the PSUs in India have become more market oriented on raising funds. The slow reduction in the budgetary support for the PSUs has become a notable factor for the PSUs. The PSUs depend more on extra-budgetary resources (EBR) for their

requirements. The variables are considered keeping in view the established Capital Structure models like (i) Trade off Theory and (ii) Pecking Order Theory.

**(i) Trade off Theory:** The Companies have the options to trade off costs against the cost and benefit to arrive at decisions for availing borrowed funds. As per this theory, companies with stable and tangible assets will go for higher debts and vice versa.

**(ii) Pecking Order Theory:** As per this theory, there is a pecking order of financing under which internal financing, debt financing and equity financing are preferred in that order. The internal equity is kept at the top and the external equity at the bottom. It explains why highly profitable companies borrow less and less profitable companies borrow more.

The factors those determine the Capital structure decisions of a company generally are financial risk, operating risk, debt servicing capacity, profitability, sizes etc which are explained below.

**(i) Financial Leverage (FL):** This ratio is used to calculate the financial leverage of a company to get an idea to measure its ability to meet financial obligations. There are several ratios, but the main factors looked at include debt, equity, assets and interest expenses. Generally money is borrowed for enhancement production and sales which ultimately yield in rising earnings. It is measured through the ratio of total debt to total assets. The higher the amount of debt, the higher the financial leverage. Since interest is a fixed cost (which can be written off against revenue), a loan allows an organization to generate more earnings without a corresponding increase in the equity capital requiring increased dividend payments (which cannot be written off against the earnings). However, while high leverage may be beneficial in boom periods, it may cause serious cash flow problems in recessionary period

**(ii) Operating Leverage (OL):**The ratio indicates the proportion between the contributions to operating profit of a business. The comparison is made between the

gross margins with the EBIT of the business. A business which has a higher proportion of fixed costs and a lower proportion of variable costs is said to have used more operating leverage. Those Companies which have lower fixed costs and higher variable costs are said to employ less operating leverage and vice versa.

**(iii) Gross Interest Coverage Ratio (GICR):**

A measure of a company's ability to meet its financial obligations. In broad terms, the higher the coverage ratio, the better the ability of the enterprise to fulfill its obligations to its lenders. The trend of coverage ratios over time is also studied by analysts and investors to ascertain the change in a company's financial position. Common coverage ratios include the interest coverage ratio, debt service coverage ratio and the asset coverage ratio. This ratio is used to assess a company's financial affordability by examining whether it is at least profitable enough to pay off its interest expenses. A ratio greater than 1 indicates that the company has more than enough interest coverage to pay off its interest expenses. The ratio is calculated as  $\text{EBITDA} / \text{Interest payments}$

**(iv) Net worth:** The book value of a company is its net worth which represents the total assets minus the total liabilities. This shows how much the company gets, if it is sold out.

**(v) Sales:** It is the Revenue earned by the companies both from sale of goods and services. The sales reflect the growth in size of a company. The more the sales, there will be inflow of more funds which will affect the financial structure of the company.

An attempt has been made to study the impact of certain variables like financial leverage, operating leverage, debt servicing Capacity, profitability and size on the Capital structure decisions represented by the debt equity ratio DPSU wise as given below.

**1.1.2 Determinants of Capital Structure of BDL:**

The impact of variables like financial leverage, operating leverage, debt servicing Capacity, profitability and size on the Capital structure decisions of the Company is given below.

**Table -1.1**

Determinants of capital structure of BDL						
Year	D/E	FL	OL	GICR	NW	Sales
2002-03	4.19	0.81	0.77	10206.00	39317	27731
2003-04	3.43	0.78	2.33	7906.00	41779	52397
2004-05	3.13	0.77	2.48	0.00	42222	45406
2005-06	3.17	0.77	1.66	0.00	47279	53173
2006-07	3.12	0.79	3.55	0.00	47862	43329
2007-08	3.60	0.78	1.17	7250.00	49937	45302
2008-09	4.27	0.81	1.02	120.68	52013	46331
2009-10	3.95	0.80	3.28	2532.00	52708	62633
2010-11	8.26	0.91	4.09	1120.00	55205	93615
2011-12	7.76	0.89	0.86	1741.95	73239	95837

**Source:** Annual Reports of BDL

The correlation among the above variables is shown in the table no 6.5 as given below. Each of the variables has been correlated with the other variable to ascertain the relationship among them.

**Table 1.2**  
**Correlation matrix of select financial parameters**

	DE	FL	OL	GICR	NW	Sales
DE	1	0.99	0.10	-0.14	0.74	0.87
FL	0.99	1	0.13	-0.13	0.74	0.84
OL	0.10	0.13	1	-0.38	-0.09	0.29
GICR	-0.14	-0.13	-0.38	1	-0.38	-0.37
NW	0.74	0.74	-0.09	-0.38	1	0.82
Sales	0.87	0.84	0.29	-0.37	0.82	1

**Source:** Correlation based on calculated ratios.

To ascertain the impact, regression analysis has been carried out considering the debt equity ratio as dependent variable and the others like financial leverage(FL),

operating leverage(OR) , Gross interest coverage ratio(GICR), Net worth and Sales as independent variables. The regression analysis of the above determinants has been shown in the following table no 4.6.

**Table 1.3**

**Regression analysis of capital structure determinants of BDL**

<b>Multiple R</b>	1.00					
<b>R Square</b>	1.00					
<b>Adjusted R Square</b>	0.99					
<b>Standard Error</b>	0.20					
<b>Observations</b>	10.00					
<b>ANOVA</b>						
<b>Regression</b>	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance</i>	
<b>Residual</b>	5.00	32.52	6.50	161.54	0.00	
<b>Total</b>	4.00	0.16	0.04			
	9.00	32.68				
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
<b>Intercept</b>	-22.60	1.94	-11.67	0.00	-27.97	-17.22
<b>FL</b>	34.39	2.78	12.38	0.00	26.67	42.10
<b>OL</b>	-0.22	0.08	-2.58	0.06	-0.45	0.02
<b>GICR</b>	0.00	0.00	-0.67	0.54	0.00	0.00
<b>NW</b>	0.00	0.00	-2.21	0.09	0.00	0.00
<b>Sales</b>	0.00	0.00	3.33	0.03	0.00	0.00

**Source:** Regression based on SPSS Statistics

Based on the above ratios, Correlation and regression analysis, the determinants of Capital structure in BDL are given below. The regression equation shows Cap structure = (-) 22.60 + 34.39(FL) + (-)0.22(OL) +0(GICR) + 0(NW) + 0(Sales).The overall result indicates the model is significant since the value of Sig.F is less than 0.05 at 5% level of significance. However a detailed analysis is given as follows.

**(i) Financial Leverage (FL):**An analysis of the data reveals that financial leverage lies in the range between 0.77 to 0.91 in BDL. The correlation analysis shows that there is positive relationship (0.99) of the financial leverage with D/E ratio. The P value of FL as per the regression analysis is 0.00 which is below 0.05(5 percent level of

significance). The regression result indicates that the impact of financial leverage on Capital structure is significant.

**(ii) Operating Leverage (OL):**An analysis of the data reveals that operating leverage lies in the range between 0.77 to 4.09 in BDL. The correlation analysis shows that there is association (0.10) of the Operating leverage with D/E ratio. The P value of FL as per the regression analysis is 0.06 which is above 0.05(5 percent level of significance). The regression result indicates that the impact of operating leverage on Capital structure is not significant.

**(iii) Gross Interest Coverage Ratio (GICR):** An analysis of the data reveals that GICR lies in the range between 0.00 to 10206.00 in DPSUs. The correlation analysis shows that there is negative relationship (-0.14) of the GICR with D/E ratio. The P value as per the regression analysis is 0.54 which is above 0.05(5 percent level of significance) The regression result indicates that the impact of GICR on Capital structure is not significant.

**(iv) Net Worth:** An analysis of the data reveals that the net worth lays in the range between Rs39317lakhs to Rs 73239lakhs in BDL. The correlation analysis shows that there is positive relationship (0.74) of the net worth with D/E ratio. The P value as per the regression analysis is 0.09 which is above 0.05(5 percent level of significance). The regression result indicates that the impact of net worth on Capital structure is not significant

**(v) Sales:** An analysis of the data reveals that Sales lies in the range between Rs 27731 lakhs to Rs 95837lakhs in BDL. The correlation analysis shows that there is positive relationship (0.87) of the sales with D/E ratio. The P value as per the regression analysis is 0.03 which is below 0.05(5 percent level of significance). The regression result indicates that the impact of sales on Capital structure is significant

Thus from the above analysis it is noted that except FL and Sales all other determinants are insignificant.

### 1.3.2 Determinants of Capital Structure of BEL

The impact of variables like financial leverage, operating leverage, debt servicing Capacity, profitability and size on the Capital structure decisions of the Company is given below.

**Table 1.4**  
**Determinants of capital structure of BEL(In percentages)**

Year	DE	FL	OL	GICR	NW	Sales
2002-03	2.15	0.70	2.81	33.74	102173	246536
2003-04	2.28	0.71	2.36	102.96	124861	273960
2004-05	1.71	0.65	1.93	80.17	159332	318533
2005-06	1.53	0.62	1.83	33.08	204246	350201
2006-07	1.25	0.57	1.97	1317.58	259215	389246
2007-08	1.15	0.55	1.66	4603.60	323313	406027
2008-09	1.23	0.56	1.21	110.04	380712	458355
2009-10	1.14	0.54	1.91	2032.28	434567	518043
2010-11	1.63	0.63	1.90	2654.65	500257	547174
2011-12	1.64	0.63	2.38	1792.42	563697	576764

**Source:** Ratios based on Annual Reports of the Company.

The correlation among the above variables is shown in the table no 4.8 as given below. Each of the variables has been correlated with the other variable to ascertain the relationship among them.

**Table 1.5**  
**Correlation ship matrix of select financial parameters**

	DE	FL	OL	GICR	NW	Sales
DE	1	0.99	0.76	-0.53	-0.53	-0.57
FL	0.99	1	0.75	-0.56	-0.53	-0.57
OL	0.76	0.75	1	-0.23	-0.31	-0.36
GICR	-0.53	-0.56	-0.23	1	0.55	0.53
NW	-0.53	-0.53	-0.31	0.55	1	0.99
Sales	-0.57	-0.57	-0.36	0.53	0.99	1

**Source** Correlation based on calculated ratios.

To ascertain the impact, the debt equity ratio has been considered as dependent variable and the others like financial leverage(FL), operating leverage(OR) , Gross

interest coverage ratio(GICR), NW and Sales as independent variable. The regression analysis of the above determinants has been shown in the following table no 4.9.

**Table 1.6**  
Regression analysis of capital structure determinants of BEL

Multiple R	0.99					
R Square	0.99					
Adjusted R Square	0.97					
Standard Error	0.07					
Observations	10.00					
ANOVA						
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>	
Regression	5.00	1.43	0.29	62.30	0.00	
Residual	4.00	0.02	0.00			
Total	9.00	1.45				
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	-1.94	0.72	-2.71	0.05	-3.93	0.05
FL	6.19	0.79	7.87	0.00	4.01	8.37
OL	0.03	0.08	0.36	0.74	-0.20	0.26
GICR	0.00	0.00	0.10	0.93	0.00	0.00
NW	0.00	0.00	0.80	0.47	0.00	0.00
Sales	0.00	0.00	-0.86	0.44	0.00	0.00

Source: Calculation based on SPSS Statistics

Based on the above ratios, Correlation and regression analysis, the determinants of Capital structure in BEL are given below. The regression equation shows Cap structure = -1.94+6.19(FL)+0.03(OL) +0(GICR) +0 (NW) + 0(Sales).The overall result indicates the model is significant. However a detailed analysis is given as follows.

**(i) Financial Leverage (FL):**An analysis of the data reveals that financial leverage lies in the range between 0.54 to 0.71 in BEL. The correlation analysis shows that there is positive relationship (0.99) of the financial leverage with D/E ratio. The P value of FL as per the regression analysis is 0.00 which is below 0.05(5 percent level of significance) The regression result indicates that the impact of financial leverage on Capital structure is significant.

**(ii) Operating Leverage (OL):** An analysis of the data reveals that operating leverage lies in the range between 1.21 to 2.81 in BEL. The correlation analysis shows that there is positive association (0.76) of the Operating leverage with D/E ratio.

The P value as per the regression analysis is 0.74 which is above 0.05(5 percent level of significance) The regression result indicates that the impact of operating leverage on Capital structure is not significant.

**(iii) Gross Interest Coverage Ratio (GICR):**An analysis of the data reveals that GICR lies in the range between 33.08 to 4603.60 in BEL. The correlation analysis shows that there is negative relationship (-0.53) of the GICR with D/E ratio. The P value as per the regression analysis is 0.93 which is above 0.05(5 percent level of significance). The regression result indicates that the impact of GICR on Capital structure is not significant.

**(iv) Net Worth:** An analysis of the data reveals that the net worth lies in the range between Rs102173 lakhs to Rs 563697 lakhs in BEL. The correlation analysis shows that there is negative relationship (-0.53) of the net worth with D/E ratio. The 'P' value as per the regression analysis is 0.47 which is above 0.05(5 percent level of significance). The regression result indicates that the impact of net worth on Capital structure is not significant.

**(v) Sales:** An analysis of the data reveals that Sales lies in the range between Rs 246536 lakhs to Rs 576764lakhs in BEL. The correlation analysis shows that there is negative relationship (-0.57) of the sales with D/E ratio. The P value as per the regression analysis is 0.44 which is above 0.05(5 percent level of significance) The regression result indicates that the impact of sales on Capital structure is not significant.

Thus from the above analysis it is noted that except FL, all other determinants are insignificant. However based on significance F, the overall model is significant.