

## Financial Leverage and Firm Performance – An Empirical Study of Select Public Sector Undertakings listed at BSE, India

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**ABSTRACT:** In the process of profit magnification, operating leverage and financial leverage play a vital role in the organization. Operating leverage magnifies the effect of change in sales on operating profit as measured by Earnings Before Interest and Tax (EBIT). The Financial Manager uses financial leverage to magnify the effect of changes in operating profit on Earnings Per Share (EPS). Even though increase in financial leverage leads to increase in return on equity (ROE), companies will not prefer to increase their debt financing portion as it leads to increase in financial risk. The rise in financial risk will cause more fluctuations in return on equity and it also will result in higher interest rate on debts. Hence, the present study is carried out to analyze the impact of financial leverage as measured by debt ratios, on the performance of the public sector companies as measured by Return on Equity (ROE) and Return on Assets (ROA). The results indicate a positive relationship between debt ratios and ROE and a negative relationship between debt ratios and ROA.

**Key Words:** Financial Leverage, Return on Equity, Return on Assets, Multiple Regression, Correlation

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### I. INTRODUCTION

The company investments are financed by debt and equity. The financial leverage is measured as the proportion of debt used to finance assets of a company. The interest rate on debt capital is fixed irrespective of the firm's rate of return on assets. The intention of using financial leverage by a company is to gain more return on assets as the debt is considered as the cheapest source of finance. The increase in debt leads to increase in the financial leverage of the firm. The main objective of the company is to use financial leverage to enhance its shareholders return. While using financial leverage for enhancing its shareholders return, it is assumed that the cost of fixed cost financial sources like loans from banks and financial institutions and debentures will be less than the companies' rate of return on assets (ROA). When the firm's earnings are less than its fixed financing cost then it leads to unfavorable or negative leverage. Financial leverage sometimes called as "trading on equity" and its favorability will be judged based on its effect on earnings per share to shareholders. In addition, the financial leverage helps in determining the company's capital structure by analyzing its cost of capital and extent of financial risk.

### II. REVIEW OF LITERATURE

An attempt is made in this section to review the prominent studies carried out to study the impact of the financial leverage on the performance of the company.

Nhung Thi Hong Bui (2017)<sup>1</sup> investigated the effect of debt ratios on the firm performance and the result revealed that there were strong negative impacts of financial leverage on performance of the company.

The research paper published in the year 1995 by Roden and Lewellen<sup>2</sup> disclosed about how capital structure of American firms affects their performance. The study was conducted with a sample of 48 American firms and results shows that the relationship between debt ratios and firm value is positive relation.

Gleason et al (2000)<sup>3</sup> conducted a study in European countries and found that there is a negative relationship between financial leverage and return on assets and profit margin.

Deesomask et al (2004)<sup>4</sup> conducted a study in Malaysia found that there is a negative relationship between financial leverage and profit margin.

Huang and Song (2006)<sup>5</sup> found from his studies on Chinese companies that there is a negative relationship between long-term liability and return on assets (ROA) and also between total liabilities and return on assets.

Enuju and Soocheong (2005)<sup>6</sup> examined in their study about impact of financial leverage on restaurant firms profitability and risk. The study revealed that financial leverage does not affect the profitability of restaurant firms.

Berger and Bonaccorsi (2006)<sup>7</sup> proved from their study that neither high degree of financial leverage nor low capital of the company are related with maximum efficiency of company's performance.

Jelinek (2007)<sup>8</sup> inspects the influence of financial leverage and free cash flows and firms growth rate on earnings management. The results of the study revealed that during a period of five years' time, firms with high degree of financial leverage has low performance in management of earnings.

Pandey (2010)<sup>9</sup> study says that the three fundamental factors such as type of business, operating leverage and financial leverage will effect values of variance, covariance and beta and these three are effected by the three fundamental factors.

Obradovich and Gill (2013)<sup>10</sup> disclose in their study that board with larger size effects negatively value of American firms and CEO duality, audit committee, firm's size, financial leverage, return on assets and insider holdings effect the value of American firms positively.

Bindiya Soni and Jigna Trivedi (2013)<sup>11</sup> revealed in their research paper on "leverage analysis of selected paint companies in India" that there is no significant relationship between financial leverage and profitability and there is a significant relationship between operating leverage and firm's profitability.

Dr. E.B. Khedkar (2015)<sup>12</sup> examined in his research study that there is a significant negative relationship between operating leverage and return on investment. There is a positive relationship between financial leverage and return on investment, which is not significant.

The present paper focuses on the analyzing the impact of financial leverage of the company on the firm performance as measured by Return on Equity and Return on Assets.

### OBJECTIVES OF THE STUDY

The main objective of the study is to examine the impact of financial leverage as measured by Short-term Debt Ratio (SDR), Long-term Debt Ratio (LDR) and Total Debt Ratio (TDR) on the performance of public sector enterprises listed at BSE as measured by Return on Equity (ROE) and Return on Assets (ROA).

The specific objectives are:

- To study the effect of debt ratios on Return on Assets (ROA) of public sector undertakings listed at BSE
- To examine the impact of debt ratios on Return on Equity (ROE) of public sector undertakings listed at BSE.

### STATEMENT OF HYPOTHESIS

**H<sub>01</sub>:** There is no significant effect of debt ratios on ROA (return on assets) of public sector companies in India

**H<sub>02</sub>:** There is no significant effect of debt ratios on ROE (Return on Equity) of public sector companies in India

### III. METHODOLOGY OF THE STUDY

The current study focuses on analyzing the effect of financial leverage on the performance of public sector enterprises selected from the Bombay Stock Exchange PSU index. The financial leverage of the company is measured by calculating Short-term debt Ratio, Long-term debt ratio and Total Debt Ratio. The performance of the company is measured by calculating ROE and ROA. These ratios were calculated for the select 32 public sector undertakings listed at BSE for the financial year ending 31<sup>st</sup> March 2018. The list the select 32 public sector undertakings is presented in Annexure 1.

$$\text{Short-term Debt Ratio (SDR)} = \frac{\text{ShortTermDebt}}{\text{TotalAssets}}$$

$$\text{Long-term Debt Ratio (LDR)} = \frac{\text{LongTermDebt}}{\text{TotalAssets}}$$

$$\text{Total-Debt Ratio (TDR)} = \frac{\text{TotalDebt}}{\text{TotalAssets}}$$

$$\text{Return on Equity (ROE)} = \frac{\text{NetProfitlessPreferenceDividend}}{\text{Equity ShareholderFunds}}$$

$$\text{Return on Assets (ROA)} = \frac{\text{ProfitBeforeTax}}{\text{TotalAssets}}$$

To study the impact of financial leverage on the performance of the company, the techniques of Pearson's coefficient of correlation and multiple regression are adopted. The Correlation coefficient is used to study the relationship between SDR, LDR, TDR, ROE and ROA. The Multiple Regression technique is used to study the impact of SDR, LDR, TDR on ROE and ROA. The ROA and ROE are taken as dependent variables and SDR, LDR and TDR are considered as independent variables. The proposed Multiple Regression Model is :

$$Y_{ROA} = \alpha + \beta_1 X_{SDR} + \beta_2 X_{LDR} + \beta_3 X_{TDR}$$

$$Y_{ROE} = \alpha + \beta_1 X_{SDR} + \beta_2 X_{LDR} + \beta_3 X_{TDR}$$

Where ROA : Return on Assets

ROE : Return on Equity

SDR : Short-Term Debt Ratio

LDR : Long-Term Debt Ratio  
TDR : Total Debt Ratio

**IV. RESULTS AND ANALYSIS**

The statistical results of the data analysed is presented below. The correlation test is used to study the relationship between the variables and the Multiple regression is used to study the impact of SDR, LDR, TDR on ROE and ROA.

**3.1 Correlation Matrix**

The correlation matrix of SDR, LDR, TDR and ROA is presented in Table I.

**TABLE I**  
**Correlation Matrix of SDR, LDR, TDR and ROA**

		SDR	LDR	TDR	ROA
STD	Pearson Correlation Sig. (2-tailed)	1			
LTD	Pearson Correlation Sig. (2-tailed)	.237 .191	1		
TD	Pearson Correlation Sig. (2-tailed)	.542** .001	.945** .000	1	
ROA	Pearson Correlation Sig. (2-tailed)	-.701** .000	-.575** .001	-.733** .000	1

\*\* . Correlation is significant at the 0.01 level (2-tailed).

It is found that there is a negative correlation between SDR, LDR, TDR and ROA, which indicates that the increase in usage of debt by the companies will result in decrease in ROA. The results were found to be statistically significant at 1% level of significance.

The correlation matrix of SDR, LDR, TDR and ROE is presented in Table II

**TABLE II**  
**Correlation Matrix of SDR, LDR, TDR and ROE**

		SDR	LDR	TDR	ROE
SDR	Pearson Correlation Sig. (2-tailed)	1			
LDR	Pearson Correlation Sig. (2-tailed)	.237 .191	1		
TDR	Pearson Correlation Sig. (2-tailed)	.542** .001	.945** .000	1	
ROE	Pearson Correlation Sig. (2-tailed)	.405* .022	.179 .328	.291 .106	1

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

It is found that there is a positive correlation between SDR, LDR, TDR and ROE, which indicates that the increase in usage of debt by the companies will result in increase in ROE. The relationship between SDR and ROE is found to be statistically significant at 5% level of significance.

**3.2 Regression Analysis**

3.2.1 The regression model of the independent variables SDR, LDR and dependent variable ROA is presented as under :

$$Y_{ROA} = 9.104 - 0.398 X_{SDR} - 0.112 X_{LDR}$$

The results indicate that a one unit increase in SDR leads to 0.398 units decrease in ROA and a one unit increase in LDR leads to 0.112 units decrease in ROE. The R<sup>2</sup> value is found to be 0.67, which indicates that, the variables SDR and LDR explains 67% of variation in ROA.

3.2.2 The regression model of the independent variable TDR and dependent variable ROA is presented as under :

$$Y_{ROA} = 8.525 - 0.164 X_{TDR}$$

The results indicate that a one unit increase in TDR leads to 0.164 units decrease in ROA. The R<sup>2</sup> value is found to be 0.54, which indicates that the variable TDR explains 54% of variation in ROA.

3.2.3 The regression model of the independent variables SDR, LDR and dependent variable ROE is presented as under :

$$Y_{ROE} = 11.075 + 0.452 X_{SDR} + 0.40 X_{LDR}$$

The results indicate that a one unit increase in SDR leads to 0.452 units increase in ROE and a one unit increase in LDR leads to 0.04 units increase in ROE. The t-value of SDR is 2.206, which indicates that impact of SDR on ROE is statistically significant at 1% level of significance.

3.2.4 The regression model of the independent variable TDR and dependent variable ROE is presented as under :

$$Y_{ROA} = 11.908 + 0.115 X_{TDR}$$

The results indicate that a one unit increase in TDR leads to 0.115 units increase in ROE. The R<sup>2</sup> value is found to be 0.85, which indicates that the variable TDR explains 85% of variation in ROA.

## V. CONCLUSION

Financial Leverage indicates the firms' usage of fixed income securities like debt in their capital structure. The higher financial leverage will result in higher financial risk to the equity shareholders. In the present study, the researchers analysed the relationship between the financial leverage as measured by SDR, LDR and TDR and the firm performance as measured by ROA and ROE. The analysis indicate that financial leverage has a negative relationship with the Return on Assets. The increase in the usage of debt by the firms, which result in decrease in ROA. Further, it was also found that usage of debt has a positive relationship with ROE. The increase in the usage of debt, the cheaper source of finance, is resulting in an increase in the return to the equity shareholders. Hence, the company should design the optimum capital structure considering the impact of leverage on its performance.

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## ANNEXURE - 1

### List of Public Sector Enterprises of S&P BSE Psu Index

1	Balmer Lawrie & Co. Ltd.
2	BEML Ltd.
3	Bharat Electronics Ltd.
4	Bharat Heavy Electricals Ltd.
5	Bharat Petroleum Corp.Ltd.
6	Chennai Petroleum Corp.Ltd.
7	Coal India Ltd.
8	Container Corp. of India Ltd.
9	Engineers India Ltd.
10	GAIL (India) Ltd.

11	Hindustan Copper Ltd.
12	Hindustan Petroleum Corp. Ltd.
13	Indian Oil Corp. Ltd.
14	Mahanagar Telephone Nigam Ltd.
15	Mangalore Refinery & Petrochemicals Ltd.
16	MMTC Ltd.
17	MOIL Ltd.
18	National Aluminum Co. Ltd.
19	NBCC (India) Ltd.
20	NHPC Ltd.
21	NLC India Ltd.
22	NMDC Ltd.
23	NTPC Ltd.
24	Oil & Natural Gas Corp. Ltd.
25	Oil India Ltd.
26	Power Finance Corp. Ltd.
27	Power Grid Corp. of India Ltd.
28	Rashtriya Chemicals & Fertilizers Ltd.
29	Rural Electrification Corp. Ltd.
30	Shipping Corp. of India Ltd.
31	SJVN Ltd.
32	Steel Authority of India Ltd.