

Determine Optimum Level of Financial Leverage for Listed Sugar Companies of India

¹Ashvinkumar M. Patel, ²Pankaj M. Nayka, ³Mahendrakumar S. Tarasariya

¹Alumnus, ²Alumnus, ³Alumnus

¹Sir K.P. College of Commerce, Surat, India.

²Navyug Commerce College, Surat, India

³S.P.B. English Medium College of Commerce, Surat, India.

Abstract: The use of financial leverage is vital decision for any business concern because it may have positive or negative impact on performance of the business. The purpose of this research is to analyse impact of financial leverage on the listed sugar companies' performance and determine optimum level of financial leverage for sugar companies to take advantage of trading on equity. For this purpose, 75 company year taken as a sample which include 15 listed sugar companies' 5-year financial data covering 2012-13 to 2016-17. All companies which include in sample, are listed on National Stock Exchange. Ratio analysis has been used for measure companies' financial leverage and performance. Pearson correlation and regression analysis has been used to evaluate impact of financial leverage on sugar companies' performance. The result shows that financial leverage has significant negative impact on performance of the sugar companies. This research paper also found that 40% to 50% level of financial leverage is optimum level of financial leverage for sugar companies to take maximum advantage of trading on equity. Using more than 70% financial leverage make sugar companies' performance negative.

Keywords: Financial Leverage, Sugar Companies of India, Trading on Equity

1. INTRODUCTION

The use of long term fixed interest-bearing debt finance along with equity capital in capital structure is called financial leverage. Financial leverage may have a positive or negative impact on performance of business concern that's why financial leverage is a two-edged sword. Financial leverage has a positive impact on firms' performance if rate of return on assets acquired by debt finance is higher than interest rate on debt finance sources. Positive financial leverage is beneficial for shareholders because it helps in maximizing their stock value. Positive impact of financial leverage is known as "Trading on Equity". Positive financial leverage is result of "Tax Shield" because interest expense is deductible expense when, income for tax purpose is calculated. Tax shield lower the overall amount of taxes owned by business concerns. Financial leverage has a negative impact on firms' performance if interest rate on debt finance sources is higher than rate of return on assets acquired by debt finance. Negative financial leverage cause share value minimizes that's why it is loss for shareholders. Thus, using financial leverage is a momentous decision for any business concern.

2. LITERATURE REVIEW

Syed shah Fasih Ur Rehman reported mix effect of financial leverage in his research paper "Relation between Financial Leverage and Financial Performance: Empirical Evidence of Listed Sugar Companies of Pakistan" He investigated 35 listed sugar companies' 5-year financial data and reported that financial leverage is positively related with return on assets and negatively related with earning per share, net profit margin and return on equity (1).

Joshua Abor attempt research to investigate the relation of capital structure and profitability of listed firms on the Ghana Stock Exchange. For this purpose, he investigated all listed firms' financial data over a five-year period. His final conclusion was that ratio of short-term debt to total assets is positively related with return on equity and ratio of long-term debt to total assets is negatively related with return on equity. He also concludes that there is significant positive relationship between the ratio of total debt to total assets and return on equity. (2)

Puwanenthiren Pratheepkanth attempt investigation to analyse the relation between capital structure and companies' performance. He analyses five-years financial data of business companies in Sri Lanka. His research found that capital structure (financial leverage) is negatively related with financial performance of business companies. (3)

CA Sachchidanand Pachori and *Dr. Navindra K. Totala* analyse seven major automotive public companies' financial data to investigate impact of financial leverage on shareholders' return and market capitalization. They reported in their research paper that financial leverage has no significant impact on shareholders' return and market capitalization. (4)

Franklin John. S. and **Muthusamy. K.** attempt to investigate the variables that influence of use of financial leverage (debt funds) in the Indian pharmaceutical industry. Their results conclude that financial leverage is positively related with interest, asset structure, retained earning and intrinsic value of share. They also concluded that cash flow and interest coverage is negatively related with financial leverage. (5)

3.OBJECTIVES

- 1) To analyse impact of financial leverage on companies' performance.
- 2) To determine optimum level of financial leverage for optimum profitability and performance of companies.
- 3) To determine optimum level of financial leverage to take advantage of trading on equity.

4.RESEARCH AND METHODOLOGY

4.1 Sample and Data Collection

Data for this research is taken from 15 listed sugar companies' 5 years annual reports covering 2012-13 to 2016-17. Data is secondary and quantitative in nature. Sample for this study consist 75 company years. All other sugar companies are excluded from study.

4.2 Methods

Ration Analysis: Ration analysis has been used to measure financial leverage and companies' performance. To measure level of financial leverage, Debt ratio is used. Interest cover ratio, earning per share, return on equity, net profit margin and return on assets are used to measure companies' performance. Calculation formulas for above ratios are as per table:1

Table:1 Formulas for calculate ratios.

<i>Indicator of Financial Leverage - Predictor Variable</i>	
Debt Ratio(DR)	Total liabilities / Total assets
<i>Indicators of Companies' performance - Dependent Variable</i>	
Interest Coverage (IC)	Earning before Interest and Tax / Interest expense
Earning per Share (EPS)	Net Profit – Preferential Dividend / Total Equity Shares
Return on Equity (ROE)	Net Profit / Shareholders' fund × 100
Net Profit Margin (NPM)	Net Profit / Net Sales × 100
Return on Assets (ROA)	Net Profit / Total Assets × 100

Statistical Methods: Correlation has been used in this research to find out the nature of relation between financial leverage and performance of companies. Regression analysis which include t-value, F-value, coefficient value and significance level is used in present research for test the hypotheses. To determine optimum level of financial leverage for optimum performance, data is properly arranged in ascending order in table.

All data analysis is done using SPSS and MS excel.

5.HYPOTHESIS

- H01: Financial leverage has no significant impact on EPS.
 H11: Financial leverage has significant impact on EPS.
 H02: Financial leverage has no significant impact on ROE.
 H12: Financial leverage has significant impact on ROE.
 H03: Financial leverage has no significant impact on NPM.
 H13: Financial leverage has significant impact on NPM.
 H04: Financial leverage has no significant impact on ROA.
 H14: Financial leverage has significant impact on ROA.
 H05: Financial leverage has no significant impact on IC.
 H15: Financial leverage has significant impact on IC.

6.DATA ANALYSIS AND RESULTS

6.1 Descriptive Statistics Analysis

Table:2 Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
DR	75	0.39	0.99	0.7248	0.15246
IC	75	-5.54	10.80	1.4628	2.50311

EPS	75	-120.03	124.56	1.1469	28.69614
ROE	75	-115.30	52.49	-8.1608	31.18553
NPM	75	-27.71	13.29	-1.7473	8.41305
ROA	75	-20.59	9.28	-.2849	4.98857
Valid N	75				

Debt Ratio

Debt ratio is the solvency ratio which measures a long-term solvency of business concern. It measures a companies' total liabilities in compare of total assets. Table shows that average value of DR is 0.7248 which means sugar companies averagely use 72.48% of debt finance in compare of total assets to acquire its assets. Minimum and maximum value of debt ratio is 0.39 and 0.99 respectively with the standard deviation value of 0.15.

Interest Coverage

Interest coverage ratio is a financial ratio which measures a company's ability to pay interest expense. The mean value for this ratio is 1.46 which indicates that sugar companies most profit is consumed in interest expense. Standard deviation value is 2.50 which shows that IC value can be deviate from mean to both side by 2.50 times. The maximum value and minimum value is 10.8 and -5.54 respectively.

Earning per Share

Earning per share is ratio which measures how many rupees of net income have been earned by each share of common equity. The average value for EPS is 1.14 rupee which is quite low. Minimum value of EPS is -120.03 which shows worst condition and best value of EPS is 124.56 rupees. The standard deviation value of EPS is 31.18 which indicates that value of EPS are 31.18 rupees bunched around the average value of EPS.

Return on Equity

ROE is the profitability ratio which measures how effectively company uses shareholders' funds to generate profit. Minimum value of ROE is -115.30 which indicates that loss is more than shareholders' funds. Maximum value for same ratio is 52.49 percent. The average value of ROE is -8.16 percent which shows that sugar companies averagely generate 8.16 percent loss on shareholders' fund.

Net Profit Margin

NPM is also a profitability ratio that measures how many percentage net income business concern makes from each rupee of sales. The mean value which is -1.74 is shows bad situations of sugar companies and one of the reason for low profitability of sugar companies is that sugar companies are using too much debt finance in capital structure. Because of debt finance, companies have to bear interest expense and it diminish the profitability of business. The minimum and maximum value of NPM is -27.71 and 13.29 respectively with the standard deviation value of 8.41 percent.

Return on Assets

ROA is a profitability ratio which indicate that how much profit company generate on its assets. The average value of ROA shows that averagely sugar companies generate negative profit on their assets.

6.2 Correlation analysis

Table:3 Correlations table

	EPS	ROE	NPM	ROA	IC
DR					
Pearson Correlation	-0.398**	-0.455**	-0.445**	-0.508**	-0.488**
Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000
N	75	75	75	75	75

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

Table:3 shows that debt ratio is negatively related with EPS, ROE, NPM, ROA and IC which means high level of financial leverage has a bad impact on financial performance of companies. As financial leverage increase, profitability and performance decrease and vice a versa. It also indicates that sugar companies are using a debt finance sources which has a high interest rates and major portion of their income is consumed in paying interest.

6.3 Regression Analysis

6.3.0 Regression analysis of DR with EPS

Table:4.0 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.398 ^a	.158	.147	26.50772

a. Predictors: (Constant), DR

Table:4.1 ANOVA^a

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	9642.529	1	9642.529	13.723	.000 ^b
	Residual	51294.119	73	702.659		
	Total	60936.648	74			

a. Dependent Variable: EPS
b. Predictors: (Constant), DR

Table:4.2 Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		β	Std. Error	Beta		
1	(Constant)	55.414	14.966		3.703	.000
	DR	-74.874	20.212	-.398	-3.704	.000

a. Dependent Variable: EPS

Regression analysis between DR and EPS shows that there is significant negative relation between financial leverage and EPS. Table 4.2 shows that β value is negative which indicates a negative relation of financial leverage and EPS. P-value is 0.000 which is less than significant level of 0.01 which provide a strong evidence to reject null hypothesis and accept alternative hypothesis. Thus, our final conclusion is “There is significant negative impact of financial leverage on EPS”. From regression analysis, we can find estimated EPS from following equation.

$$\text{Estimated EPS} = 55.414 - 74.874(\text{DR})$$

6.3.1 Regression analysis of DR with NPM

Table:5.0 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.445 ^a	.198	.187	7.58766

a. Predictors: (Constant), DR

Table:5.1 ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1034.879	1	1034.879	17.975	.000 ^b
	Residual	4202.796	73	57.573		
	Total	5237.675	74			

a. Dependent Variable: NPM
b. Predictors: (Constant), DR

Table:5.2 Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		β	Std. Error	Beta		
1	(Constant)	16.031	4.284		3.742	.000
	DR	-24.529	5.786	-.445	-4.240	.000

a. Dependent Variable: NPM

Regression analysis of DR with NPM found that financial leverage has a significant negative impact on NPM. Table 5.2 indicates that β value for DR with NPM is negative which means financial leverage playing negative role in degerming NPM. Significance level is

0.000 which provides strong evidence to accept alternative hypothesis and reject null hypothesis. So, "Financial leverage has a negative impact on NPM." Estimated NPM can be found using following equation.

$$\text{Estimated NPM} = 16.031 - 24.529(\text{DR})$$

6.3.2 Regression analysis of DR with ROE

Table:6.0 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.455 ^a	.207	.196	27.95672

a. Predictors: (Constant), DR

Table:6.1 ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14912.566	1	14912.566	19.080	.000 ^b
	Residual	57055.197	73	781.578		
	Total	71967.763	74			

a. Dependent Variable: ROE
b. Predictors: (Constant), DR

Table:6.2 Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		β	Std. Error	Beta		
1	(Constant)	59.326	15.784		3.759	.000
	DR	-93.113	21.317	-.455	-4.368	.000

a. Dependent Variable: ROE

Regression analysis of DR with ROE indicates that financial leverage is negatively related with ROE which means as level of financial leverage decrease, ROE increase and vice a versa. β value between these two variables is negative which indicate that financial leverage is negatively related with ROE. Significance level (0.000) provide information to reject null hypothesis and accept alternative hypothesis that financial leverage has a significant negative impact on ROE. Relation between financial leverage and ROE can determine through following equation.

$$\text{Estimated ROE} = 59.326 - 93.113(\text{DR})$$

6.3.3 Regression analysis of DR with ROA

Table:7.0 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.508 ^a	.259	.248	4.32494

a. Predictors: (Constant), DR

Table:7.1 ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	476.076	1	476.076	25.452	.000 ^b
	Residual	1365.473	73	18.705		
	Total	1841.549	74			

a. Dependent Variable: ROA
b. Predictors: (Constant), DR

Table:7.2 Coefficients^a

Model		Unstandardized Coefficients	Standardized Coefficients	T	Sig.
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		β	Std. Error	Beta		
1	(Constant)	11.773	2.442		4.822	.000
	DR	-16.637	3.298	-.508	-5.045	.000

a. Dependent Variable: ROA

Regression analysis between DR and ROA concludes that financial leverage has negative impact on ROA. β value is negative means as financial leverage increase, ROA decrease and vice a versa. Significance level is less than 0.01 which provide strong evidence to reject null hypothesis and accept alternative hypothesis. Thus, "Financial leverage has negative impact on ROA". Estimated ROA can be determine using following equation.

$$\text{Estimated ROA} = 11.773 - 16.637 \text{ ROA}$$

6.3.4 Regression analysis of DR with IC

Table:8.0 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.488 ^a	.239	.228	2.19917

a. Predictors: (Constant), DR

Table:8.1 ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	110.600	1	110.600	22.868	.000 ^b
	Residual	353.053	73	4.836		
	Total	463.652	74			

a. Dependent Variable: IC

b. Predictors: (Constant), DR

Table:8.2 Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		β	Std. Error	Beta		
1	(Constant)	7.275	1.242		5.859	.000
	DR	-8.019	1.677	-.488	-4.782	.000

a. Dependent Variable: IC

The regression analysis between DR and IC founded that as DR increase, IC will decrease and vice a versa. Which means using too much debt in capital structure make profit low for pay interest expenses. Significance value is 0.000 which is lower than 0.01 significance level which provide testimony to accept alternative hypotheses and reject the null hypotheses. Thus, "There is significant negative impact of financial leverage on IC". Estimated IC can be determined through following equation.

$$\text{Estimated IC} = 7.275 - 8.019(\text{DR})$$

6.4 Determine Optimum Level of Financial Leverage

Correlation analysis and Regression analysis only provide information about relation between variables but these methods don't provide information to determine optimum level of financial leverage to get optimum profitability. So, here we used tabulating method to determine optimum level of financial leverage.

Table:9 Level of financial leverage and companies' performance

DR	Average EPS	Average ROE	Average NPM	Average ROA	Average IC
Less than 0.4	12.013	6.427	4.279	3.900	4.063
0.4 to 0.5	23.940	15.900	11.296	8.748	9.185
0.5 to 0.6	18.147	4.321	2.433	1.935	2.203
0.6 to 0.7	13.131	4.934	-1.271	1.454	1.935
0.7 to 0.8	-3.438	-2.864	-1.467	-0.541	0.875
0.8 to 0.9	-9.953	-16.285	-4.661	-2.454	0.521
More than 0.9	-16.108	-50.594	-7.624	-4.300	0.284
Total					

Above table shows level of financial leverage(DR), average EPS, average ROE, average NPM and average ROA.

When financial leverage is less than 40%

As table indicates that when level of financial leverage is less than 40%, average EPS is 12.01-rupee, average ROE is 6.43%, average NPM 4.28% average, ROA is 3.9% and average IC is 4.06 times. But, this is not optimum level of financial leverage for sugar companies.

When financial leverage is between 40% and 50%

As financial leverage increase from less than 40% to 40% to 50%, all indicators of companies' performance also increase. Average EPS increase to 23.94-rupees from 12.01-rupees. Average ROA is increase by margin of 9.48% and became 15.9%. Average NPM, Average ROA and Average IC is 11.30%, 8.75% and 9.19 times respectively. This level of financial leverage is optimum level of financial leverage for sugar companies because at this level all indicators of companies' performance is on optimum level and after this level performance of companies start diminishing.

When financial leverage is between 50% and 60%

When financial leverage increase to between 50% and 60%, performance of companies starts diminishing. However, performance is still positive. EPS decrease from 23.94-rupees to 18.15-rupees. All other performance indicators also shrink.

When financial leverage is between 60% and 70%

At this level of financial leverage, NPM became negative and all other indicators of performance also decrease except ROE. However, ROE increase by just 0.61%. Average value of ROA is 1.45% which indicates low profitability.

When financial leverage is more than 70%

When company start using more than 70% of financial leverage, average value of all profitability indicators goes negative. So, using more than 70% of financial leverage can cause bad effect on profitability and performance.

Thus, sugar companies have to use 40% to 50% debt finance to get optimum benefits of trading on equity. By doing so, companies can maximize their profitability and can increase the performance. Using more than 70% debt finance makes companies' performance negative. It's not wisdom to use more than 70% debt finance in capital structure because it makes companies' performance negative.

7.CONCLUSION

This research paper attempt to investigate impact of financial leverage on profitability of listed sugar companies in India and to determine optimum level of financial leverage to take maximum advantage of trading on equity. The results of present study found that financial leverage has a negative impact on profitability of companies which means as level of financial leverage increase, profitability will increase and vice versa. The study also found optimum level to get maximum advantage of trading on equity. Sugar companies can take advantage of debt finance by using 40% to 50% debt finance in their capital structure and can maximize EPS. It's not fair to use more than 70% debt in capital structure because using that much of debt put too much interest expense on companies profit and it made profitability negative.

8.LIMITATION OF THE STUDY

1. The study based on secondary data which is taken from the annual reports of the companies.
2. The study covers only 21 listed sugar companies in India.
3. The study covers only 5 years data.
4. The study shows results for sugar companies. Results for various sectors are may be various from these results.

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