A STUDY OF FINANCIAL LEVERAGE AND ITS IMPACT ON THE PERFORMANCE OF ENERGY SECTOR LISTED ON BOMBAY STOCK EXCHANGE

Ranjit Kumar Paswan
Assistant Professor
Department of Commerce
Kazi Nazrul University, Asansol, India

Abstract: The energy sector listed on BSE encompasses a diverse range of companies, including those engaged in oil and gas exploration, power generation, renewable energy production and utilities. These companies play a pivotal role in shaping India's energy landscape, meeting the nation's growing energy demands and driving economic growth. The present study is an honest attempt to analyze the impact of financial leverage on firm performance of the selected companies. In this study a sample of thirteen companies belonging to different industries under the energy sector have been selected. The data has been collected from the Capitaline database for a period of ten years from 2011-12 to 2020-21. The study considers Return on Assets (ROA) as financial performance variable. Debt Equity Ratio (DER), Debt to Assets Ratio (DTAR), Assets to Equity Ratio (AER) and Debt to Capital Ratio (DCR) were taken to be represented as financial leverage variables. Panel data analysis has been applied to examine the effect of financial leverage on firm performance. The coefficients highlight that DER and DTAR significantly affect ROA, while AER and DCR have minor effects.
Keywords: **Energy sector, financial leverage, performance**

I.   INTRODUCTION

Financial performance refers to an assessment of how well a company or organization is working financially. This analysis involves the examination of various financial measures and indicators to have insights on the various parameters such as profitability, liquidity, efficiency and overall financial health. These performance measures play an important role in providing the snapshot of company's financial strength and its ability in generating returns.

Leverage is an important concept of financial analysis. It offers valuable information from which a company chooses to finance its operations and investments. It measures the extent to which a company relies on debt or borrowed capital comparing to its own equity. Investors, analysts and stakeholders are heavily interested in crucial measurement of the financial structure. The leverage magnifies both profits and losses. Leverage analysis emphasizes the evaluation of company's risk and reward factors. In case of returns generated from investment exceeds the cost or borrowing, it becomes a powerful tool for shareholders. On the other hand, excessive leverage can turn into a financial crisis. When the company has too much debt in its capital structure, it has to meet the regular interest and principal payments, irrespective of its financial performance. It becomes a threat to the company at the time of economic hardship. Financial leverage refers to the use of borrowed funds to finance a firm's operations and investments. There is a complex relationship between financial leverage and the performance of companies, as it may influence company positively or negatively. High financial leverage leads to higher interest expenses, which can minimize a company's profitability and cash flows. It may also lead to the reduction of company's liquidity as the company has pay its obligations utilizing its significant portion of cash

flow. Investors and stakeholders often are of the opinion that high levels of debt as risk and a highly leveraged firm may have evidence of decline in stock price or may suffer from reputational damage. The influence of leverage on performance can vary from industry to industry and by economic conditions. The effective uses of financial leverage by the management may have significant impact on the performance. The skilled management can use leverage to enhance returns while effectively managing the associated risks.

In this background the study concentrates on evaluating the relationship between financial leverage and performance of selected firms.

II.   LITERATURE REVIEW

Bauer (2004) investigated the relationship between company's performance and its capital structure. The study discovered several insightful correlations. Firstly, there was a positive correlation between firm's size and the leverage. Secondly, the study revealed a positive association between leverage and tax benefits.

In **Leon's (2013)** study, it was asserted that leverage exhibited a negative correlation with Return on Equity (ROE). The research also found an insignificant correlation between leverage and Return on Assets (ROA).

Abor (2005) examined the relationship between financial leverage and profitability. The study revealed that the short-term debt has positive impact on company's profitability, as the findings pointed out that short-term debt to total assets has positive correlation with Return on Equity (ROE).

Mwangi and Birundu (2015) investigated the impact of capital structure on the financial performance of Small and Medium Enterprises (SMEs). The study was conducted for a period of five years and considered 40 SMEs operating in Thika Sub-County, Kenya. It was revealed that there was no significant effect of capital structure, asset turnover and asset tangibility on the financial performance of the selected companies.

Saleem et al. (2013) studied the influence of leverage on the profitability of a specific group of oil and gas companies operating in South Asian countries. The study discovered that both financial leverage and operating leverage had a substantial and statistically significant impact on the profitability of the selected companies.

Muritala (2012) aimed to examine the relationship between capital structure and firm performance in selected companies in Nigeria. The research revealed a positive association between Return on Assets (ROA) and factors such as assets turnover, size, age and tangibility. In contrast to this study **Salim and Yadav (2012)** unveiled a negative correlation between ROA and Return on Equity while also identifying a positive correlation between Tobin's Q and financial leverage.

The study conducted by **Kothari and Sodha (2018)** explored the connection between liquidity and profitability while also investigative the influence of financial leverage and liquidity on the financial performance of specific pharmaceutical firms. The results of the study stated that company's liquidity had an impact on the firm's capital structure. However, the study did not uncover any significant impact of leverage on profitability and capital structure.

III.   OBJECTIVE AND METHODOLOGY

This study explores the impact of financial leverage on the performance of selected companies belonging to energy sector listed on the Bombay Stock Exchange. The study includes data for a period of ten (10) years from 2012 to 2021 from thirteen (13) power generation companies. The data for the study was collected from 'CAPITALINE' database. To reach the objectives, the study considers Return on Assets (ROA) as financial performance variable. Debt Equity Ratio (DER), Debt to Assets Ratio (DTAR), Assets to Equity Ratio (AER) and Debt to Capital Ratio (DCR) were taken to be represented as financial leverage variables. Panel data analysis has been applied to examine the effect of financial leverage on firm performance.

3.1 Hypothesis:

H_0: There is negative impact of Leverage on Firm Performance.

H_1: There is positive impact of Leverage on Firm Performance.

The study investigates the relationships between leverage and firm performance. To achieve the objectives, diagnostic approach was adopted in the form of Panel Regression Model, which incorporates both fixed and random effects. Hausman test is applied to select the appropriate model. The models is:

$$ROA_{it} = \beta_0 + \beta_1(DER)_{it} + \beta_2(DTAR)_{it} + \beta_3(AER)_{it} + \beta_4(DCR)_{it} + \varepsilon_{it}$$

Where,

ROA	= Return on Assets
DER	= Debt – to- Equity Ratio
DTAR	= Debt to Assets Ratio
AER	= Asset to Equity Ratio
DCR	= Debt -to- Capital Ratio
ε_{it}	= Error

α_0, β_0 = intercept

α_i, β_i = regression coefficients

Table 3.1: Descriptive Statistics

	ROA	*DER*	*DTAR*	*AER*	*DCR*
Mean	85.7768	0.7328	0.5108	37.8021	0.77
Median	8.2819	0.565	0.3814	30.4465	0.8903
Maximum	1221.592	2.49	4.5746	162.1587	0.9901
Minimum	0.6134	0	0	0.7289	0
Standard Deviation	270.706	0.6715	0.6874	34.3484	0.2646
Count	130	130	130	130	130

Source: Eviews 9 software output

The table 3.1 represents the result of descriptive analysis. The average ROA stands at 85.77% with a standard deviation of 270.7, which indicates a significant variation. The mean DER is 0.7328, demonstrates that on average companies have more equity than debt. The average DTAR is 0.51 with moderate variability. AER at 37.8% suggests that some companies utilizing their assets more efficiently. DCR's average is 0.77 suggests that companies can cover 77% of their debt payments with earnings with lesser variation.

Table 3.2: Correlation Analysis

Variables	ROA	DER	DTAR	AER	DCR
ROA	1				
DER	-0.157	1			
DTAR	0.884	0.141	1		
AER	-0.31	0.283	-0.221	1	
DCR	-0.078	0.555	0.173	0.338	1

Source: Eviews 9 software output

The above results show the correlation between the financial variables selected in the study. There is strong positive correlation (0.884) between DTAR and ROA, which suggests that companies with higher debt to total assets ratios tend to have higher return on assets. Conversely, DER exhibits a weak negative correlation (-0.157) with ROA indicating that as the debt-to-equity ratio increases, return on assets tends to decrease slightly. AER and DCR display relatively weak correlations with the other variables, indicating limited linear associations. DCR and DER exhibit a moderate positive correlation (0.555), suggesting that companies with higher debt to equity ratios tend to have higher debt coverage ratio, implying a certain level of debt stability.

Table 3.3: Diagnostic Test Analysis

Redundant Fixed Effects-Likelihood Ratio test (F-Test)			
Effect Test	Statistics	d.f.	Prob.
Cross-section F	47.077	(12,113)	0.0000
Cross-section Chi-Square	232.915	12	0.0000
Hausman Test			
Test Summary	Chi.Sq. Statistics	Chi. Sq. d.f.	Prob.
Cross-section random	433.592	4	0.0000

Source: Eviews 9 software output

3.2 Diagnostic Tests

In this study Redundant Fixed Effects-Likelihood Ratio test has been applied to choose among the Pooled Ordinary Least Square (POLS) and Fixed Effect Model (FEM), and the result which suggested that as the p-value of cross-section F and cross-section chi-square is less than 0.05, so null hypothesis was rejected and hence Fixed Effect Model was selected with ROA as dependent variable.

Further, to choose among the Fixed Effect Model and Random Effect Model, Hausman test was applied. The result of Hausman test denoted that the p-value is 0.000. Since the p-value is less than the common significance level of 0.05, there is strong evidence to reject the null hypothesis in favor of the alternative, indicating that a fixed effects model could be appropriate.

Table 3.4: Regression Analysis

Variable	ROA		
Model Selected	FEM		
	Coefficient	t-statistics	Prob.
C	87.282	4.612***	0.0000
DER	-58.287	-2.676**	0.0086
DTAR	85.397	6.236***	0.0000
AER	0.311	1.238	0.2182
DCR	-18.388	-0.76	0.4486
R^2	0.979		
Adjusted R^2	0.976		

Note: *=significant at 10% level; **=significant at 5% level; ***=significant at 1% level
Source: Eviews 9 software output

The above results reveal the relationships between Return on Assets (ROA) as the dependent variables and other independent variables. The coefficient of DER is -58.287. A unit of increase in DER is associated with a substantial decrease in ROA by approximately 58.287 units, while one-unit increase in DTAR results in a significant increase in ROA by 85.397 units. The coefficients of AER (0.311), which represents a one-unit increase in the asset to equity ratio in a 0.311 unit increase in ROA and DCR (-18.388) have minor influence on ROA. The t-statistics of DER and DTAR is -2.676 and 6.236 respectively. The negative t-statistic of DER suggests that it has a statistically significant and negative impact on ROA. The positive t-statistic for DTAR, indicates that it has a statistically significant and positive impact on ROA. DER and DTAR have low probabilities (0.0086 fand 0.0000 respectively), indicating that they are statistically significant in explaining ROA. Alternatively, AER and DCR have higher probabilities suggesting that they are not statistically significant predictors of ROA. The value of R-squared (0.979) indicates that the model explains approximately 97.9% of the variance in ROA and adjusted R-squared (0.976) is similar to R-squared explains the significant variance in ROA.

IV. CONCLUSION AND SUGGESTION

The study examines the impact of financial leverage on the financial performance of the selected companies. The study reveals a strong positive correlation between financial leverage and performance. However, debt to equity ratio (DER) exhibits as weak negative correlations with ROA. AER and DCR have limited influence on ROA. The study selects the fixed effect model due to significant p-values in the Redundant Fixed Effects-Likelihood Ratio test and Hausman test. The coefficients highlight that DER and DTAR significantly affect ROA, while AER and DCR have minor effects.

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