IMPACT OF CAPITAL STRUCTURE ON FIRM PERFORMANCE: EVIDENCE FROM INDIA

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Abstract: This study assesses the impact of capital structure on firm’s performance among Indian firms. Capital structure is often cited as a crucial factor that has the potential to impact firm’s continual performance. Sample taken for the study consists of 2121 wholesale trading and manufacturing companies listed in Bombay Stock Exchange (BSE). This study has been computed based on Panel data model for the period financial year 2012 to 2017 and the result shows that within the sample, leverage is not significantly affecting the performance.

Keywords: Leverage, Capital Structure, Performance, Panel data model regression

1. Introduction

For any firm capital structure is the core aspect as it depicts the sources of funds which are invested into the business for its operations. Capital structure consists of equity stock, preferred stock, debt, retained earnings. Well managed firms with optimum capital mix ratio have the minimum cost of capital with higher returns to the shareholders compared to mediocre capital mix. The finance manager of the company is responsible to forecast the application of funds for maintaining optimum capital mix while procuring funds. When the market value of the firm is maximized it said to have an optimal capital structure. Capital structure also referred to as financial leverage is the interrelation between debt and equity where former (debt) involves borrowing of funds and the latter (equity) involves owner’s fund in the business. Firms are classified into 2 types where the Levered firms are operated with both debt and equity and Unlevered firms are operated only with equity. Continuous monitoring of capital structure is required as long as business needs are expanding. The final goal of financial manager here is to achieve the targeted capital structure to avoid high leverage, if not it erodes the wealth of the firm. Past studies have found that leverage has a significant negative impact on firm’s performance, thereby making it all the more important for a finance manager to work towards optimal capital structure.

Financial performance explicates how effectively a firm can utilize its assets and generate revenue. It is measured in terms of indicators evaluated on assets and sales often named as Return on assets and Return on Sales. If the profitability of the firm is high it normally tends to generate interest from the shareholders and lenders which is vital for any firm to raise the funds. This not only helps in increasing profitability but also maintaining optimum capital structure.

2. Literature Review

Research studies on the impact of leverage on performance have brought out diverged results. With many possible reasons for such contrasting views like differing industries, regions and efficiency of the financial markets our paper attempts to take a stand with respect to wholesale trading and manufacturing industries.

Reference [1] reviewed relationship between capital structure and firm performance with the sample of 16.5 thousand Ukrainian firms for a period of 10 years. The study was done using model developed by Shaffer for fixed effects panel data model. It was found that leverage was negatively affecting firm performance.

Reference [2] studied impact of financial leverage on firm performance with a sample of 422 BSE listed manufacturing companies for a period of 10 years. To analyse the leverage effect annual financial standalone data was considered. Empirical study has done by following ratio analysis and panel data approach. The study found that financial leverage is not impacting firm’s financial performance.

Reference [3] analyzed the relationship between determinants of capital structure and leverage of energy sector firms in India for a period of 5 years of eight listed companies. The analysis was done using linear regression. The study found that the leverage has less impact on firm’s performance as most of their debt funding is through tangible assets. This paper brings in the industry perspective stating that the impact of leverage on performance might possibly vary with industry.

Reference [4] reviewed impact of leverage on firm’s profitability in Indian cement industry of 21 companies for a period of 5 years where the CAGR is of 8.37%. Collected data was converted into relative measures such as percentages, ratios for the purpose of analysing the impact of leverage. The study found that
due to higher profitability and growth rate the major source of finance for cement companies are internally generated funds.

Reference [5] examined the relationship between capital structure and financial performance of 200 National Stock Exchange (NSE) listed companies for a period of 5 years. Necessary variables which were collected were measured by using Pearson correlation coefficient. The study concluded that companies will have less profitability if the leverage is high.

Reference [6] observed the relationship between the determinants of Corporate financial performance relating to capital structure decisions for pre-recession period (4 years) and post-recession period (4 years) in Indian Iron and Steel industry. The analysis was conducted on various variables to understand its impact using multiple regression model. The study found out that financial leverage, size of the firm, debt service ratio will have significant effect on profitability of the firms.

Reference [7] reviewed the capital structure impact on profitability of listed firms in Indian automobile industry where sample of 10 companies were analyzed for a period of 5 years. Correlation analysis has been performed between variables and profitability to ascertain impact. The study found out that debt is negatively correlated to profitability which implies that increase in debt would affect profitability of the firm.

Reference [8] tested how leverage impacts firm’s performance with sample of 101 listed firms in Nigeria for the period of 2003 to 2007. Panel data model with fixed-effect, random-effect and pooled regression model was used. The analysis has found out that leverage will have negative impact on firm’s performance.

Reference [9] studied whether ownership structure impacts financial decisions and performance among all listed firms in Amman Stock Exchange for the year 2004-2006. To analyze this impact cross sectional average methodology was used. This study found that leverage is positively related and does not have significant effect on firm’s performance.

3. DATA and METHODOLOGY

This study uses Panel Regression for understanding whether capital structure measured as Leverage impacts the performance of firms. The study focuses on wholesale trading and manufacturing industry especially those listed in the Bombay Stock Exchange (BSE) for a time period of 5 financial years from April 2012 to March 2017. Data was collected from Prowess for the above-mentioned period. The primary independent variable selected for the study is Leverage which is defined as interest bearing debt to assets. According to the trade-off theory there will be no consistency in linear relationship between leverage and firm performance. It is being said that if there is a linear relationship between leverage and firm performance, it is impossible to optimize the firm value as firms incline towards optimal capital structure. To resolve this issue, leverage is squared.

We also have considered few control variables like size of the firm, age and growth rate of the firm, productivity, Research and Development (R&D).

1) Size of the firm: Numerous studies have shown that the firm size is an important determinant for measuring firm’s performance. Size creates ambiguous effect on firm’s performance. Larger firms have wide range of exposure to resources, more capacities, economies of scale whereas there is highly likely that small firms are managed by owners themselves which avoids agency costs. Log(Assets) is considered to be the measure for size of the firm.

2) Age of the firm: It is calculated as t (-) F. Y Where ‘t’ is the year of incorporation of the firm and ‘F.Y’ is the Financial year till which the age is calculated.

3) Growth rate of the firm: Sales is considered for measuring growth rate of the firm, as sales growth rate indicates change in performance year-on-year. Nonlinearities are allowed by including log(Sales), log(Sales²) as control variables.

4) Productivity: Few studies have shown that the productivity of managers will increase if the firm has leveraged capital structure as it brings out the discipline in management. Unlevered firms normally tend to allocate funds to insignificant expenditures due to availability of free cash flow thereby creating a negative impact on profitability of the firm. Productivity is measured as Total sales to Assets.

5) Research & Development intensity: Every company doesn’t invest in R&D. So, for the companies with this expenditure, R&D intensity is calculated as R&D expenditure to Sales of the firm. This variable measures the future growth prospect of the firm.

In this study 2 models are selected to ascertain capital structure impact on firm’s profitability

Model 1) Earnings Before Interest and Tax (EBIT) Margin: EBIT measures the profit earned by the company after providing for all the expenses from the generated net revenue. EBIT is synonymous with operating profit. EBIT Margin is a measure of company’s operating income to net revenue.

Model 2) Return on Assets: ROA indicates the level of profitability compared to its Assets. ROA is measured as Operating income (EBIT) to Average book value of assets.

The required data has been collected for a period of 5 years which initially comprised of 5111 companies belonging to various sectors of Indian industry and are classified according to National Industrial Classification (NIC) name, code.

From the collected list of data, finance and insurance industry were excluded as this industry follow different ways for financing from those of other
industry companies. After categorizing, 385 companies from this industry were discarded from the data set. Companies which were classified into “Providing software support and maintenance, technology & other services” were subsequently discarded as these companies operates with high amount of intangible assets which is not in line with leverage calculation. Consequently, the companies which are in operation during the period of April 2012 to March 2017 were only selected and excluded the companies which were in operation for few of the years in the above-mentioned timeline. After dropping all those companies mentioned above the final data set consists of 2121 companies.

**Hypotheses:**
H0: Leverage has no significant impact on the financial performance of firms
H1: Leverage has a significant impact on the financial performance of firms

**Regression Equation:**

Model 1

\[ \text{EBIT Margin}_{i,t} = \beta_0 + \beta_1 \text{(Leverage)}_{i,t} + \beta_2 \text{(Leverage}_2)_{i,t} + \beta_3 \text{(Productivity)}_{i,t} + \beta_4 \text{(RDintensity)}_{i,t} + \beta_5 \text{(lnSales)}_{i,t} + \beta_6 \text{(lnAssets)}_{i,t} + \beta_7 \text{(Age)}_{i,t} + \text{Cons} \]

Model 2

\[ \text{Return on Assets}_{i,t} = \beta_0 + \beta_1 \text{(Leverage)}_{i,t} + \beta_2 \text{(Leverage}_2)_{i,t} + \beta_3 \text{(Productivity)}_{i,t} + \beta_4 \text{(RDintensity)}_{i,t} + \beta_5 \text{(lnSales)}_{i,t} + \beta_6 \text{(lnAssets)}_{i,t} + \beta_7 \text{(Age)}_{i,t} + \text{Cons} \]

**4. Results and Discussion**

The results of the Panel data model are summarized for selected sample of firms in table 1 and 2 below

**Table 1:**

| EBIT Margin | Coef. | t | P>|t| |
|-------------|-------|---|-----|
| Leverage    | 0.61173 | 0.50 | 0.618 |
| Leverage\(^2\) | -11.9792 | -1.21 | 0.228 |
| Productivity | -0.34567 | -2.91 | 0.004*** |
| RDintensity | 0.251639 | 0.34 | 0.735 |
| lnSales     | 1.77253 | 2.88 | 0.004*** |
| lnSales\(^2\) | -0.43814 | -2.98 | 0.003*** |
| lnAssets    | 0.002892 | 0.60 | 0.548 |
| Age         | -5.33479 | -2.45 | 0.014 |

***: significant at 1% level
** : significant at 5% level

Based on the above table we find that Growth rate of the firm measured as log of sales has significant positive impact on EBIT Margin whereas log of sales squared has marginal significant negative on EBIT Margin meaning growing firms perform better than their contemporaries. Productivity has a marginal significant negative impact on EBIT Margin. Size of firm measured as log of assets has significant negative impact. Leverage has an insignificant positive impact of EBIT Margin whereas Leverage squared has an insignificant negative impact on EBIT Margin. R&D intensity has an insignificant positive impact on EBIT Margin. Age of the firm has a positive insignificant impact on EBIT Margin.

**Table 2:**

| Return on Assets | Coef. | t | P>|t| |
|-----------------|-------|---|-----|
| Leverage        | 0.72534 | -1.4 | 0.163 |
| Leverage\(^2\)  | -2.655 | 0.52 | 0.606 |
| Productivity    | 0.055568 | 3.28 | 0.001*** |
| RDintensity     | -0.33844 | -1.99 | 0.047** |
| lnSales         | -0.01577 | -0.49 | 0.626 |
| lnSales\(^2\)   | 0.005083 | 2.13 | 0.034** |
| lnAssets        | -0.02366 | 1.08 | 0.282 |
| Age             | -0.00167 | 1.19 | 0.233 |
| _cons           | 0.071634 | 0.33 | 0.742 |

***: significant at 1% level
** : significant at 5% level

Based on the above table we find that Productivity has a significant positive impact on ROA meaning that firms that are productive are rewarded with a higher return. At the same time R&D intensity is found to show a significant negative impact on performance. Early studies have also proven that higher R&D
intensity leads to turbulence within firms and may impact performance. Both the Leverage and Leverage² has negative impact on ROA though insignificant. The growth rate of a firm measured as log of Sales has negative impact on ROA which is insignificant whereas log of Sales squared has marginal positive impact on ROA which is significant. Size of the firm measured as log of assets and age has an insignificant negative impact on ROA.

5. Conclusions
The study examined whether the capital structure of a firm impacts the performance. Based on the analysis we conclude that leverage has no significant impact on the financial performance of firms in wholesale trading and manufacturing sectors. However, the results may vary if the study is emulated for specific industries that may yield contrary results. On an end note, management of the firm should not restrict its outlook towards leverage but should also take into account other factors for improving firm’s performance.

References