

## **Influence of Financial Performance and Leverage on Growth of the firm with reference to Selected Manufacturing Sectors India**

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### **Abstract**

The current study is examining the relationship between leverage and performance on growth of the firm with reference to Selected manufacturing sectors India Study investigates the effect of three types of the degree of leverage, degree of operating leverage, degree of financial leverage and the degree of combined leverage on the financial performance of the firms Manufacturing sector. The sample of the study includes 20 listed companies for the time period 2013-2020. Some of the companies have been excluded because the data was not available for this study period. The statistical tests that were used in this study includes: descriptive statistics, correlation analysis, unit root test and random effect regression model. Firm's financial performance measured by the EVA (economic value added) is significantly and inversely affected by the DOL (degree of operating leverage) and DFL (degree of financial leverage). Performance measured by Tobin's q is not significantly affected by DOL (degree of financial leverage), DFL (degree of operating leverage) and DCL (degree of combined leverage). Firm's size has significant negative impact on the performance measured by Tobin's Q. The results of this study support to the pecking order theory of capital structure because firm's performance measured in term of economic value added is significantly and negatively affected by the leverage. The study recommends that stakeholders of the banking industry must be concerned with the utilization of debts effectively and efficiently to enhance an optimal leverage ratio from the findings of the study it recommended that the managers of firms should control the fixed cost to avoid the operating leverage and focus to increase the revenue of firms.

**Keywords:** Financial performance, degrees of leverage, food and fertilizer sector.

### **Introduction**

The impact of leverage on firm performance is ambiguous, with some studies finding a negative relationship and others reporting either a positive or no significant relationship Theoretically, the divergence in previous studies can be partly explained by competing theories such as the signaling theory which posits that debt, in the presence of asymmetric information, should be positively related to firm profit performance, and the agency costs or pecking order theory which predicts a negative relationship between leverage and firm performance resulting from the agency costs between firm

owners and lenders. Empirically, one plausible explanation for this ambiguity, in our view, may be the failure of existing empirical studies to model the contingent role that the size of a firm plays in the relationship between leverage and firm performance. If firm size impacts firm performance and the relationship between leverage and firm performance remains a subject of discussion, then firm size should provide some explanation for the ambiguous relationship between leverage and firm performance. This is the hypothesis advanced in this paper and forms the basis on which our empirical analysis is built. To reiterate, we ask whether the size of a firm helps to better understand and explain the ambiguous relationship between leverage and firm performance that has been documented in previous studies. As a by-product of this question, we determine whether there exists an optimal level of firm size at which leverage does not diminish firm performance. The leverage from operating liabilities typically levers profitability more than financial leverage. However, the operating liability leverage analyzed in this study should not get confused with the operating leverage; a measure which is used to indicate the proportion of fixed and variable costs in a firm's cost structure. Accordingly, the total leverage is formed by the aggregation of operating liability leverage and financial leverage.

Furthermore, these studies on the leverage-performance nexus in Nigeria have an important drawback. They did not consider the contingent role that other factors such as firm size might play in the leverage-performance nexus, and little is known about whether the size of a firm could be a game changer regarding the empirical relationship between leverage and firm performance. It is this specific issue that we set out to address in this paper. Moreover, Nigeria's listed firms are a special case in that the debt component of their capital structure relies on short-term debt and has a low amount of long-term debt, partly due to the nonexistence of a robust debt capital market in the country. Thus, a study that examines the impact of leverage, particularly short-term leverage, on firm performance is crucial in this instance as it will uncover the consequences of the preference for such form of leverage and reveal conditions for it to be less or more deleterious to firm performance. To address the problem, we will test whether the relationship between leverage and firm size is invariant to sample splitting, where the sample is split based on firm size and where the firm size represents the threshold variable. We do not impose predetermined estimate of firm size; instead we follow the procedure in which determines, from available data, estimates of thresholds based on minimizing the concentrated sum of squares. If we find evidence that such a split yields relationship between leverage and firm performance that is different across the split samples, then this would be an evidence for nonlinearities between leverage and firm performance, where the nonlinear agent is the firm size – that is, firm size influences the link between leverage and firm performance, so that there exists a level or 'cut-off point' for firm size such that the relationship between leverage and firm performance changes. For instance, it could be that leverage decelerates firm performance when firm size is below a certain level, say  $x$ , but accelerates firm performance when firm size is above  $x$ . On the other hand, it could also be that whether firm size is above or below  $x$ , the link between leverage and firm performance is unchanged, i.e. leverage either accelerates or decelerates firm performance irrespective of firm size. The advantage of this empirical exercise is that it provides a fresh perspective among researchers, policymakers and business managers that promotes the monitoring of not just leverage and how it affects performance but also how firm size might, positively or negatively, influence this relationship. One important consequence of this paper is its potential to inspire a tradition where firms take size into consideration before reaching a decision on the amount

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of debt to include on their balance sheets in a bid to unlock the positive benefits or at least mitigate the negative effects of leverage on performance

### Review of Literature

A lot of research has already been conducted on the impact of financial leverage on firm profitability. Titman & Wassels (1988) concluded in his study that firms which use their earnings instead of taking outside capital earn more profit because of less leverage as compare to the firms which rely more on outside capital which increase their leverage. Firm performance can be depicted by the price of its stock. If stock price of the firm is high than firms prefer to issue equity instead of taking outside capital that helps them to maintain their leverage. Wald (1999) in his research study argued that debt to assets ratio has significant negative relation with the firm profitability. He did his study on the firm's capital structure which operates in United State, United Kingdom, Japan, France, and Germany. He used firm size, growth and firm's riskiness as explanatory variables. Sheel (1994) in his study also supported the negative relation between debt to assets ratio and firm's past profitability. He used cross sectional regression analysis to study the leverage behavior of 32 firms in two industry groups, Hotel industry and manufacturing sector was examined. His findings confirmed that all leverage determinants except firm size are significant in explaining leverage variations in debt behavior. Eunju & Soocheong (2005) studied the relationship between profitability, financial leverage and size of the firm in restaurant industry. He took study period from 1998 to 2003 by using ordinary least square method. The aim of this study was to analyze the association between financial leverage and restaurants firm profitability and risk. For the sake of the achievement of objective of this study, he made three hypotheses. The first hypothesis was restaurant firms using a lower level of financial leverage have higher profitability. If a restaurant firm has a higher level of financial leverage than it has to spend large amount as interest expense despite the business situation. Second hypothesis was; firms with a higher level of financial leverage are riskier than those with a lower level of financial leverage. In his study he applied return on equity as a measure of profitability and financial leverage as a ratio of long-term debt to total assets and total assets as firm size. Results of the study suggested that the restaurant firms having large assets were more profitable than small firms and the sign of financial leverage variable was negative which indicated that firms with higher debt rates were less profitable. Mangalam & Govindamsamy (2010) analyzed and understand the impact of leverage on the profitability of the firm by investigating the relationship between the leverage and the earning per share. He analyzed leverage in three ways which were financial leverage, operating leverage and combine leverage. For analysis purpose he took seven public limited companies listed on the Bombay stock exchange. These were ACC Cement, Chettinad Cement, India Cements, Dalmia Cement, Ambuja Cement, Birla Cement and Prism Cement. He took the period of seven years for analysis. He used Analysis of Variance (ANOVA) as analysis tool in his study. He evaluates the hypothesis of relationship between degree of financial leverage and earnings per share. Operating leverage is caused due to fixed operating expenses in a firm. It is the firm's ability to use fixed operating costs to magnify the effects of changes in sales on its earnings before interest and taxes. Financial leverage is caused due to fixed financial costs in firm. It is the ability of the firm to use fixed financial charges to magnify the effects of change in EBIT on the earning per share. It involves the use of funds obtained at a fixed cost in the hope of increasing the return to the shareholders. Ezeoha (2008) studied the nature and significance of the firm size as a

determinant of corporate financial leverage from an undeveloped market perspective. The key variables he used in the study were firm size, financial leverage ratios, with profitability, firm age, and assets tangibility as control variables. Financial leverage served as dependent variable while the other used as independent variables. A and Wahid. MSME (2011). They arrived in to this conclusion, after studying the impact of financial leverage to profitability based on a sample of non-financial companies from Indonesian stock exchange. The independent variable was the Return on Equity which is depended on Equity Multiplier, Total Asset Turnover, logistic of Total Assets and Bank Interest Rate. In addition, Sachchidanand and Navindra (2012) carried on a study upon the influence of financial leverage on shareholders' return and market capitalization based on the automotive cluster companies of Pithampur, and it was concluded that there is no significant influence of financial leverage on shareholders' return and market capitalization. Also, the study concludes that there might be other nonquantitative factors which may lead to nullify the impact of financial leverage on shareholders return like recession, saturation of auto industry, competition and government policy. It should be noted that financial leverage is a speculative technique and there are special risks and costs involved with financial leverage and specially noted that a financial leverage strategy will be successful during any period in which it is employed. Tayyaba (2013) determined that ROA is positively related with DFL and negative correlation exists between ROA and DOL. The relationship between DOL and ROI was inversed. DFL and Return on investment also has inverse relationship. Degree of financial leverage and Earning per share have inverse relationship have positive relationship while Degree of operating leverage and Earning per share have negative correlation. Cheng and Tzeng (2014) analyzed in their study that leverage and firm value were positively related until a firm had issued sufficient debt to attain its optimal capital structure. They related the firm value with financial leverage but in fact the firm value may be affected by other factors like operational leverage and combined leverage may also be other factors. Vijayalakshmi and Manoharan (2015) determined the impact of leverage on EVA and MVA by taking a sample of 7 companies listed on both Bombay Stock Exchange and National Stock Exchange. They found that leverage had significant impact on EVA and MVA of the selected companies.

### **Objectives of the Study**

1. To Measure the impact of degree of financial leverage on profitability of selected manufacturing organizations
2. To examine the impact of degree of operating leverage on profitability of selected manufacturing organizations
3. To assess the influence of degree of combined leverage on profitability of selected manufacturing organizations

### **Research Methodology**

This study examined the relationship between leverage and financial performance. Model was built based on the finding of the previous research and literature. Leverage and firm size were the independent variables, inflation was the control variable and the financial performance was the dependent variable. This research used panel data of the companies that were listed in Indian Stock Exchange of three years research period during 2013 until 2020. The model that included some

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variables related to the financial performance is shown as follow: Where FP is financial performance as dependent variable. The financial performance was reflected by Return on Assets (ROA). ROA was calculated by ratio of net income to total assets. Return on Assets indicated profit when higher net income came from its total assets and it showed efficiency. As an independent variable, FS is firm size that was measured by natural logarithm of total assets. This measurement was used because the total assets can reflect the whole firm. Then Lev is leverage was calculated as ratio of total debt to total assets.

### Data Analysis

Table one shows mean and dispersion about the selected variables. The table consists of seven variables and provide descriptive statistic about them. This table represents the total of observation, standard deviation and mean value of all variables. Variation in the data of the firms is analyzed by the descriptive statistics. Maximum and minimum value of variables is also presented by the descriptive statistics. The efficiency of the management is measured by the return on assets. The mean value ROA is 14.56288% and the maximum value is 67.59000%. These values show that the firms are doing well during these days. The average value of Tobin's q is 24.13677 and its standard deviation is 258.1149. These values show that book value of the firm is less than firm market value. It's means during this period the firms are overvalued. The tobin's q mean value is larger than 1 which is clear cut indication of higher value of the shares of the firm.

The mean value of EVA is 1689450 and the value of standard deviation is 4443086. The mean value of (DOL), (DFL) and (DCL) are -9.431299, 1.742422 and 20.31436 respectively. The value of standard deviation for (DOL), (DFL) and (DCL) are 116.9155, 5.891194 and 301.6182 respectively. The average value and standard deviation of firm size are 6.532397 and 0.966677 respectively.

Table 1 Descriptive statistics (20013-2020)

	No	DCL	DFL	DCL	FS	ROA	TQ	EVA
Mean	200	0.831299	1.0002	0.600552	6.532397	13.45288	21.14677	2679550.
Median	200	0.823681	1.101000	0.544375	6.446296	11.22000	1.197829	88122.82
Maximum	200	97.99138	36.50988	3101.370	8.363508	67.59000	3266.316	25378016
Minimum	200	-1252.283	-13.92313	-1252.283	3.344981	-90.16000	0.242513	- 10358845
Std. Dev.	200	116.9155	5.891194	301.6182	0.966677	17.73111	258.1149	4483086.

### Correlation Test

Table 2 shows a correlation matrix of all variables in this study. The test of correlation is very important for analysis. If the independent variables in the study are highly correlated then the problem of multi co linearity is expected. In case of perfect multi co linearity the explanatory variables coefficients are indeterminate and standard error of them are infinite. In case of less perfect multi co linearity the coefficients of, regression although determinate, but cannot be

evaluated accurately. If the correlation between two variables is more than 0.8 then it is expected that the problem of multi co linearity exists (Gujarati, 2004). The main purpose of correlation analysis is to determine whether independent variables are strongly correlated or nor with each other. Correlation analysis helps to examine the problem of multi-co linearity. The positive relationship between DOL and EVA shows that when there will be increase in operating leverage the EVA will also increase by 0.058. DFL also has positive relation with EVA its mean that a unit increase in DFL will cause a 0.226 units increase in EVA. DCL and EVA are also positively related with each other.

When the performance is measured by ROA then the negative relationship between DOL and ROA has been found. This negative value indicates that if 1-unit increase is made in DOL then ROA decreased by 0.08 and vice versa. The DFL also has negative relationship with ROA. Similarly, DCL shows the inverse relation with ROA.

The profitability measured by Tobin's q is positively associated with DOL which shows that a unit increase in DOL will bring about 0.03 units increase in Tobin's q. The DFL is positively related with tobin's q and DCL has negative association with Tobin's q. As far as the firm size is concerned there is positive association among the DOL, DFL and DCL with the firm size. This indicates that as the firms will grow in size, they will use more amount of debt to run their operations. As per the values of correlation among independent variables it can be inferred that all the independent variables can be taken in one model. The correlation among the independent variable is not more than 0.8 according to the (Gujrati, 2004). It means that no problem of multi co- linearity exists among the variables.

Table 2 The correlation matrix of the selected variables

	DOL	DFL	DCL	FS	EVA	ROA	TQ
DOL	1						
DFL	0.053	1					
DCL	0.437**	0.779*	1				
FS	0.098	0.083	0.150*	1			
EVA	0.058	0.226**	0.363**	0.503**	1		
ROA	-0.087	-0.078	-0.081	0.216	0.318**	1	
TQ	0.037	-0.011	0.005	-0.276**	-0.031	0.089	1

\*\* . Correlation is significant at the 0.01 level

\*. Correlation is significant at the 0.05 level

### UnitRootTests

This study used the unit root test to examine the trend in the data. The existence of trend in the data can be a serious cause of in accuracy of results produced by the study. When it is found that the data is non-stationary at level then the data is to be differenced until the trend is removed To test for unit roots or trend in the data we check the data at level if their trend and P value is not less than significant value 0.05 then we take first difference of data. The result of the following table shows

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that all the variables are stationary at level except tobin's q and firm size.

Table 3: Unit root test

	DOL	DFL	DCL	FS	ROA	EVA	TQ
Levin, Lin & Chu t	0.0000	0.0000	0.0004	0.0000	0.0000	0.0000	0.0000
Pesaran and Shin W-stat	0.0014	0.0058	0.2932	0.0000	0.0011	0.2567	0.0963
ADF - Fisher Chi-square	0.0002	0.0002	0.0060	0.0000	0.0000	0.0350	0.0168
PP - Fisher Chi-square	0.0000	0.0005	0.0000	0.0000	0.0028	0.0471	0.0002

### Panel regression analysis

Selection of Random Effect or Fixed Effect Models. The decision about the selection of fixed effect model or random effect model is not easy to decide. Judge et al (1980) described some suggestions for the selection of the appropriate model. If the regression and error component are assumed to be not correlated then the appropriate model may be the random effect model and if they are assumed to be correlated then the more appropriate model may be fixed effect model. In order to find the most appropriate method from fixed or random effects models the Hausman specification test can be helpful in this regard. Hausman's test is like yard stick to decide about the use of appropriate model. If the result of this test is significant which verifies that the P value is less than 0.05 then we use fixed effect model otherwise the random effect model is more appropriate.

#### ROA against DOL, DFL, DCL and FIRM SIZ Hausman Test

Test Summary	Chi-Sq Statistic	Prob.
Cross-Section Random	7.171235	0.1271

In panel data methodology two models can be applied to determine the impact and actual result which are fixed and random affect models but which test will be suitable is also a big issue. Hausman test works like a yard stick which decides that which model is more appropriate. According to the probability value which is 0.1271 greater than 0.05 random affect model is more appropriate. Therefore, we will use random affect model to determine the impact of DOL, DFL, DCL and DFL on the ROA.

Table 4: ROA against DOL, DFL, DCL and FIRM SIZE

Variables	Random effect model	
	Coefficients	Probability
C	13.85529	0.0000
DOL	-0.029645	0.0082
DFL	-0.081509	0.7957

DCL	0.002649	0.6983
FS	4.176354	0.2502
R2	0.637	
F-statistics	2.827	

The result of Hausman test proves the validity of random effect model accepting the null hypothesis at 5 percent significant level because its respective P value is more than 0.05. In panel data methodology two models can be applied to determine the impact and actual result which are fixed and random affect models but which test will be suitable is also a big issue. Hausman test works like a yard stick which decides that which model is more appropriate. According to the probability value which is 0.5965 greater than 0.05 random affect model is more appropriate.

### Summary of interpretation and findings

The purpose of this study was to examine the impact of three types of leverage (DOI, DFL and DCL) and Firm Size on financial performance of the companies of fertilizer and food sector listed under PSE. Profitability was determined by using return on assets, Tobin's Q and EVA. Secondary data was collected for the period of eight years (2008 – 2015) from PSE website, annual reports of the companies and SBP website. Data collected was keyed into e-view and analysis made. Three regression models were used.

$$\text{Model 1 } ROA = \beta_0 + \beta_1 (DFL) + \beta_2 (DOL) + \beta_3 (DCL) + \beta_4 (FS) + \varepsilon$$

The first regression model was to measure the impact of DOL, DFL, DCL and FS on profitability (measured by ROA). Random effect model indicates that DFL and DCL and FS have not been significant in predicting ROA because respective P values are higher than 0.05 at 5 percent significant level. However, DCL and FS have positive impact on ROA and DFL has negative impact on ROA. In terms of DOL, the result given by the model shows a negative and significant relationship with ROA because respective P value is less than 0.05 at 5 percent significant level.

The Hausman test verifies that the random effect model is best fit model to examine the impact of leverage and firm size on profitability because its respective P value is more than 0.05. Since the results of this study indicates inverse non-significant relationship between DFL and ROA which are in line with the findings of Quang and Xin (2014) who found negative relationship while in contrary to the findings of Khalid et al (2014). According to the results DOL has statistically significant and negative relationship with ROA which are related to the findings of Tayaba (2013) who found negative relationship between DOL and ROA. The operating leverage arises due to the determination of a firm's cost as variable and fixed. The firms studied under this study time period includes a relatively higher proportion of fixed expenses in their cost structure which may lead to operating leverage. However, the fixed cost can be controlled, and relatively lower fixed cost is an indication of managerial efficiency. The firms with higher fixed cost are exposed to higher leverage, and ultimately it may affect the profitability as well.

$$\text{Model 2 } \text{TOBIN'Q} = \beta_0 + \beta_1 (DFL) + \beta_2 (DOL) + \beta_3 (DCL) + \beta_4 (FS) + \varepsilon$$

The second regression model was to measure the impact of operating DOL, DFL, DCL and FS on



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profitability (measured by Tobin's Q). Random model indicates that DOL and DFL and DCL have not been significant in predicting Tobin's Q because respective P values are higher than 0.05 at 5 percent significant level. However, DOL and DFL have negative association with Tobin's Q and DCL has positive association with Tobin's Q. In terms of Firm Size, result given by the model shows inverse and non-significant relationship with Tobin's Q because the respective P value is less than 0.05 at 5 percent significant level rejecting null hypothesis. Firm size displays a significantly negative impact on the financial performance determined by Tobin's Q, it means large size firms shows inefficiency and negatively affects the firm performance.

### **Conclusion & Implication of the study**

We present new evidence on the contingent role of firm size in determining the relationship between leverage and firm performance. This research examines the relationship among leverage, size and inflation to the financial performance with sector as the distinguish variable that can be considered. As the firms use panel data, the result indicates that size is a matter for a firm to access the leverage that influences the financial performance. The sector for manufacture has greater effect in leverage to the financial performance. Then service is a greater financial performance that is related to size. Leverage is significantly having negative effect to the financial performance. Then size is significantly positive to the financial performance. The next research could handle each sector detailly and have more variables that influence to the performance.

Leverage is used by the firm for external source of fund. This is match to the pecking order theory that explain for the financial source. Using internal first then if it is needed using the external source whether debt or equity. Thus, debt used as leverage for the firm in this research affecting the financial performance. That are support some previous research. Then, in practice, the sectors are distinguished that the financial performance for manufacture is greater for the use of leverage. So that the service sector is greater when related to the firm size. Further research suggests more variables included in the research, both independent or control variables.

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