IMPACT OF FINANCIAL LEVERAGE ON MARKET VALUE ADDED: EMPIRICAL EVIDENCE FROM INDIA

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Abstracts
The paper aims at analyzing the impact of financial leverage on market value added in the context of companies listed on Bombay Stock Exchange and provide empirical evidence. The study covers 197 companies classified as A group companies listed on the Bombay Stock Exchange. The study period ranges from 2010 to 2014. Univariate linear regression and multiple regression analysis are used to test the relationship between measures of financial leverage and market value added. The results show that interest cover is the most significant predictor of market value added by companies listed on Bombay Stock Exchange. Univariately, debt equity ratio and debt ratios are found to be statistically significant in explaining variation in market value added of the sample companies. But when taken together, they are not significantly related to market value added of sample companies. The research was restricted to only those companies which are classified as A group companies on Bombay Stock Exchange. The study relied on Market Value Added as a measure of value creation. Other measures like, Economic Value Added, Created Shareholder Value, Total Shareholder Return could also be used to gauge the impact of financial leverage on the shareholder value creation. The study identifies interest cover as the most significant predictor of change in Market Value Added. Financial managers will thus be motivated to maintain higher interest cover to ensure higher value creation for their shareholders.

Research paper

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Introduction

Financial leverage refers to the sensitivity of company's earnings per share to changes in its operating income as a result of change in its capital structure. Alternatively, it is also referred as the extent of debt financing used by the company to increase its earnings per share. Financial leverage thus, measures the degree of financial risk the company is exposed to given its usage of debt funds. Modigliani and Miller (1958) presented the idea that, in the existence of perfect capital markets and in the absence of taxes, the value of a levered firm is same as that of an unlevered firm if both firms are identical in nature in terms of similar investment opportunities they offer. They argued that the investment policy of the firm is mainly influenced by the factors that contribute to firm's profitability, cash flow or value. Hence financial leverage does not affect the investment decisions of the firm. Ross (1977) claimed that issue of debt signals as increase in value implying managers inform market that they are ready to pay out cash to their creditors.

Jensen (1986) in his free cash flow hypothesis propounded that debt decreases the amount of cash available to managers, hence reducing their possibilities for wasting corporate resources. Equity on the other hand, does not offer this benefit because shareholders' claims on profits of the company are residual, not obligatory. It thus gives enough freedom to managers to delay the payment of dividends for next year or longer while they have to pay interest and principal on time. In this manner, leverage serves as a commitment and incentive mechanism. Eventually, issuing debt instead of equity lowers agency costs and therefore increases firm value.

McConnell and Servaes (1995) examined the relationship between, value, leverage and direct managerial ownership for US firms. They provided the evidence that firm leverage was positively correlated with the firm value when a firm's growth opportunities are scarce. Lang, Ofek and Stulz (1995) found a negative correlation between leverage and future growth at the firm level and for a diversified firm at the segment level.

This paper proposes to empirically analyze the impact of financial leverage on market value added of 197 companies classified as A group companies that are listed on Bombay Stock Exchange. The remainder of the paper is structured as follows: First section discusses the literature review; second section highlights the research methodology, third section represents results and discussion; fourth section discusses the key findings and implications and fifth section offers a conclusion.

Literature review

Financial leverage refers to the degree to which the firm relies on debt (Hillier et al, 2010:326). Agrawal and Knoeber (1996) examined the relationship between leverage and value taking a sample of 383 US companies over a period of 1981-87. While using ordinary least squares regression they found negative effect of debt on value. But when used simultaneous equation model taking into account all the rest mechanisms, the role of debt as a disciplining device disappeared.

Wet and Hall (2003) showed that the effect of high financial leverage was offset by the lower cost of capital called EVA leverage. Tian and Zeitun (2007) found that leverage has a negative significant effect on the firm's performance using accounting and market measures of performance.

Pachori and Totala (2012) examined the impact of financial leverage on shareholders' return and market capitalization of automotive cluster companies of Pithampur, India. The study revealed that there was no significant influence of financial leverage on shareholders' return and market capitalization.

Hasan and Gupta (2013) taking a sample of 28 companies of Bangladesh, analyzed the relationship between debt ratio and EPS as proxy measures of leverage and shareholders' return respectively. The study revealed that leverage had statistically significant effect on shareholder's wealth. Al-Shamaileh and Khanfar (2014) examined the relationship between debt ratio, taken as a proxy of financial leverage, and profitability in the context of tourism companies of Jordan. They concluded that financial leverage had statistically significant effect on profitability of tourism companies listed in the Amman Exchange. Acheampong et al. (2014) found a negative relationship between leverage and stock return.

Nourish and Alfred (2014) analyzed the relationship between EVA (Economic Value Added) and MVA (Market Value Added) and leverage and MVA in the context of select private banks of Sri Lanka. They found that EVA and leverage did not have a significant impact on MVA. Cheng and Tzeng (2014) found that leverage was positively related to the firm value until a firm had issued sufficient debt to attain its optimal capital structure. Vijayalakshmi and Manoharan (2015) examined the impact of corporate leverage on EVA and MVA using a sample of seven companies listed on both National Stock Exchange (NSE) and Bombay Stock Exchange (BSE). They found that leverage had significant impact on EVA and MVA of the select companies.

Badi and Minoei (2015) investigated the relationship between "market value and leverage" and return on stock and economic value added". They concluded that effect of market value and leverage on stock returns was significant. They implied that as the leverage increases consistent with the market value, the stock returns also increased by 43.09%. Ramadan (2015) analyzed the impact of leverage on firm value in the case of listed firms on Amman Stock Exchange. The results showed that the firms' leverage level affects the firms' values for the listed companies included in the sample.

Research Methodology

Research used method sued for the study was empirical. All 197 "A" group companies listed on the Bombay Stock Exchange (BSE) comprised the sample of the study. These companies are considered to be most liquid stocks among the whole lot of stocks listed in BSE. All 30 stocks comprising BSE Sensex, a flagship stock market index of BSE, belong to A group companies. The sample will thus comprehensively represent the listed companies on Bombay Stock exchange and will shed light on the relationship between leverage and wealth created by companies. Data relating to all 197 "A" group companies were culled from Centre for Monitoring Indian Economy's *Prowess* database which is considered to be the most authentic database for collecting financial information in the context of Indian Economy. The study covers financial data from the period 2010 to 2014. The original data were positively skewed signaling higher skewness. Following Templeton (2011), the data were normalized using a two step approach. First, they were ranked and in the second step they were normalized as per

the defined methodology of Templeton (2011). Following Ramadan (2015), ordinary least square regression was used to analyze the relationship between set of independent variables and a dependent variable.

Variables of the study

Independent variables

Following three measures were used to gauge the extent of financial leverage.

Debt equity ratio

Debt to equity ratio (D/E ratio) indicates the quantity of funds raised relative to the equity capital. Usually a higher debt equity ratio indicates higher financial leverage and thus represents a higher financial risk.

Interest cover

Interest cover (INTC) measures the ability to meet the contractual debt obligation in terms of sufficiency of operating income to meet interest expenses. It is calculated as operating income divided by interest charges. The higher the interest cover, higher will be the ability of the firm to comfortably pay out its debt obligations.

Debt ratio

The debt ratio (D/A ratio) indicates the amount of debt funds raised as against the amount of total assets invested in the business. This ratio is slightly different from debt equity ratio, as it considers the debt amount relative to summation of total equity and total debt. Again, higher debt ratio in-

dicates that debt funds are relatively forming a significant chunk of total assets.

Dependent variable

Market Value Added (MVA)

Stewart (1991) states that MVA is a cumulative measure of corporate performance and that it represent the stock market's assessment from a particular time onwards of the net present value of all company's past and projects capital projects.

MVA is generally calculated as below

MVA = Market value of total assets- Book value of assets

Alternatively assuming the market value of debt just equals its book value the MVA can be calculated as below

MVA= Market value of equity capital- Book value of equity capital

In this paper, MVA has been calculated as the difference between market value of equity and book value of equity.

Hypotheses

In order to empirically analyze the relationship between measures of financial leverage and MVA, following null hypotheses were tested at the significance level of 5%.

H_1: There is no significant relationship between Debt equity ratio and MVA of listed companies on Bombay Stock Exchange.

H_2: There is no significant relationship between interest coverage and MVA of listed companies on Bombay Stock Exchange.

H_3: There is no significant relationship between Debt ratio and MVA of listed companies on Bombay Stock Exchange.

H_4: There is no significant relationship between measures of financial leverage and MVA of listed companies on Bombay Stock Exchange.

Model Specification

To empirically test the above mentioned null hypotheses, following regression model were tested statistically.

Model 1: $MVA_{it} = \beta_0 + \beta_1$ Normal D/E ratio$_{it}$

Model 2: $MVA_{it} = \beta_0 + \beta_2$ Normal INTC$_{it}$

Model 3: $MVA_{it} = \beta_0 + \beta_3$ Normal D/A ratio$_{it}$

Model 4: $MVA_{it} = \beta_0 + \beta_1$ Normal D/E ratio$_{it}$ + β_2 Normal INTC$_{it}$ + β_3 Normal D/A ratio$_{it}$

In the above models, MVA_{it} stands for market value added of ith company in t time period

D/E ratio$_{it}$ stands for normal debt equity ratio of ith company in t time period

INTC$_{it}$ stands for normal interest cover of ith company in t time period

D/A ratio$_{it}$ stands for normal debt ratio of ith company in t time period

In the above models, the word normal represents the normal form of data converted from non normal form.

Results and Discussions

Descriptive Statistics

Table 1 depicts the results of descriptive statistics of the independent and dependent variables. It is quite evident from the table that normalized debt ratio and debt equity ratio have lower variability with the SD= 0.2018 and 2.103 respectively. Whereas, normalized market value added and interest cover have significant variations with SD= Rs. 364924.01 million and 3814.30 times, respectively.

Table 1. Descriptive Statistics

	Mean	Std. Deviation	N
Normal_market_value_added(Rs. Million)	167054.1603	364924.00685	869
Normal_debt_equity	1.2491	2.03010	869
Normal_interest_cover	472.6925	3814.30238	869
Normal_debt_ratio	.2249	.20183	869

Relationship between Normal Debt Equity Ratio and Normal Market Value Added

Univariate simple linear regression was run to test the relationship between normal debt equity ratio and normal market value added for the whole sample of 197 firms.

Table 2. Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.261a	.068	.067	352009.53156	.655

a. Predictors: (Constant), Normal_debt_equity
b. Dependent Variable: Normal_market_value_added

Table 2 represents the model summary of the first regression model in which first hypothesis is tested. The results imply that only 6.8% variation in normal market value added was explained by normal debt equity ratio (R square = 0.068). D-W test indicates that there is a positive autocorrelation in the residuals (DW= 0.065).

Table 4. ANOVA[a]

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8193602608296.1	1	8193602608296.1	66.125	.000b
	Residual	112387014251913	907	123910710310.819		
	Total	120580616860209	908			

a. Dependent Variable: Normal_market_value_added

b. Predictors: (Constant), Normal_debt_equity

Table 4 shows the results of ANOVA for the first regression model. The results indicate that the regression model is statistically significant and best fit (F= 66.125, p<0.01).

Table 5. Coefficient

	Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	222386.104	13243.620		16.792	.000
	Normal_debt_equity	-45378.172	5580.383	-.261	-8.132	.000

The results of Coefficient are presented in table 5. It is quite evident from the results that normal debt equity ratio is statistically significantly related to normal market value added (t=-8.132, p<0.01). The results thus imply rejection of first null hypothesis and are consistent with Ramadan (2015).

Relationship between Normal Interest Cover and Normal Market Value Added

The results of the univariate regression model run between normal interest cover and normal market value added is presented in table 6.

Table 6. Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.427a	.183	.182	329762.53154	.685

a. Predictors: (Constant), Normal_interest_cover
b. Dependent Variable: Normal_market_value_added

The results show that 18.3% change in normal market value added is explained by interest cover (R square = 0.183). DW test indicates that there is a positive autocorrelation in the residuals (DW= 0.685). As shown in table 7, the regression model is found to be statistically significant and well fitted (F= 194.131, p<0.01).

Table 7. ANOVA[a]

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	21110457338674.3	1	21110457338674.300	194.131	.000b
	Residual	94497951342432.9	869	108743327206.482		
	Total	115608408681107	870			

a. Dependent Variable: Normal_market_value_added
b. Predictors: (Constant), Normal_interest_cover

The results of regression coefficients are presented in table 8. The results indicate that normal interest cover is statistically significantly related to normal market value added (t=13.933, p>0.01). The results lead to the rejec-

tion of second null hypothesis and conclude that impact of interest cover is influencing market value added by listed Indian firms.

Table 8. Coefficients[a]

	Unstandardized Coefficients		Standardized Coefficients		
Model	B	Std. Error	Beta	t	Sig.
1 (Constant)	148286.477	11254.832		13.175	.000
Normal_interest_cover	40.792	2.928	.427	13.933	.000

a. Dependent Variable: Normal_market_value_added

Relationship between Normal Debt Ratio and Normal Market Value Added

Table 9 depicts the results of the third regression model. Using OLS regression analysis, the third hypothesis was tested. It is evident from the table that only 3.45 variation in normal market value added is explained by normal debt ratio. (R square = 0.034)

Table 9. Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.184a	.034	.033	358412.16437	.637

a. Predictors: (Constant), Normal_debt_ratio

b. Dependent Variable: Normal_market_value_added

The results of the ANOVA are shown in table 10. The results suggest that regression model is statistically significant and well fitted (F= 31.706, p<0.01).

Table 10. ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4072966445501.21	1	4072966445501.21	31.706	.000b
	Residual	116512566568772	907	128459279568.658		
	Total	120585533014274	908			

a. Dependent Variable: Normal_market_value_added

Table 11 depicts the results of regression coefficients for the third model. It is quite evident from the result that normal debt ratio is statistically significantly related to normal market value added (t= 14.187, p<0.01) resulting into rejection of third null hypothesis.

Table 11. Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	238925.933	16841.359		14.187	.000
	Normal_debt_ratio	-319006.101	56653.444	-.184	-5.631	.000

a. Dependent Variable: Normal_market_value_added

The relationship between all measures of financial leverage (jointly) with Market value added

Table 12 shows the results of correlation between individual independent variable and dependent variables. Results indicate that two independent variables viz. normal debt equity ratio and normal debt ratio have statistically significant negative correlations with normal market value added (r = -0.260, p<.0.01 and r = -0.176, p<0.01 respectively). On the other hand, normal interest cover is found to be statistically significantly positively correlated with normal market value added (r = 0.429, p<0.01).

Table 12. Correlations

		Nor-mal_market_value_added	Nor-mal_debt_equity	Nor-mal_interest_cover	Nor-mal_debt_ratio
Pearson Correlation	Nor-mal_market_value_added	1.000	-.260	.429	-.176
	Normal_debt_equity	-.260	1.000	-.675	.813
	Normal_interest_cover	.429	-.675	1.000	-.541
	Normal_debt_ratio	-.176	.813	-.541	1.000
Sig. (1-tailed)	Nor-mal_market_value_added		.000	.000	.000
	Normal_debt_equity	.000		.000	.000
	Normal_interest_cover	.000	.000		.000
	Normal_debt_ratio	.000	.000	.000	
N	Nor-mal_market_value_added	869	869	869	869
	Normal_debt_equity	869	869	869	869
	Normal_interest_cover	869	869	869	869
	Normal_debt_ratio	869	869	869	869

Note: Correlation is significant at 0.01 level.

Table 13 reports the results of the multiple regression run between the set of independent variables and a dependent variable. The results of multiple regression suggest that there was a significant correlation between measures of financial leverage and market value added (R= 0.434). The results are inconsistent with Agrwal and Knoeber (1996), which showed that there is a negative relationship between leverage and value. Measures of financial leverage jointly explained 18.8% variation in the market value added by the sample companies (R square = 0.188). The results show positive autocorrelation in the residuals (DW=0695). Table 14 depicts the results of ANOVA. It is evident from the results that the multiple regression model was found to be well fitted and statistically significant (F=66.960, $p<0.01$).

The regression coefficients are shown in table 15. Normal debt equity ratio was not statistically significant in explaining variation in normal market value added (t= -0.366, p<0.05). Normal debt ratio was also found to be not significant (t= 1.779, p>0.05). On the contrary, normal interest cover was statistically significantly related to normal market value added (t= 11.188, p<0.01). The results thus imply that when taken together, debt equity ratio and debt ratio do not affect market value added by listed Indian firms. The results imply rejection of the fourth hypothesis, indicating that financial leverage measures jointly influence market value added by Indian listed firms. Figure 1 shows the histogram demonstrating that the changes in normal market value added are normally distributed as explained by the set of independent variables.

Findings and Conclusion

This study empirically analyzed the impact of three financial leverage measures on market value added taking a sample of 197 "A" group companies listed on Bombay Stock Exchange. The study covered the period ranging from 2010 to 2014. Following the ordinary least squares method, univariate and multiple linear regression were used to analyze the relationship between independent variables and a dependent variable. It was found that when analyzed univariately, all three measures of financial leverage namely; debt equity ratio, interest cover and debt ratio were significantly related to market value added. On the contrary, when used jointly in a multiple regression, only interest cover was found to be statistically significant. Interest cover was found to be the most significant predictor of market value added by listed companies with R square of 18.3%. The results are thus in-

consistent with Nourish and Alfred (2014), who showed that leverage, did not have a significant impact on market value added. The results are also inconsistent with Pachori and Totala (2002) who reported that financial leverage had no significant influence on shareholders' return and market capitalization. On the contrary, the results are found to be consistent with Vijayalakshmi and Manoharan (2015) who demonstrated that leverage had significant impact on MVA. Results also confirm the findings of Hasan and Gupta (2013) which revealed that leverage had statistically significant effect on shareholders' wealth.

Table 13. Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.434a	.188	.186	329312.33567	.695

a. Predictors: (Constant), Normal_debt_ratio, Normal_interest_cover, Normal_debt_equity

b. Dependent Variable: Normal_market_value_added

Table 14. ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	21784831237573.000	3	7261610412524.350	66.960	.000b
	Residual	93806321478324.700	865	108446614425.809		
	Total	115591152715898.000	868			

a. Dependent Variable: Normal_market_value_added

b. Predictors: (Constant), Normal_debt_ratio, Normal_interest_cover, Normal_debt_equity

Table 15. Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	112927.239	19352.375		5.835	.000
Normal_debt_equity	-3945.550	10772.763	-.022	-.366	.714
Normal_interest_cover	44.448	3.973	.465	11.188	.000
Normal_debt_ratio	169131.170	95065.422	.094	1.779	.076

a. Dependent Variable: Normal_market_value_added

Figure 1. Histogram of Normal Market Value Added

Histogram
Dependent Variable: Normal_market_value_added

Mean = -7.12E-16
Std. Dev. = 0.998
N = 869
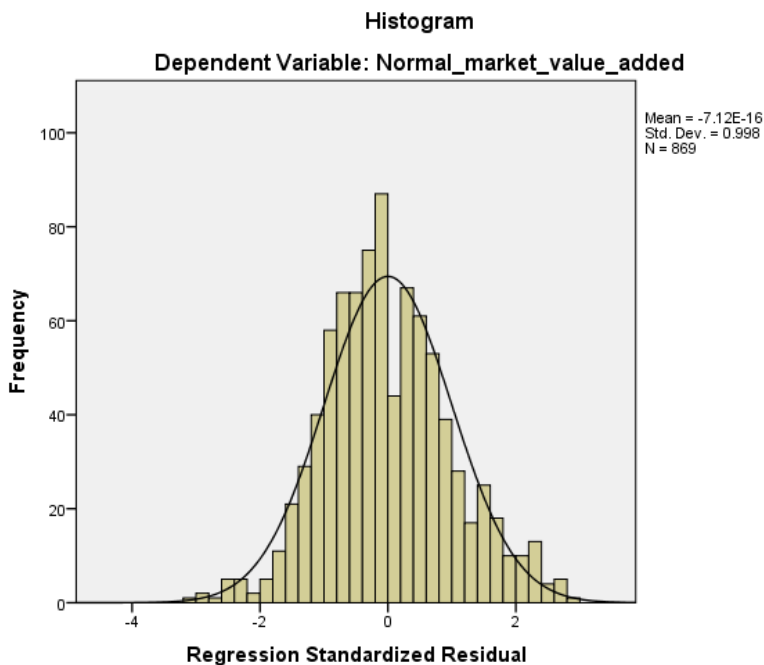
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