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IMPACT OF FINANCIAL LEVERAGE ON SHAREHOLDERS' WEALTH: A CASE STUDY OF INDIAN COMPANIES

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ABSTRACT

Maximization of shareholders' wealth, which is the heart of economic growth, as a long term proposition delivers higher economic output through productivity gains, employment growth and higher wages. Financial leverage on the other hand, results from the use of debt and preferred stock to increase stockholder earnings. The aim of this paper is to explore relationship between Shareholders' wealth and leverage of Indian companies of oil and gas sector. Data consisted of ROCE, sales, net worth, debt equity ratio, total debt to total assets ratio of top 10 companies of this sector, which were on the basis of market capitalization. These data were collected for a period of five years 2013-14 to 2017-18. The collected data were used to find the impact of leverage on shareholders' wealth of the companies. Panel data regression, fixed effect model and random effect model were estimated and compared on the basis of diagnostic parameters to find the most parsimonious model. It was found while performing panel data regression that random effect model was the most parsimonious model. The model proved to be significant from the calculated F value and explained 91.5% variability in the ROCE. Both the variables, which proxies for leverage (debt equity ratio and total debt to total assets ratio), were impacting ROCE..

KEYWORDS: *Shareholders' Wealth, Economic Growth, Productivity Gains, ROCE .*

Introduction

In physics, leverage denotes the use of a lever and a small amount of force to lift a heavy object. Likewise in business, leverage refers to the use of a relatively small investment in fixed assets or small amount of debt to achieve greater profits. That is, leverage is the use of assets and debt to boost profits while balancing the risks involved. Creation of shareholders' wealth is key objective of financial management. Indeed one of the most basic and fundamental tenets of capitalism is the obligation to create and maximize shareholders' wealth. Maximization of shareholders' wealth, which is the heart of economic growth, as a long term proposition delivers higher economic output through productivity gains, employment growth and higher wages. Financial leverage on the other hand, results from the use of debt and preferred stock to increase stockholder earnings. Although operating and financial leverage involve a certain amount of risk, they can bring about significant benefits with little investment when successfully implemented.

Every experienced organization knows when debt capital is more suitable for them and from which sources they should collects their debt funds. Every financial expert should consider some factors before they will use debt funds. First of all, the impact of using leverage to the sales revenue of the organization. If the debt financing increase, the sales revenue of the firm will increase that indicates the positive potential profitability of a company. In other sense, if the leverage drop off the sales revenue of the company that indicates the potential losses of a company. Secondly, the financial manager should consider that, the use of debt funds will increase the return or not. If the return of the firm will increase,

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the value of the firm will increase that indicates the wealth maximization of the company. This study mainly focuses on the existence of leverage in the context understanding its impact on earnings and market conditions. The present research work shall focus on study of relationship between financial leverage and shareholders' wealth of companies of the developing nation India.

Review of Literature

Several researches related to earlier studies were reviewed and a summary of these have been presented below:

Ahmed, Awais and Kashif[i] (2018) aimed to investigate the optimal level of capital structure that firms could adopt to improve their financial performance given the industry dynamics and economic circumstances of the country. The finding of the paper indicated that capital structure, leverage, interest cover and sales growth were the most significant variables impacting firms' profitability.

Dalci[ii] (2018) explored how financial leverage influenced profitability of 1,503 listed manufacturing firms in China. The results revealed that the impact of leverage on profitability was inverted U-shaped. In this inverted U-shaped relationship, the positive impact of financial leverage on profitability could be attributed to tax shield, whereas the negative impact might be because of bankruptcy cost, financial distress, severe agency problems and information asymmetry that the listed Chinese firms suffered from because of some institutional characteristics of China.

Thirumagal and Vasantha[iii] (2018) analyzed the impact of dividend payout on shareholders wealth for five important industries in India as well the effect of dividend announcement on share price using 15 years data from 2001 to 2015. It was found that dividend payout had significant negative impact on shareholders wealth for majority of the industries. There was significant difference in share price between pre and post dividend announcement.

Karimi and Kheiri[iv] (2017) investigated the effect of financial structure, financial leverage and profitability on company's value among the firms listed on Tehran's stock exchange between 2010 and 2014. Results showed that the variable of financial structure had no statistically significant effects on company's value but there was a positive relationship between financial leverage and profitability on company's value.

Onyenwe and Glory[v] (2017) investigated the effect of financial leverage measures on firm's performance. The study was carried out on thirteen deposit-money banks listed on the Nigerian Stock Exchange floor for a period of ten years from 2006 to 2015. The empirical results revealed that financial leverage had positive effect on profitability and efficiency. No significant effects were found on liquidity, size and market capitalisation value.

Adetunji, Akinyemi and Rasheed[vi] (2016) determined the relationship between financial leverage and firms' value, as well as evaluate the effect of financial leverage on firms' value. A sample of 5 firms listed on Nigerian Stock Exchange (NSE) for a period of 6 years from 2007-2012 was used. Data were sourced from annual reports of selected firms. The Ordinary Least Square (OLS) statistical technique was used for data analysis and hypothesis testing. The study revealed that there was significant relationship between financial leverage and firms' value and that financial leverage had significant effect on firms' value. The study concluded that financial leverage was a better source of finance than equity to firms when there was need to finance long-term projects.

Ishari and Abeyrathna[vii] (2016) investigated the financial leverage on firms' value. The main objective was to compare the value of the firms of the listed manufacturing companies in Sri Lanka by using the financial leverages for estimations. The results indicated that there was a significant relationship between DE ratio and ROA. According to Pearson correlation, there was a weak negative relationship between DE ratio and ROA. And also, there was not a significant relationship between DE ratio and ROA.

Venugopal and Reddy[viii] (2016) aimed at investigating the impact of capital structure on the profitability and shareholder wealth of the listed cement manufacturing companies using a panel data methodology. Results showed that the capital structure (debt-equity ratio) positively impacted the firm's profitability, market value and shareholder wealth but statistically this relation was not significant.

Thirumagal and Vasantha[ix] (2016) attempted to find out the dividend policy's impact on shareholders wealth. Ten companies listed in NIFTY PHARMA of NSE were considered for the study. Regression results showed that the dividend, risk and liquidity of the companies impacted shareholders wealth. Size and Earnings of the companies were insignificant with the shareholders wealth.

Raheel and Shah[x] (2015) identified the relationship between the financial leverage and Firms profitability of Oil and Gas marketing companies of Pakistan listed on Karachi Stock Exchange (KSE). The findings revealed that there was no significant relationship of DOL, DFL and DCL with EPS. Thus, fixed operating expenses and the financing mix decisions of the firm were not significantly impacting the earning capacity of the listed companies in KSE.

Waykole, Ahirao and Rana[xi] (2015) measured the impact of fixed cost expenses on return to equity shareholders'. Data was retrieved from the financial statements of the concern for three years and accordingly the current status of operating leverage, financial leverage and combined leverage was analyzed and its impact on return to equity was concluded. During the period of study, operating leverage, financial leverage and combined leverage was not favorable due to decline in revenue.

Objective

The research has following objective:

- To examine the relationship between financial leverage and shareholders' wealth.

Hypothesis

The research has following hypothesis to attain above objectives:

H_0: There is no significant impact of financial leverage on shareholders' wealth.

H_1: There is significant impact of financial leverage on shareholders' wealth.

Data Collection and Sample

In order to attain the objectives of the study, top 10 companies of Oil and Gas Sector on the basis of largest market capitalization (as on 30th June 2019) were selected. The following companies were there in the sample:

- Oil and Natural Gas Corporation (ONGC)
- Gas Authority of India Limited (GAIL)
- Hindustan Oil Exploration Company Ltd.
- Reliance Industries Limited (RIL)
- Hindustan Petroleum Corporation Ltd.
- Oil India Limited (OIL)
- Indian Oil Corporation (IOC)
- Essar Oil Limited (EOL)
- Bharat Petroleum Corporation Ltd.
- Castrol India Limited

Collected data consisted of debt, equity, market capitalization, total assets, profit after tax, ROI (return on investment), ROA (return on assets), firm size (proxied by net sales), current assets, current liabilities etc. for a period of five years from 2013-14 to 2017-18.

Tools and Techniques

The collected data were analyzed using descriptive statistics, correlation and regression. Data have been prepared on MS- Excel whereas analysis has been done SPSS 21.0.

Financial Leverage was calculated using Total Debt/Total Assets and Debt-Equity Ratio.

- FL = TD / TA
- FL = TD / Shareholders Fund

Shareholders' wealth was proxied by the variable Return on Capital Employed.

For regression purpose, following equation was used:

$$ROCE_{it} = \alpha + \beta_1 DER_{it} + \beta_2 TDTA_{it} + \beta_3 NETWORTH_{it} + \beta_4 SALES_{it} + \varepsilon_{it}$$

Since the data consisted of both cross sectional (10 companies) and time series data (5 years), the data constitutes a panel. Therefore, after performing ordinary least square (OLS) regression, panel data regression, with both fixed effects and random effects, were also run. After running all three models, best or parsimonious model was chosen on the basis of adjusted R square, F statistic and its p value.

Results and Discussion

Table 1 presents the descriptive statistics of the data used in the study:

Table 1: Descriptive Statistics

Variables	Mean	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Prob
Debt	369350.8	514754.2	2.04	6.64	72.24	0
Shareholders Fund	544321.4	787923.1	1.81	5.27	44.01	0
Sales	1384023	1477809	0.81	2.34	7.31	0.02
Net Worth	558157	786113.9	1.59	4.18	27.66	0.00
Return on Capital Employed	23.75603	33.61088	3.12	12.10	294.34	0
Total Debt to Total Assets	99.00897	111.5441	3.43	18.02	659.51	0
Debt Equity Ratio	0.937931	1.691326	4.18	22.04	1045.14	0

Source: Own Compilation

Table 1 contains the mean, standard deviation, skewness, kurtosis and Jarque Bera test results (for normality) for all the variables under study. These descriptive statistics were generated for the last year under study i.e. 2017-18 only. Mean and standard cannot be compared being the absolute values. Skewness is positive for all the variables showing positive skewness in the data and high value of kurtosis, greater than 3 (except for sales) indicates the data to be leptokurtic. Jarque-Bera test of normality shows that p value for all the variables is less than 0.05 and thus making the series non-normal.

Correlation

Table 2 shows the correlations between variables, bivariate Pearson's measure of correlation has been displayed. Correlation significant at 5% level of significance have been marked with '*' and correlations significant at 1% level of significance have been marked with '**'.

Table 2: Correlations between Variables

Variables	Total Debt	Share-holders Fund	Net Sales	Net Worth	ROCE	Total Debt to Total Assets	Debt Equity Ratio
Total Debt	1						
Shareholders Fund	.981**	1					
Net Sales	.792**	.794**	1				
Net Worth	.971**	.998**	.813**	1			
ROCE	-.251	-.253	-.248	-.259	1		
Total Debt to Total Assets	.029	-.079	.396	-.078	.155	1	
Debt Equity Ratio	.349	.231	.447	.233	-.362	.661*	1
**. Correlation is significant at the 0.01 level (2-tailed).							
*. Correlation is significant at the 0.05 level (2-tailed).							

Source: Own Compilation from software output

It is revealed from the results that significant correlations have been found at various places. Correlation was found to be significant and positive between total debt and shareholders fund; total debt and net sales; total debt and net worth; net worth and shareholders fund; net worth and net sales; and total debt to total assets ratio and debt-equity ratio. The variables of interest like ROCE, total debt to total assets ratio and debt equity ratio do not show significant correlations with other variables.

Panel Data Regression

Regression equation mentioned above was estimated and the results have been presented in Table 3.

Table 3: Results of OLS Regression

Dependent Variable: ROCE
Method: Panel Least Squares
Periods included: 5
Cross-sections included: 10
Total panel (balanced) observations: 50

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	11.46365	6.331711	1.810514	0.0769
DER	-36.32622	4.579408	-7.932515	0.0000
TDTA	0.578785	0.074662	7.752027	0.0000
Sales	-1.32E-05	3.16E-06	-4.177350	0.0001
Networth	1.54E-05	6.20E-06	2.479181	0.0170
R-squared	0.626085	F-statistic		18.83702
Adjusted R-squared	0.592848	Prob (F-statistic)		0.000000
Akaike info criterion	9.210752	Durbin-Watson stat		0.998843

Source: Own Compilation from software output

It is found from the results that the estimated regression model is significant at 5% level of significance as the F-statistic is 18.837 and the p value is 0.00. Thus the estimated model provides a good fit. The R-square is .6260 and the adjusted R square is .5928, which indicates that 59.28% variability in the dependent variable ROCE is explained by the model. When individual coefficients are observed, it is found that the coefficient of DER has the value of -36.326 and the p value of its t statistic is significant at 5% level of significance. Coefficient of TDTA has the value of 0.5787 with a significant p value. Sales and net worth have very low values but significant at 5% level of significance. Thus all the variables in the model are significantly impacting ROCE, but since the data is panel data, the regression with fixed effects and random effects were also estimated.

Fixed Effects Model

Table 4 presents the estimation results of fixed effects model. Fixed effect for both cross section and time period was estimated.

Table 4: Estimation Results of Fixed Effects Model

Dependent Variable: ROCE				
Method: Panel Least Squares				
Periods included: 5				
Cross-sections included: 10				
Total panel (balanced) observations: 50				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	9.885599	12.66670	0.780440	0.4409
DER	-8.840921	3.314311	-2.667499	0.0119
TDTA	0.166003	0.056747	2.925345	0.0063
SALES	-9.51E-08	4.24E-06	-0.022420	0.9823
NETWORTH	9.43E-06	1.51E-05	0.626068	0.5357
Effects Specification				
Cross-section fixed (dummy variables)				
Period fixed (dummy variables)				
R-squared	0.945026	F-statistic		32.35837
Adjusted R-squared	0.915821	Prob(F-statistic)		0.000000
Akaike info criterion	7.813584	Durbin-Watson Stat		2.246249

Source: Own Compilation from software output

It is found that the estimated fixed effect model has improved the earlier results. The calculated F-statistic is 32.358 with a p value of 0.00. Hence the model provides a good fit at 5% level of significance. The calculated R square value increased to 0.945 and that of adjusted R square is 0.916. Thus now the model is able to explain 91.5% variability in ROCE (dependent variable). As far as individual coefficients are concerned, it is now found that sales and net worth are no longer significant and the values of their coefficients become even lower. Variables DER and TDTA are still significant at 5% level of significance, DER has negative value and TDTA has positive value.

Random Effect Model

Table 5 displays the estimation results of random effects model. Cross section was kept as fixed effect and time period was kept as random effect model.

Table 5: Estimation Results of Random Effect Model

Dependent Variable: ROCE				
Method: Panel EGLS (Period random effects)				
Periods included: 5				
Cross-sections included: 10				
Total panel (balanced) observations: 50				
Swamy and Arora estimator of component variances				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	13.71689	10.45865	1.311535	0.1980
DER	-8.375519	3.290052	-2.545711	0.0153
TDTA	0.155192	0.054577	2.843567	0.0073
SALES	-1.23E-06	3.73E-06	-0.328684	0.7443
NETWORTH	7.27E-06	1.15E-05	0.631825	0.5315
Effects Specification				
			S.D.	Rho
Cross-section fixed (dummy variables)				
Period random			0.000000	0.0000
Idiosyncratic random			10.49603	1.0000
Weighted Statistics				
R-squared	0.941795	F-statistic		44.80820
Adjusted R-squared	0.920777	Prob(F-statistic)		0.000000
		Durbin-Watson stat		2.262123

Source: Own Compilation from software output

It is found that random effect has even more positive effect on the results. The calculated value of F-statistic is 44.808 and the p value is 0.00. Thus model remained significant with even higher F value. The R-square value is 0.942 and that of adjusted R square is .921 which is even more improvised. The values of coefficients of Sales and Net worth have still very low value and those too are not significant. Variables DER and TDTA are still significant at 5% level of significance, DER has negative value and TDTA has positive value. Then, in order to select the most parsimonious model among the three, following diagnostic parameters were compared in Table 6.

Table 6: Comparison of Regression Models

Parameters	OLS	Panel (Fixed Effects in both)	Panel (Cross Section – Fixed and Period – Random)
R Square	0.626085	0.945026	0.941795
Adjusted R Square	0.592848	0.915821	0.920777
F- Statistic	18.83702	32.35837	44.80820
P Value (F)	0.000000	0.000000	0.000000
Akaike info Criterion	9.210752	7.813584	--
Durbin Watson	0.998843	2.246249	2.262123

It seems from the results that the random effect model is the most parsimonious model. The adjusted value of R-square is highest in this model along with F-statistics. The Akaike-information criterion is lowest in fixed effect model but the Durbin-Watson statistic is highest in random effect model, indicating no heteroskedasticity in the residuals. In random effect model the coefficients DER and TDTA are found significant; their respective values of -8.375519 and 0.155192 show that on an average 1% change in DER and TDTA will bring about a reverse change of 8.37% and same change of .15% in ROCE.

Thus the equation output is:

ROCE = 13.717 - 8.375*DER + 0.155*TDTA - 1.22561719602e-06*SALES + 7.27162849909e-06*NETWORTH + [CX=F, PER=R]

CX= Cross section, PER = Period, F = Fixed Effect and R = Random Effect

Conclusion

Present paper attempts to explore relationship between shareholders' wealth and leverage of Indian companies of oil and gas sector. Top 10 companies of this sector on the basis of market capitalization were selected and data regarding various variables like ROCE, sales, net worth, debt equity ratio, total debt to total assets ratio were collected for a period of five years 2013-14 to 2017-18.

The collected data were used to find the impact of leverage on shareholders' wealth of the companies. Panel data regression, fixed effect model and random effect model were estimated and compared on the basis of diagnostic parameters to find the most parsimonious model. Results revealed that the random effect model was the best among the three models. The model was significant and could explain 91.5% variability in the ROCE. Both the variables, which proxied for leverage (debt equity ratio and total debt to total assets ratio), were impacting shareholders' wealth (ROCE) significantly.

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