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THE RESPONSIVENESS OF FINANCIAL LEVERAGE ON PROFITABILITY OF INDIAN ALUMINIUM INDUSTRY

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Abstract
Financial leverage occurs when a company's capital structure includes obligations with fixed interest rates. Earnings after interest and return on equity are boosted or depressed more than proportionally as volume and profitability fluctuate. With financial leverage, advantage is gained from the expectation that funds borrowed at a fixed rate of interest can be used for investment opportunities earning rates of return higher than the interest paid on the funds. In this study the effect of financial leverage is analysed on the profitability of Indian Aluminium Industry. Though the data related to the study could be collected from HINDALCO Industries Limited. Financial as well as statistical analyses have been used to test the result.

Key Words: Financial Leverage, Capital, Equity, Debt, Earning per Share.

Introduction

When a firm expands, it needs capital, and that a company can finance its investments by debt and equity. Company may use preference capital as well. The use of the fixed-charges sources of funds such as debt and preference capital along with the owners' equity in the capital structure is described as Financial Leverage.

Debt has two important advantages. First, interest paid is tax deductible, which lowers debt's effective cost. Second, creditors get a fixed return, so stockholders do not have to share their profits if the business is extremely successful.

However, debt also has disadvantages. First, the higher the debt ratio, the riskier the company, hence the higher its cost of both debt and equity. Second, if a company falls on hard times and operating income is not sufficient to cover interest charges, its stockholders will have to make up the shortfall, and if they cannot, bankruptcy will result. Good times may be just around the corner, but too much debt can keep the company from getting there and thus can wipe out the stockholders. Companies with volatile earnings and operating cash flows therefore limit their use of debt. On the other hand, companies with less business risk and more stable operating cash flows can take on more debt.

This role of financial leverage suggests a lesson in physics, and there might be some point in considering the rate of interest paid as fulcrum used in applying forces through leverage. At least it suggests consideration of pertinent variables; the lower the interest rate, the greater will be the profit, and the less the chance of loss; the less amount the amount borrowed the lower will be the profit or loss; also greater the borrowing, the greater the risk of unprofitable leverage and the greater the chance of gain.

Indian Aluminum Industry is one of the leading industries in the Indian economy. With the growing demand of aluminium in India, the Indian aluminium industry is also growing at an enviable pace. The growth of the aluminium industry in India would be sustained by the diversification and exploration of new horizons for the industry. At present, Hindalco and Nalco are one of the most economical in the production of the aluminium in the world. On the basis of market area and availability of financial information, HINDALCO has been chosen to analyse the role of financial leverage in the profitability of aluminium industry in India.

Objective of the Study

The main objective of this study is to determine the relationship between financial leverage and earnings of selected companies from Indian aluminium industry for this research paper. The specific objectives of this study are as follows:

- To examine the effect of debt ratio (DR) on Return on Assets (ROA) of selected Aluminium Companies in India.
- To determine whether debt- equity ratio (DER) have any effect on Return on Assets (ROA) of selected Aluminium Companies in India.
- To establish if there is any effect of interest coverage ratio (ICR) on Return on Assets (ROA) of selected Aluminium Companies in India.

Statement of hypotheses

To make proper relationship and find out the result the following hypotheses are to be tested:
Ho_1= there is no significant relationship between debt and profitability of Aluminium Companies in India.

Ho_2= there is no significant relationship between debt to equity and EPS of Aluminium Companies in India.

Ho_3= There is no significant relationship between interest coverage ratio (ICR) on Return on Assets (ROA) of Aluminium Companies in India.

Methodology, Sampling and Data collection

In this study non-probable sampling method has been adopted. All the data has been collected from the annual reports of the HINDALCO from the year 2011 to 2015. All the annual reports are available on the official web site of the company. Some other required details are obtained from different magazines and journals. For this study, profitability (ROI) is considered as the dependent variable and financial leverage ratios i.e. Debt Ratio, Debt Equity Ratio and Interest Coverage Ratio as independent variables.

Descriptive analysis was firstly applied to describe relevant aspects of financial leverage and provided detailed information about each relevant variable. Correlation models, specifically Pearson correlation were applied to measure the degree of association between different variables under consideration while regression analysis was applied to examine the relationship of independent variables with dependent variable and to know the effect of selected independent variables on financial performance. By using this method, researchers will be able to identify the significant of each explanatory variable to the model and also the significance of the overall model. The multiple regressions model was used for more than one independent variable.

Description of Variables

1. Income

Income is dependent variable of this study. Return on investment is being used as income as variable which is calculated and shown in the table 1.

Table 1: Return on Investment (ROI)

Year	EBIT	Investment	ROI
2010-11	2815	40025	0.070
2011-12	3031	47829	0.063
2012-13	2483	59671	0.042
2013-14	2793	64926	0.043
2014-15	3462	68010	0.051
Average	2917	56092	0.054

Source: Annual Reports of HINDALCO Industries Limited

Return on Investment ratio is the relationship between income and investment. This ratio shows the efficiency of the firm in producing profit against the fund invested in the company. From the table 1 Earnings before Interest and Tax (EBIT) is used as return. During the study period returns are increasing each year except the year 2012-13 when it reduced from Rs.3031 crore to Rs.2483 crore. But the overall scenario shows increasing trend of profitability.

As compared to earnings, investment recorded high increase. In the year 2010-11, total investment (capital employed) was Rs.40,025 crore and increased to Rs.68,010 crore in 2014-15. Investment has grown 1.5 times during the study period while income has shown a small growth during same time.

Average ROI is 5%, which is highest in the year 2010-11 and lowest in the year 2012-13. Reduction in income was the main reason of low ROI. But after 2012-13, ROI is increasing every year.

2. Capital Gearing

Capital gearing shows the portion of debt in the capital used in the business. Two main ratios are calculated in this study i.e. Debt Ratio and Debt Equity Ratio.

Debt Ratio

Debt ratio depicts the portion of total debt capital invested in the assets of the business. In table 2, Debt, Assets and Debt Ratio of HINDALCO are shown.

HINDALCO has raised debt fund of Rs.9,038 crore in the year 2010-11 and reached to Rs.20,829 crore in the year 2014-15. This is more than double increase in debt fund during the study period. But as compared to assets it is depicted that participation of debt capital is increasing in total investment. It is clear from debt ratio which shows an increasing trend of debt in total assets.

In the year 2010-11 the debt ratio was just 23% and it increased to 43% in 2014-15. The average debt ratio is 36%. At this level creditors of the company can feel safe for their investment in the company.

Table 2: Debt Ratio			
Year	Debt	Assets	Debt Ratio
2010-11	9038	40025	0.23
2011-12	14572	47829	0.31
2012-13	24508	59671	0.41
2013-14	27020	64926	0.42
2014-15	29007	68010	0.43
Average	20829	56092	0.36
Source: Annual Reports of HINDALCO Industries Limited			

Debt –Equity Ratio

Debt equity ratio is an important ratio to measure financial leverage of the company. This ratio makes the relationship between debt and equity composition in total capital employed. Equal proportion of debt gives a safe condition to creditors. Table 3 depicts that HINDALCO has increased its debt proportion in total capital during the study period. It has reached 0.78:1 in the year 2014-15 from 0.30:1 of 2010-11. In first three years of the study company raised huge debt fund rather than equity.

Table 3: Debt Equity Ratio			
Year	Debt	Equity	Debt Equity Ratio
2010-11	9038	29700	0.30
2011-12	14572	32032	0.46
2012-13	24508	33972	0.72
2013-14	27020	36732	0.74
2014-15	29007	37255	0.78
Average	20829	33938.2	0.60
Source: Annual Reports of HINDALCO Industries Limited			

3. Income Gearing

Interest Coverage Ratio

Interest coverage ratio is used to test the debt-service capacity of a company. It indicates the number of times interest is covered by the profit available to pay the interest charges. Long term creditors of the company are interested in knowing the firms ability to pay interest on their long term borrowing. Generally, higher the ratio, more safe are the long term creditors because even if earning of the company fall, the firm shall be able to met its commitment of the fixed interest charges. But too high interest coverage ratio may not be good for the firm because it may imply that firm is not using debt as a source of finance so as to increase the earnings per share. The interest coverage ratio of HINDALCO was 12.80 times in 2010-11and it reduced to 6.97 times in the year 2014-15. It is depicted from the table 4 that every year of the study period interest coverage ratio is decreasing, which incapability of the company to increase the profitability accordingly to same manner as debt fund raised.

Table 4: Interest Coverage Ratio			
Year	Interest	EBIT	Interest Coverage Ratio
2010-11	220	2815	12.80
2011-12	294	3031	10.31
2012-13	436	2483	5.69
2013-14	712	2793	3.92
2014-15	1637	3462	2.11
Average	660	2917	6.97
Source: Annual Reports of HINDALCO Industries Limited			

Regression and Correlation Analysis

Model Specifications

The choice of ordinary least squares (OLS) for this research work is guided by the fact that its computational procedure is simple and the estimates obtained from this procedure have optimal properties which include: linearity, Unbiasedness, Minivariance and Mean square error estimation (Koutsoyianis, 2003). In carrying out this research paper on the effect of financial leverage on financial performance, we developed a compact form of our model as follows:

$Y = bo + b1x1 + b2x2 + b3x3 + \ldots\ldots + \varepsilon i$

Where: Y = Dependent variable of company

X = Independent variable of company

b0 = Intercept for X variable of i company

b1 – b3 = Coefficient for the independent variables X of companies, denoting the nature of the relationship with dependent variable Y (or parameters)

εi = The error term Specially,

when researcher converts the above general least squares model into our specified variables, it becomes:

$(ROI)yt = bo + b1(DR)yt + b2(DER)yt + b3(ICR)yt + \varepsilon i$

Where: ROI = Return on Investment

DR = Debt Ratio

DER = Debt-Equity-Ratio

ICR = Interest Coverage Ratio

εi = Error term

Table 5: Coefficient of Correlation

Co-relation	DR	DER	ICR	RoI
DR	1.0000			
DER	0.9974	1.0000		
ICR	-0.9685	-0.9802	1.0000	
RoI	-0.9336	-0.9253	0.8464	1.0000

Source: Calculated with the help of STATA SE 10

The correlation matrix table shows that Debt ratio (DR) and Debt-equity ratio (DER) have negative relationship with Return on Investment (ROI) while interest coverage ratio (ICR) has a positive relationship with Return on Investment (ROI). The strength of their relationship is indeed at -93.36%, -92.53% and 84.64% for Debt ratio (DR); Debt-equity ratio (DER) and Interest coverage ratio (ICR) respectively.

It indicates that as Debt ratio (DR) and Debt-equity ratio (DER) increases, the Return on Investment (ROI) decreases and vice versa while when interest coverage ratio (ICR) increases, the Return on Investment (ROI) also increases and vice versa. The Correlation between dependent variable i.e. (ROI) and the independent variables (DR, DER and ICR) is high degree.

Table 6: Regression Analysis

ROI	Coef.	Std. Err.	T	P>|t|	[95% Conf. Interval]	
DR	.1494963	0.5510746	0.27	0.831	-6.852571	7.151563
DE	-0.2257281	0.2937611	-0.77	0.583	-3.958316	3.50686
ICR	-0.0050697	0.0040004	-1.27	0.425	-0.055899	0.0457597
Cons	-0.1710384	0.0614656	2.78	0.220	-0.6099566	0.9520333
Adj R-squared = 0.8131		R-squared = 0.9533				
Source: Calculated with the help of STATA SE 10						

The debt ratio (DR) has positive relationship with Return on Investment (ROI). The t- calculated of debt ratio (DR) shows 0.27 which indicates that DR has positive but weak relationship with Return on Investment (ROI). Its significance level of 0.831 shows that tc (DR) is statistically insignificant. Thus, the weight of the evidence suggests that we reject Hypothesis that there is no significant effect of debt ratio (DR) on Return on Investment (ROI) of the company. This means that a change in debt ratio increases s profitability by 0.149 times.

Moreover, it shows that the tc (D) stands at $-0.77 < t*2$ confirming that it is statistically insignificant to company's financial performance. This indicator shows that debt-equity ratio (DE) has negative relationship and does not statistically affect the financial performance of the HINDALCO Industries Limited insignificantly. However, its significance level at 0.583 renders the tc (DE) statistically insignificant. The weight of evidence, therefore suggests that Ho be accepted. This means that debt-equity ratio (DE) has no effect on Return on Investment (ROI) of HINDALCO.

Finally, the coefficient result presented above reveals that interest coverage ratio (ICR) has positive relationship and does not statistically affect the financial performance of HINDALCO. ICR is statistically insignificant at 5% level of significance.

The table above shows that coefficient of multiple determinations R-Square which explains the extent to which the independent variables affect the dependent variable. In this Case, 0.9533 or 95.33% of the variations in the dependent variable were explained by the independent variables while just 0.467 or 4.67% were affected by other variables outside the independent variables. The adjusted R-Square, a more conservative way of looking at the coefficient of determination is also more than 80%. In this case, 0.8131 or 81.31% of the variations in the dependent variable is explained by the independent variable. So this indicates that debt ratio (DR); debt-equity ratio (DER) and interest coverage ratio (ICR) are the major determining factors of Return on Investment (ROI) of the HINDALCO. Only 0.1869 or 18.69% of the variation are determinate by other factors.

Conclusions and Recommendations

The information or data collected were presented and analysed accordingly and from the analysis, the researcher now concludes as follows:

- That debt ratio (DR) and debt-equity ratio (DE) have negative relationship with Return on Investment (ROI) of HINDALCO.
- That debt equity ratio (DE) has positive relationship with debt ratio (DR) while interest coverage ratio (ICR) has negative relationship with debt ratio (DR) of the company.
- That interest coverage ratio (ICR) has negative relationship with debt-equity ratio (DE) of the company
- That coefficient of multiple determinations (R^2) is 95% of the variations in the dependent variable are explained by the independent variables while 5% of the variations are affected by other factors outside our model. It also shows that independent variables are the major determinant factors of financial performance of the company.
- That debt ratio (DR) bears a positive relationship with the Return on Investment (ROI) at 0.27 but insignificant at 0.831 and it is not an important determinant of financial performance of company. This negative relationship and insignificant of debt ratio (DR) on Return on Assets (ROI) of the sampled companies shows an increase in debts, leads to an increase in the assets utilization potentials of the company.
- That debt-equity ratio (DE) bears a negative relationship with the Return on Investment (ROI) at -0.77 but insignificant at 0.583. It shows that debt-equity ratio (DE) is not an important determinant factor or variable of financial performance of the company. So debt-equity ratio (DE) has no effect on Return on Investment (ROI) of HINDALCO.
- The interest coverage ratio (ICR) of the financial leverage of company shows positive relationship with Return on Investment (ROI). It is insignificant and does not consider as an important variable affecting the financial performance of HINDALCO. So there is no significant effect of interest coverage ratio (ICR) on Return on Investment (ROI).

Against this backdrop, the researcher recommended among others

- Company's management should ensure that financial decisions made by them are in consonance with shareholders' wealth maximization objectives which encompasses the profit maximization objective of the firm.
- The amount of debt finance in the financial mix of the firm should be at the optimal level so as to ensure adequate utilisation of the firms' assets.
- The separation of ownerships and management in modern day corporation (companies) demands that agents must act in ways that are in line with the objectives of the principal in order to achieve enhanced earnings per share for the firm owners.
- More often than not, it is rare for any firm to depend solely on equity finance, thus, management may seek other sources of funding which may not be in the interest of equity holders. Therefore, managers should employ financial leverage in a way that enhances value for their company owners' i.e leading to an increase in returns to equity holders.
- The management should monitor the interest charged on debt financing to avoid liquidation of the company. It is also suggested that further research be conducted on the same topic with different sector and extending the years of the sample.

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