A Study on Leverage and Profitability: An Empirical Analysis

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Abstract

This research paper has examined study the role of leverage and profitability with respect to Steel Sector in India. It has considered the period of study for10 years during 2005-06 to 2014-15. The data collected for 29 Steel firms was taken into account which is listed in National Stock Exchange (NSE). (FL), (OL), and (CL) are the independent variables and (ROE), (ROCE), and (EPS) are dependent variables. The statistical tools like regression and correlation analysis have been used to test the aforementioned variables (independent and dependent variables). The result indicates that there is an impact of (OL) on (EPS). (FL) has impact on (ROE, ROCE and EPS), and (CL) has significant impact on (ROE) and has insignificant impact on (ROE and ROCE)..(OL) has significant relationship with (EPS), (FL) has significant relationship with (ROE),(ROCE) and (EPS), and (CL) has significant relationship with (EPS) are selected by Steel Sector in India.

Keywords: *Financial leverage, operating leverage, combined leverage and capital structure,,*
JEL Classification code: *G34, G30, G31, G32.*

INTRODUCTION

Chakraborty, 1977 noted capital structure (CS) delineated the relationship between debt and equity on the basis of proportion. (Myers, 1977), identified that with risky debt should be invested only when the expected return on investment should be high and the guaranteed amount to be paid to bondholders. (Pandey, 1984), noted three major decisions of financial management viz., financial decisions, investment decisions, and dividend decisions). The theory of CS suggested the optimal debt level balances with the costs of debt. (Jensen,1986). Firms can finance their investment in any projects either with debt or equity. Leverage means the use of borrowed funds through preference and equity capital.

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(Jensen, 1986) argues that to pay out excess funds using debt financing as an instrument. (Stewart, 1991) pointed out negative relationship between a firm's debt ratio historical market-to-market ratios using the percentage of external financing as the weighting scheme.

The term 'leverage' is used to utilize the fixed cost assets or funds to increase the returns. The use of leverage is always associated with the risk of uncertainty of returns but at the same time with the possibility of increasing the size of returns. (Baker and Wurgler, 2002), examined an empirical research on determination of CS which is highly concentrated on the costs and benefits related with different degrees of leverage.

SCOPE AND PERIOD OF THE STUDY

The study has focused on Steel Sector in India. The study has concentrated for 10 years data from 2005-06 to 2014-15 with listing firms in NSE and BSE.

RESEARCH OBJECTIVES AND HYPOTHESES

The main objectives of the study are given below:
1. To identify the impact of leverage on profitability.
2. To measure the relationship between leverage and profitability
3. To identify growth and trend of leverages and profitability

HYPOTHESES

H_0^1: Operating leverage doses not have an impact on ROE.

H_0^2: Operating leverage doses not have an impact on ROCE.

H_0^3: Operating leverage doses not have an impact on EPS.

H_0^4: Financial leverage doses not have an impact on ROE.

H_0^5: Financial leverage doses not have an impact on ROCE.

H_0^6: Financial leverage doses not have an impact on EPS.

H_0^7: Combined leverage doses not have an impact on ROE.

H_0^8: Combined leverage doses not have an impact on ROCE.

H_0^9: Combined leverage doses not have an impact on EPS.

H_0^{10}: Operating Leverage and Profitability (EPS) do not have a significant relationship.

H_0^{11}: Financial Leverage and Profitability (ROE, ROCE, and EPS) do not have significant relationship.

H_0^{12}: Combined Leverage and Profitability (ROE) do not have a significant relationship.

RESEARCH METHODOLOGY

The data was collected with the Bombay Stock Exchange (BSE) (www.bseindia.com), and (www.moneycontrol.com).

Sample of the Study

There are 50 steel firms in India which are listed in BSE. The full-fledged data was available for 29 firms for ten years (2005-06 to 2014-15). Hence, the final size of sample arrived 29 firms for the above mentioned period.

Sampling Techniques

This study is concerned with Steel Sector in India. The annual reports and statements were available for the said period. Multistage sampling has been used.
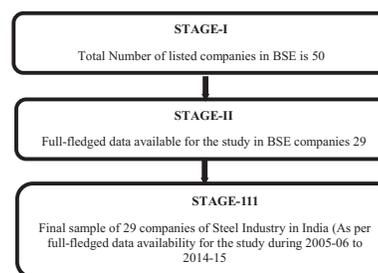

Figure 1: Sampling Technique

Source: Compiled data collected from BSE

Table 1 : List of variables

Independen t variables:	1) (FL)
	2) (OL)
	3) (CL)
Dependent variables: (profitability is a dependent variable for this study)	1) (ROE)
	2) (ROCE)
	3) (EPS)

Research Methods:

Mean, Standard Deviation, Regression Analysis, and Correlations have been used for appropriate analysis of the study. (FL), (OL), and (CL) are taken as independent variables and (ROE), (ROCE) and (EPS)

are taken as dependent variables which are used and tested.

LIST OF MAJOR STEEL PLANTS IN INDIA

The major steel plants of India are given below:

Table 2

Name	Location	Owner
Tata iron and steel corporation (tisco)	Jamshedpur, jharkhand	Tata steel
Visvesvaraya iron and steel plant	Bhadravati, karnataka	Sail
Bhilai steel plant	Chattisgarh	Sail
Durgapur steel plant	Durgapur, west bengal	Sail
Bokaro steel plant	Jharkhand	Sail
Chandrapur ferro alloy plant	Chandrapur, maharashtra	Sail
Iisco steel plant	Asansol, west bengal	Sail
Salem steel plant	Tamil nadu	Sail
Rourkela steel plant	Odisha	Sail
Vijay nagar steel plant	Hospet, bellary, karnataka	Sail
Visakhapatnam steel plant	Visakhapatnam, andhra pradesh	Rashtriya ispat nigam limited
Visakhapatnam steel plant	Visakhapatnam, andhra pradesh	Rashtriyaispat nigam limited

Table 3 : List of selected firms for the study (Steel Industry)

Sl. No.	List of Firms	Sl. No.	List of Firms
1	Welspun Corp	16	Srikalahasthi Pipes
2	Gallant Ispat	17	Kalyani Steels
3	Apl Apollo Tubes	18	Good Luck Steel Tube
4	Maharashtra Seamless	19	Tata Steel

5	Tata Sponge Iron	20	Prakash Industries
6	Pennar Industries	21	Natl.Steel & Agro Industries
7	Kamadhenu Ispat	22	Man Industries (India)
8	Ratnamani Metals And Tubes	23	Steel Authority Of India (Sail)
9	Jsw Steel	24	Oil Country Tubular
10	Surya Roshini	25	Monnet Ispat
11	Prakash Steelage	26	Bhushan Steel
12	Technocraft Industries (India)	27	Jinda Stainless
13	Sunflag Iron And Steel Company	28	Gyscoal Alloys
14	Tata Metaliks	29	Mukand
15	Sarda Energy And Minerals		

Source: *Data collected from moneycontrol.com*

REVIEW OF LITERATURE

The following studies are extracted to review the findings of the past studies:

Aivaziana et al. (2005), noted that leverage is a vital tool for firms with low growth opportunities. Yoon and Jang (2005), suggested that firm size has a strong impact on ROE with respect to restaurant firms than use of debt, larger firms' earning have high return on equity.

Vunyale and Sharma (2006) examined and inferred that the price earnings are following the pecking order theory in the process of mobilizing fund. Tobias and Shin (2010), noted that aggregate liquidity is resulted as the rate of change of the aggregate balance sheet of the financial entities. Chen and Chen (2011) suggested, profitability is a vital factor which has an effect positively on value of firm, and also has an effect on the leverage negatively whereas leverage has an effect negatively on value of firms.

Augustine et al. (2011), documented, a high default risk with higher agency costs of debt. Kouser et al. (2011), suggested that performance of firm had different performance for AS present and AS absent cases. Companies should use ERP systems because they have many benefits and they are becoming necessities for business. Akinlo and Asaolu (2012), examined and concluded that aggregate profit level for the firms declined by 0.02 per cent early during the period. Azhagaiah and Sathia (2012), found a significant growth rate in FL, OL, and CL. The selected financial variables via sales, EBIT, investment (I), borrowings (B) and net worth (NW) influence the leverage in both positive and negative direction. Khalid (2012), pointed out the liquidity (L) and tangibility (T) have relationship significantly with leverage in industrial sector, on the other hand it is also concluded that factors like growth rate (GR), (L), and (T) have significant relationship with leverage.

Yin and Yongjun (2013), inferred that a firm with CDS can generate externalities on financial policies of another relevant firm without CDS. Barakat (2014), noted that there was an impact of financial structure on ROE. Sawa et al. (2014), found a negative relationship between DR (Debt Ratio) and price book value.

Mortezada and Mehrnoosh (2015), concluded that FL

has a significant relationship (positive) with the performance of sample firms. It means that firms with high level of are more profitable. Vijayalakshmi and Padmaja (2015), study reveals a significant influence of leverage on profitability. May and Yang (2016), found interdependent relationship between investment decision and financing decision exists. Kartikasari and Marisa (2016), noted that the DR has a positive effect on P (profitability) whereas total assets has a significant impact (negative) on P (profitability).

Kumar et al. (2016), revealed that Bharti Airtel's liquidity position is not favourable, but profitability ratios showed a positive trend during the period. Pandey and Prabhavathi (2016) inferred that ROCE, ROE, ROD, NW, RF, B (Borrowings), I (Investment) as well as GPA (Gross Fixed Assets) have impact (significantly) on FL of selected automobile firms in India during the period 2003-04 to 2012-13. Pandey et al. (2016) examined that the negative association was found between the profitability of the firm and debt ratio. It was found a significant relationship (negatively) between leverage and firms' profitability. It was concluded and established statistically tested relationship between leverage and P (profitability) in Steel industry in India.

DAYA ANALYSIS AND DISCUSSION
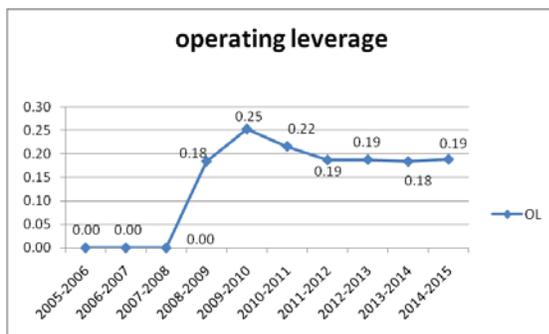
Source: Data collected from moneycontrol.com

Figure 1 : Trend of OL

The performance of operating leverage shows in Figure 1 in the year 2005-06 to 2009-10. There was a
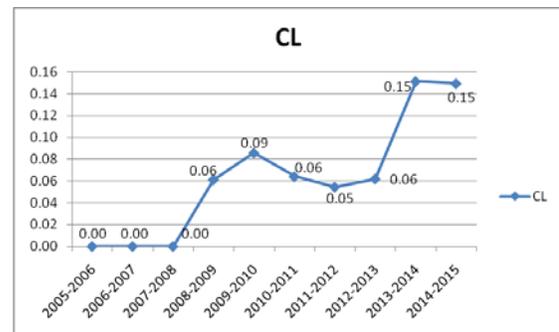
increase in operating leverage during the year 2008-09 to 2009-10. Sample units have positive value in above mentioned period. Then shows a decline in OL in 2011-12 and depicts standard level in the OL in the year 2013-14 and there was also a normal OL in the year 2014-15.
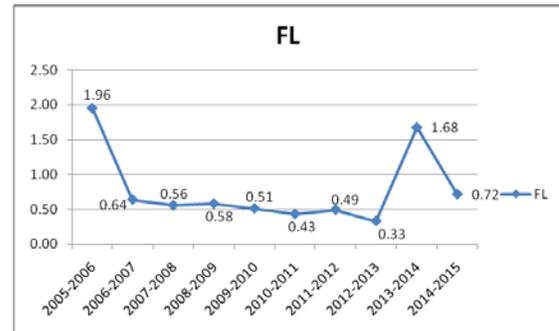
Source: As stated above

Figure 2 : Trend of FL

Figure 2 records a sharp down fall in the FL in 2006-07. Afterwards there was a small change in FL in the following in 2011-12 and showed a decline in FL in 2012-13 and depicted increase in FL in 2013-14 and against fall in FL in 2014-15. however all sample showed positive values of above mentioned period.
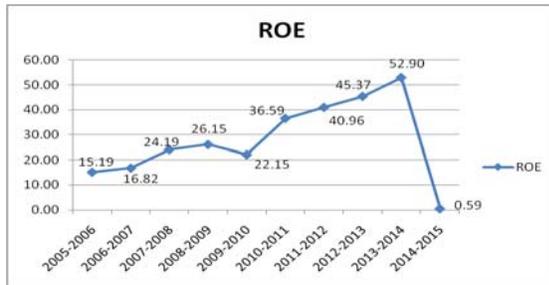

Source: As stated above.

Figure 3 : Trend of CL

Figure 3 depicts that combined leverage has almost nil value during the year 2005-06 to 2007-08. Afterwards there is a increase in CL during the year 2008-09 to 2009-10 and there is a decrease in CL during the year 2011-12 and suddenly increase in the
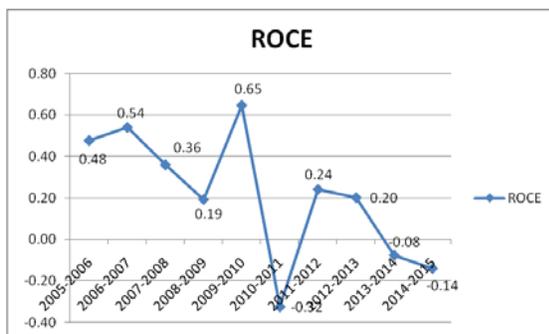
CL during in 2013-14 and stable in the year 2014-15.

Source: As stated above
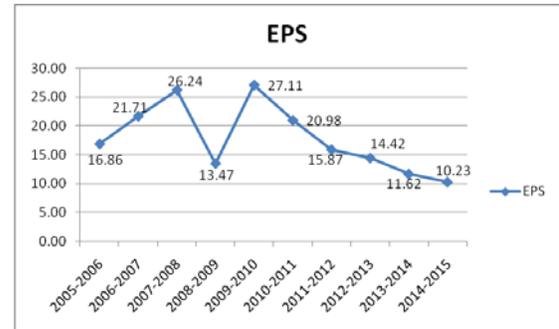
Figure 4 : Trend of ROE

Figure 4 point outs ROE has positive relationship when ROE ratio increase and decreases profitability ratio and vice-versa. ROE ratio steeps fall in during the year 2014-15.

**Source:** As stated above

Figure 5 : Trend of ROCE

ROCE shows in figure 5 a sudden decline in profitability ratio (ROCE) in 2008-09 and the sudden increase in during the year 2009-2010 and then it is a sudden steep fall in next year units have negative value in the year 2011-12. After a deep fall in profitability in 2011-12 and there is a slight fall for two years and a little rise and ends with fall down of profitability.

Source: Data collected from moneycontrol.com

Figure 6 : Trend of EPS

EPS shows (Figure 6) a steep fall in EPS in 2008-09. Afterwards there is a increase in EPS in 2009-10 and there is a decrease in EPS in 2010-11,and gradually decrease in subsequent years till 2014-15. All samples shows positive value in the above period.
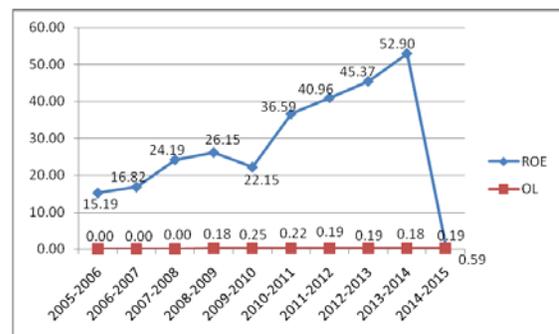
Source: Data collected from moneycontrol.com

Figure 7 : Trend of OL and ROE

Figure 7 explained that return on equity (ROE) shows positive relationship when ROE ratio increase and decreases profitability ratio and vice versa. ROE ratio has steep fall in 2014-15.and increase in OL in 2008-09 and there is an increase in OL in 2009-10. Though all sample units show positive value in period. After the deep fall in OL in 2011-12 and it is standard level in the OL in 2013-14 and also it is a normal OL in 2014-15.
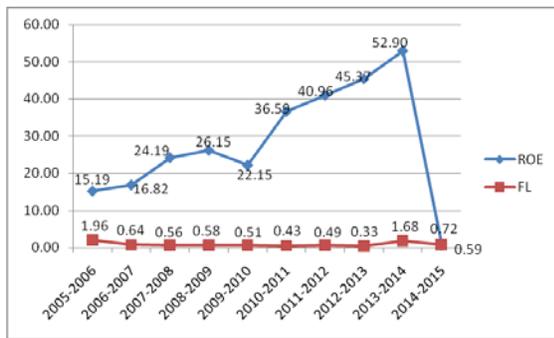
Source: As stated above

Figure 8 : Trend of FL and ROE

Figure 8 indicates that (ROE) is showing positive relationship when ROE ratio increases and decreases profitability ratio and vice- versa. ROE ratio has steep fall in the year 2014-15 and FL depicts a steep fall in the FL in 2006-07. Then there is a small change in FL in 2011-12 and shows a decrease in FL in 2012-13 and rise in FL in 2013-14. It is depicted that all sample show values positively in above mentioned period, then it records a sharp fall in FL in 2014-15.
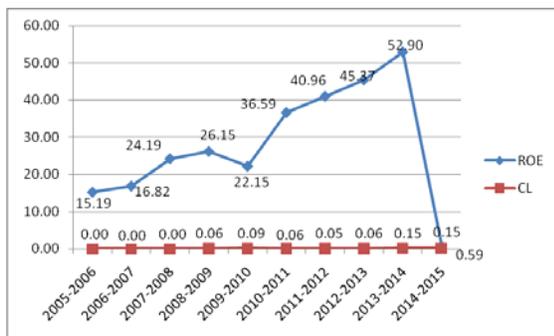
Source: As stated above.

Figure 9 : Trend of CL and ROE

Figure 9 ROE indicates positive relationship when ROE ratio increases and decreases profitability ratio and vice-versa. ROE ratio has steep fall during the year 2014-15 and CL depicts that there is a small changes in CL in 2005-06 to 2007-08. Subsequently it shows an increase in CL from 2008-09 to 2009-10 and there is a decrease in CL in 2011-12 and suddenly increase in CL in 2013-14.

Source: As stated above

Figure 10 : Trend of OL and ROCE

Figure 10 depicts that ROCE has a sudden fall in profitability ratio (ROCE) during the year 2008-09 and the sudden rise in during the year 2009-2010 and then it is depicted a sudden sharp down fall in next year and units have negative value in the year 2011-12. After the deep fall in profitability in 2011-12 and there is a slight fall for two years and a little rise in 2012-1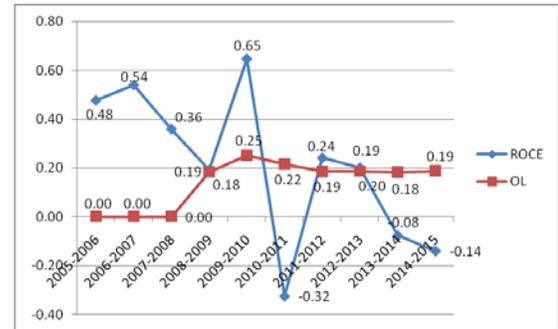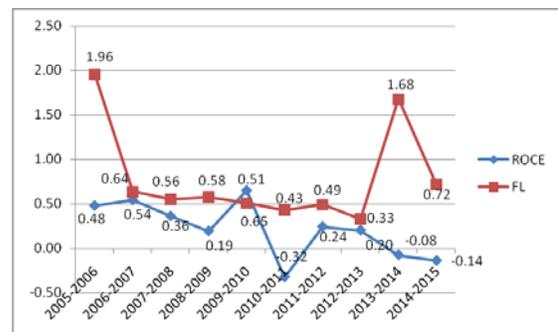3 and ends with fall down of profitability and increase in OL in 2008-09 and there is a rise in OL in 2009-10. Though all sample showed positive value in aforementioned years. After a sharp decrease in OL in 2011-12 and there is standard level in the OL in 2013-14 and it is also shown a normal OL in 2014-15.

Source: As stated above

Figure 11 : Trend of FL and ROCE

Figure 11 depicts that ROCE shows a sudden down fall in profitability ratio (ROCE) in 2008-09 and the sudden rise in 2009-2010 and then it is a sudden steep fall in the next year and units have negative value in the year 2011-12. After the deep fall in

profitability during there is a slight fall for two years and a little rise and ends with fall down of profitability and FL shows a down fall in the FL in 2006-07. Then, it is a small change in FL in 2011-12 and it shows decline in financial leverage in 2012-13 and shows an increase in FL in 2013-14. However, all sample show positive values in aforementioned period. It records deep down fall in FL in 2014-15.
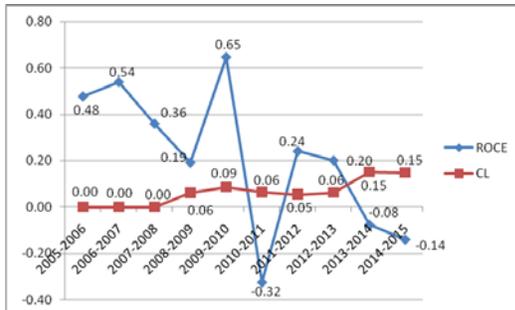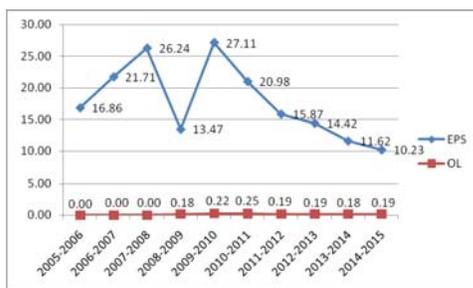

Source: As stated above

Figure 12 : Trend of CL and ROCE

Figure 12 depicts that ROCE shows a sudden fall in profitability ratio (ROCE) in 2008-09 and the sudden rise in during the year 2009-2010 and shows a sudden steep fall in the next year i.e. 2011-12 and units depicts negative value in 2011-12. After the deep fall in profitability during there is a slight fall for two years and a little rise and ends with fall down of profitability. And combined leverage shows that there is a small change in CL during the year 2005-06 to 2007-08. Afterwards increase in CL during the year 2008-09 to 2009-10 and there is a decrease in CL in 2011-12 and suddenly increase in the CL in 2013-14.

Source: As stated above

Figure 13 : Trend of OL and EPS

It is clear from Figure 13 that EPS shows a steep fall in EPS in 2008-09. Afterwards, it shows an increase in EPS in 2009-10 and decrease in EPS in 2010-11. All sample units record positive value in above duration after it shows a deep down fall in EPS in 2013-14 and also it shows continuous decrease in EPS in 2014-15 and increase in OL in 2008-09. It shows a rise in OL in 2009-10. However, all samples depicts positive value in above mentioned years. Then a sudden down decrease in OL in 2011-12 and it shows standard level in the OL in 2013-14 and also it shows a normal OL in 2014-15.

Source: As stated above

Figure 14 : Trend of FL and EPS

Figure 14 shows a steep down fall in EPS in 2008-09 and subsequently it shows a increase in EPS in 2009-10 and decrease in EPS in 2010-11. All samples clearly show positive value in above years then showing a sharp decrease in EPS in 2013-14 and it also shows continuous decrease in EPS in 2014-15. The FL shows a steep downfall fall in FL in 2006-07. Afterwards, it shows a small change in FL in 2011-12 and decrease in FL in 2012-13 and increase in FL in 2013-14. However, all samples depict positive values in above mentioned years after showing a sharp decrease in FL in 2014-15.
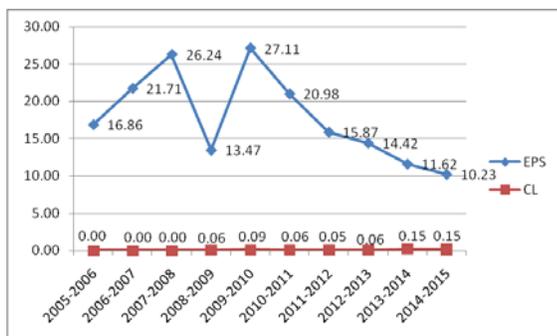
Source: As stated above

Figure 15 depicts steep fall in EPS in 2008-09. Afterwards, it shows increase in EPS in 2009-10 and decrease in EPS from 2010-11 to 2014-15. All sample unit record positive value in the duration after a gradual down fall in EPS in 2013-14 and shows continuous decrease in EPS in 2014-15. It also shows a small change in CL from 2005-06 to 2007-08. Afterwards, it shows increase in CL in 2008-09 to 2009-10 and decrease in CL in 2011-12 and sudden increase in CL in 2013-14.

Figure 15 : Trend of CL and EPS

Analysis of Descriptive Statistics
Table 4

Variables	N	Minimum	Maximum	Mean	Std. Deviation
OL	29	.06	.50	.205	.101
FL	29	.02	1.60	.493	.458
CL	29	.01	.20	.070	.049
ROE	29	.17	.61	.353	.127
ROCE	29	-11.73	.76	-.0318	2.256
EPS	29	-45.02	733.25	1.785	2.062

Source: Computed and complied data from moneycontrol.com based on BSE registered companies.

The descriptive statistics shows in table 4 that EPS shows the highest mean value and it shows that the company's EPS is high when it is compared to other variables. FL has the next highest mean value. ROCE has high standard deviation which indicates that the company is leveraging its financial position effectively. EPS also has high standard deviation but the CL has low standard deviation. Mean value shows much variation with regards to all leverages with profitability (P)

Regression Analysis
Table 5 : Results of Regression of OL on ROE from 2005 to 2015

Model	Un-standardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
ROE	.379	.055		6.915	.000
OL	-.124	.240	-.099	-.516	.610
R^2					.010
Adjusted R^2					-.027

Source: As stated above.

Table 5 depicts OL has not significant (positive co-efficient) (.610) on ROE.

"H_0^1: Operating leverages does not have an impact on ROE" is accepted, with adjusted R^2 -.027. The overall result of regression model shows that R^2 shows 10% of changes in ROE. Hence, OL does not have an impact on ROE. Therefore, it is insignificant.

Table 6 : Regression Results of OL on ROCE from 2005 to 2015

Model	Un-standardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	T	Sig.
ROCE	-1.078	.950		-1.134	.267
OL	5.102	4.168	.229	1.224	.232
R^2					.053
Adjusted R^2					.017

Source: As stated above.

Table 6 clears, OL has not significant (positive co-efficient) (.232) on ROCE. "H_0^2: Operating leverage does not have an impact on ROCE". H_0^2 is accepted, with Adjusted R^2 -.017. The overall outcome of regression model shows that R^2 is 5.3% changes in ROCE. Hence, OL does not have an impact on ROCE. Therefore, the result is insignificant.

Table 7 : Results Regression of OL on EPS from 2005 to 2015

Model	Un-standardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	T	Sig.
EPS	-134.275	59.003		-2.276	.031
OL	1525.552	258.832	.750	5.894	.000
R^2					.563
Adjusted R^2					.546

Source: As stated above.

It is clear from the Table 7 shows OL has significant positive co-efficient (.000) on EPS.

"H_0^3: Operating leverage does not have an impact on EPS". H_0^3 is rejected and Adjusted R^2 shows 54.6%. The overall result of regression model shows by R^2 is at 56.3%. It has changes in EPS. It is therefore, OL has significant impact on EPS. Hence, it is significant.

Table 8 : Regression Analysis of FL on ROE during 2005 to 2015

Model	Un-standardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
ROE	.277	.030		9.355	.000
FL	.155	.044	.558	3.495	.002
R^2					.311
Adjusted R^2					286

Source: As stated above.

Table 8 depicts, FL has significant (positive co-efficient) (.002) on ROE at 1% of significant level. H_0^4: "Financial leverage does not have an impact on ROE." H_0^4 is rejected with adjusted R^2 is 28.6%. The overall conclusion of regression model showed R^2 is 31.1%. It has changes in ROE. Hence, it is highly significant. It means FL has significant impact on ROE.

Table 9 : Regression Results of FL on ROCE during 2005 to 2015

Model	Un-standardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
ROCE	.871	.587		1.484	.150
FL	-1.831	.879	-.372	-2.082	.047
R^2					.138
Adjusted R^2					.106

Source: As stated above.

Table 9 records, FL has significant (positive co-efficient) (.047) on ROCE at 5% level of significance.. "H_0^5: Financial leverage does not have an impact on ROCE". H_0^5 is rejected, with Adjusted R^2 10.6%. The result of regression depicted that R^2 is 13.8%. It shows changes in ROE. It means FL has significant impact on ROCE.

Table 10 : Regression Results of FL on EPS during 2005 to 2015

Model	Un-standardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
EPS	276.911	51.833		5.342	.000
FL	-199.501	77.606	-.443	-2.571	.016
R^2					.197
Adjusted R^2					.167

Source: As stated above.

It is clear from the Table 10, FL shows significant positive co-efficient (.016) on EPS at 5% level of significance. "H_0^6: Financial leverage does not have an impact on EPS". H_0^6 is rejected, with Adjusted R^2 16.7%. The result of regression analysis recoded that R^2 is 19.7% It shows changes in ROE. It means FL has significant impact on EPS.

Table 11 : Regression Analysis of CL on ROE During 2005 to 2015

Model	Un-standardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
ROE	.238	.033		7.188	.000
CL	1.620	.386	.628	4.192	.000
R^2					.394
Adjusted R^2					.372

Source: As stated above.

It is clear from Table 11, CL indicated significant positive co-efficient (.000) on ROE at 1% level of significance. H_0^7: "Combined leverage does not have an impact on ROE". H_0^7 is rejected, with Adjusted R^2 37.2%. The result of regression analysis showed that R^2 is 39.4%. It shows changes in ROE. It is highly significant. It means CL has significant impact on ROE.

Table 12 : Regression Results of CL on ROCE During 2005 to 2015

Model	Un-standardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
ROCE	.345	.751		.460	.649
CL	-5.323	8.748	-.116	-.609	.548
R^2					.014
Adjusted R^2					-.023

Source: As stated above.

Table 12 depicts, CL shows insignificant positive co-efficient (.548) on ROCE.. "H_0^8: Combined leverage does not have an impact on ROCE". H_0^8 is accepted, with Adjusted R^2 -.023. The result of regression model showed that R^2 is at 1.4%. It records the changes in ROCE. It is not significant. It means that CL does not have an impact on ROCE.

Table 13 : Regression Results of CL on EPS during 2005 to 2015

Model	Un-standardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
EPS	276.599	65.213		4.241	.000
CL	1384.152	759.767	-.331	-1.822	.080
R²					.109
Adjusted R²					.076

Source: As stated above.

Table 13 depicts, CL insignificant positive co-efficient (.080) on EPS. H_0^9: "Combined leverage does not have an impact on EPS". H_0^9 is accepted, with Adjusted R^2 -.076. The result of regression analysis showed that R^2 is at 10.9% and showed changes in EPS. It is not significant. It means CL does not have an impact on EPS.

Table 14 : Pearson Bi-variate Correlation of Leverage on Profitability from 2005 to 2015:

		ROE	EPS	ROCE	FL	OL	CL
ROE	Pearson Correlation	1					
	Sig. (2-tailed)						
EPS	Pearson Correlation	-.104	1				
	Sig. (2-tailed)	.590					
ROCE	Pearson Correlation	-.267	.131	1			
	Sig. (2-tailed)	.162	.499				
FL	Pearson Correlation	.558**	-.443*	-.372*	1		
	Sig. (2-tailed)	.002	.016	.047			
OL	Pearson Correlation	-.099	.750**	.229	-.674**	1	
	Sig. (2-tailed)	.610	.000	.232	.000		
CL	Pearson Correlation	.628**	-.331	-.116	.814**	-.393*	1
	Sig. (2-tailed)	.000	.080	.548	.000	.035	

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Table 14 shows the relationship among the different dependent and independent variables used in analysis.

"H_0^{10}: "Operating leverage and profitability (EPS) do not have a significant relationship". It is rejected hence; OL has significant relationship with EPS.

"H_0^{11}: "Financial leverage and profitability (ROE, ROCE, and EPS) do not have a significant relationship". It is rejected therefore; FL has significant relationship with ROE, ROCE, and EPS.

"H_0^{12}: "Combined leverage and profitability (ROE) do not have a significant relationship". H_0^{12} is rejected it concludes that CL has significant relationship with ROE.

Table 15 : The overall result and findings of the study :

S. No.	Hypotheses	Accept/Reject	Results
1	H_0^1	Accepted	Not significant
2	H_0^2	Accepted	Not significant
3	H_0^3	Rejected	*Significant*
4	H_0^4	Rejected	*Significant*
5	H_0^5	Rejected	*Significant*
6	H_0^6	Rejected	*Significant*
7	H_0^7	Rejected	*Significant*
8	H_0^8	Accepted	Not significant
9	H_0^9	Accepted	Not significant

Table 16 : Statement of Correlation Results:

S. No.	Hypotheses	Accept/Reject	Results
1	H_0^{10}	Rejected	*Significant*
2	H_0^{11}	Rejected	*Significant*
3	H_0^{12}	Rejected	*Significant*

FINDINGS OF CORRELATION MODEL:

✓ OL with ROE, ROCE, and EPS have positive relationship and FL with ROE, EPS have negative relationship and the CL with ROE has also negatively correlated.

✓ H_0^{10}: "OL and Profitability (EPS) do not have significant relationship." It is rejected (H_0^{10}). Therefore, OL and EPS have significant relationship.

- ✓ H_0^{11}: "FL and Profitability (ROE, EPS, ROCE) do not have significant relationship." H_0^{11} is rejected hence; FL has significant relationship with ROE, EPS and ROCE.
- ✓ H_0^{12}: "CL and Profitability (ROE) do not have significant relationship". H_0^{12} is rejected therefore CL has significant relationship with ROE.

CONCLUSION

The analysis confirmed that Operating Leverage has an impact on EPS, Financial leverage on ROCE and EPS and combine leverage has an impact on ROE of the Steel Sector in India. Leverage is one of the most significant factors of the corporate management. The correlated result inferred that there was a significant relationship with OL and EPS, FL has significant relationship with ROE, ROCE and EPS. CL also has significant relationship with ROE.

SUGGESTION

On the basis of above result and analysis, it is suggested that the Steel Industry in India should progress based on their operating risk taking capacity and financial risk to be maintained by manageable level of fixed cost. It is therefore is suggested that FL shows an impact on all financial dimensions which exactly explain that the fixed cost connecting to debt portion in the CS. The present study has focused on 29 firms of steel industry in India, it is also suggested that the sample size can be decreased based on the availability of data to get comprehensive analysis about whole Steel Sector in India.

Scope for Future Studies

- ✓ Basically, the present study is analysed a sample of 29 Steel firms in India for the period of 10 years. It could have taken all listed steel firms listed in BSE and NSE for comprehensive analysis and result by applying some other advanced statistical tool for better results. Further research may also be done to the leverage related to other profitability variables like ROA, ROD, and ROI etc.

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