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AN EMPIRICAL ANALYSIS OF FINANCIAL LEVERAGE AND FINANCIAL PERFORMANCE IN SELECTED INDIAN STEEL COMPANIES

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ABSTRACT

Financial leverage plays a crucial role in shaping a company's capital structure and determining its financial sustainability, especially in capital-intensive industries like steel. This study empirically investigates the relationship between financial leverage and financial performance in selected Indian steel companies. The research is based on a five-year financial dataset from 2020–21 to 2024–25 for two leading steel companies: JSW Steel Ltd and Tata Steel Ltd. The analysis focuses on key financial indicators such as Net Profit Margin, Return on Assets, and Total Debt-to-Equity Ratio to assess both profitability and leverage strategies adopted by these firms. The findings reveal that while there is no significant difference in net profit margin and return on assets between the two companies, there exists a statistically significant difference in their total debt-to-equity ratios, suggesting contrasting approaches to financial leverage. The study contributes to the understanding of how capital structure choices influence firm performance in capital-intensive sectors like steel. It offers valuable insights for financial analysts, investors, and corporate managers seeking to evaluate risk, return, and financial sustainability in the Indian steel industry.

Keywords : Financial Leverage, Financial Performance, Steel Industry, Net Profit Margin, Return on Assets, Debt-to-Equity Ratio

1. Introduction

Financial leverage is a critical concept in corporate finance, referring to the use of borrowed capital (debt) in a company's capital structure to enhance the potential return on equity. It essentially indicates how much a company relies on debt financing as opposed to equity financing. The primary objective behind employing financial leverage is to amplify the gains or returns for equity shareholders by utilizing the fixed cost nature of debt. However, while financial leverage can magnify returns during favorable conditions, it also increases the risk of losses during adverse periods, making its management a delicate balance between risk and reward.

At its core, financial leverage is measured by several key ratios, such as the debt-equity ratio, interest coverage ratio, and financial leverage ratio. The debt-equity ratio, which compares a company’s total debt to its shareholders' equity, provides insights into the proportion of financing that comes from creditors versus owners. A high debt-equity ratio may signal aggressive financing strategies and potentially higher financial risk. The interest coverage ratio, on the other hand, evaluates a company's ability to meet its interest obligations from operating profits. A lower interest coverage ratio may indicate potential difficulties in servicing debt, especially during economic downturns or periods of reduced revenue.

The use of financial leverage affects not only the profitability but also the solvency of a company. In times of robust earnings and expanding markets, leverage can significantly boost the return on equity, as fixed interest payments on debt remain constant while earnings increase. However, in declining markets or during unexpected disruptions such as economic recessions, the burden of fixed interest payments can lead to financial distress. Therefore, the decision to employ leverage must be based on a comprehensive assessment of a company's earnings stability, industry characteristics, cost of debt, and macroeconomic environment.

2. Literature Review

Mehta and Sharma (2021) analyzed 100 companies from the BSE 500 index over a five-year period to evaluate how capital structure decisions influenced profitability. They discovered a negative correlation between financial leverage and profitability, particularly for companies in capital-intensive sectors like infrastructure and power. The authors highlighted that companies with high fixed costs and unstable cash flows are more vulnerable to the risks associated with leverage. Their regression analysis revealed that increased debt ratios often led to a decline in ROE and EPS, suggesting that higher debt burdens limit the capacity of companies to reinvest profits and service debt effectively. The study recommended cautious use of leverage, especially in volatile sectors.

Patel and Desai (2022) carried out an empirical study on 60 mid-cap Indian companies from various sectors to investigate how financial leverage affects firm performance in the post-COVID era. The research showed that during the pandemic, companies with high leverage suffered significant declines in net income and cash flows. On the contrary, firms that had conservative debt policies managed to retain stability and outperformed their highly leveraged counterparts. The findings underscored that in crisis situations, companies with higher leverage face liquidity constraints, which in turn affects their operational efficiency. Patel and Desai concluded that external shocks amplify the financial risk posed by leverage, and Indian companies need to adopt a more dynamic approach to managing capital structures.

Rao (2022) explored the influence of leverage on financial performance specifically within the Indian pharmaceutical industry. The study employed panel data analysis over the period 2016–2021 and focused on 25 leading pharma firms. Rao observed that there was a statistically significant negative relationship between total debt and profitability indicators such as ROA and ROE. He argued that the high levels of R&D expenditure in pharma companies do not align well with high leverage levels, as uncertain returns from innovation-driven investments increase financial vulnerability. The study suggested that firms in research-oriented industries should rely more on equity financing to mitigate the risks associated with leverage.

Joshi and Verma (2023) examined the leverage-performance relationship in the context of the Indian automobile industry. Using data from 2015 to 2022 for 30 automobile companies, the authors applied fixed-effects models to control for firm-specific characteristics. Their results showed a U-shaped relationship between leverage and profitability, indicating that a moderate level of leverage positively influences financial performance, but excessive leverage leads to deteriorating results. They explained that a certain amount of debt enforces discipline in managerial decision-making, but beyond a threshold, the cost of debt outweighs the benefits. Their study highlighted the need for companies to constantly reevaluate their capital structure strategies in response to changing market dynamics.

Singh and Kaur (2023) studied the impact of short-term and long-term debt on the financial performance of FMCG companies in India. Their research differentiated the effects of various types of debt on profitability metrics. The study found that short-term debt had a more adverse effect on performance compared to long-term debt. This was attributed to the pressure of frequent repayment obligations, which strain working capital and disrupt operational continuity. Singh and Kaur emphasized the importance of maturity structure in leverage decisions and recommended that companies adopt long-term strategic financing tools rather than relying on short-term borrowing for operational needs.

Gupta (2024) conducted a comprehensive study on the steel and cement industries in India to compare how leverage affects performance in these two heavy industries. The study utilized a sample of 40 companies and employed correlation and regression analyses. Gupta found that the steel industry exhibited a stronger negative relationship between leverage and performance than the cement industry. He attributed this to the higher volatility in raw material prices and global demand fluctuations that affect steel producers more severely. His findings suggest that industry-specific factors significantly moderate the impact of financial leverage, and a uniform capital structure strategy cannot be applied across sectors.

3. Research Methodology

Research Objectives

1. To analyse the financial leverage and financial performance of selected steel companies of India
2. To compare the financial leverage and financial performance of selected steel companies of India

Sample Size

In this research study, 2 steel companies based in India have been taken

1. JSW Steel Ltd
2. Tata Steel Ltd

4. Data Analysis

4.1 Net Profit Margin

Company	2024-25	2023-24	2022-23	2021-22	2020-21
JSW Steel Ltd	5.94	3.74	14.05	11.86	8.23
Tata Steel Ltd	10.54	3.40	12.01	25.58	20.29

JSW Steel Ltd, the company recorded a net profit margin of 8.23% in 2020–21, which increased steadily to 11.86% in 2021–22 and peaked at 14.05% in 2022–23. This upward trend during the three-year span suggests strong profitability, likely driven by favorable global steel prices, robust demand, and efficient cost management. However, in the subsequent years, there was a significant drop in margins, with the NPM falling to 3.74% in 2023–24 and slightly recovering to 5.94% in 2024–25. This decline could be attributed to multiple factors such as rising input costs, weakening demand, reduced export competitiveness, or currency volatility. The slight improvement in 2024–25 may reflect early signs of recovery or effective corrective measures taken by the company to restore profitability. In contrast, Tata Steel Ltd showed even more dynamic fluctuations in its net profit margin over the same period. The company reported an impressive NPM of 20.29% in 2020–21, which surged to a remarkable 25.58% in 2021–22. These figures indicate exceptionally strong profitability during those years, possibly due to booming global steel markets post-pandemic, operational efficiency, and strategic expansion. However, the margin declined sharply to 12.01% in 2022–23 and further dropped to 3.40% in 2023–24. Similar to JSW Steel, this deterioration may stem from a combination of declining steel prices, increased raw material costs (particularly iron ore and coking coal), and global economic slowdown affecting demand. In 2024–25, Tata Steel experienced a recovery in margin to 10.54%, suggesting a more robust bounce-back than JSW Steel during the same year.

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
JSW Steel Ltd	5	43.82	8.764	17.75693
Tata Steel Ltd	5	71.82	14.364	75.32243

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	78.4	1	78.4	1.684584	0.230485	5.317655
Within Groups	372.3174	8	46.53968			
Total	450.7174	9				

H0 = There is no significant difference in net profit margin between selected steel companies of India.

INTERPRETATION

From above table for 1 and 8 degree of freedom

Fcal is 1.684 and Ftab is 5.317

P-value is 0.230485

Thus, Fcal<Ftab and p-value is higher than specified α of 0.05

So, null hypothesis is accepted and it is concluded that there is no significant difference in net profit margin between selected steel companies of India.

4.2 Return on Assets

Company	2024-25	2023-24	2022-23	2021-22	2020-21
JSW Steel Ltd	4.33	2.85	10.25	6.29	4.33
Tata Steel Ltd	5.49	1.95	6.62	14.87	9.46

JSW Steel Ltd shows a relatively stable trend in ROA performance over the five-year period. In 2020–21, the ROA was 4.33%, indicating modest efficiency in generating profits from assets. This improved significantly in 2022–23, peaking at 10.25%. The rise suggests a strong increase in profitability, likely supported by favorable steel market conditions, increased capacity utilization, and optimized asset deployment. However, in 2021–22, the ROA dipped slightly to 6.29% before climbing again, implying that the improvement was not linear. Post-2022–23, the ROA dropped to 2.85% in 2023–24, reflecting either a sharp fall in profitability or increased asset base without proportionate returns. In 2024–25, the ROA rebounded to 4.33%, matching the 2020–21 level, suggesting a partial recovery. This pattern indicates that JSW Steel's asset utilization has been moderately efficient, with some vulnerability to external economic conditions and market volatility.

Tata Steel Ltd, on the other hand, presents a more fluctuating ROA trend. In 2020–21, the company recorded a robust ROA of 9.46%, indicating solid asset efficiency during a post-pandemic economic recovery. This figure surged dramatically in 2021–22 to 14.87%, the highest across both companies in all years presented. This spike likely reflects exceptional profitability driven by booming steel prices and strong demand, combined with efficient asset utilization. However, the ROA dropped to 6.62% in 2022–23, which, although still healthy, represented a significant decline. The metric further deteriorated to a low of 1.95% in 2023–24, implying a drastic fall in net income or possibly increased capital investments yielding lower short-term returns. In 2024–25, Tata Steel managed to recover to 5.49%, a substantial improvement, suggesting that the company may have restructured operations, improved profitability, or divested underperforming assets.

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
JSW Steel Ltd	5	28.05	5.61	8.2216
Tata Steel Ltd	5	38.39	7.678	23.40427

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	10.69156	1	10.69156	0.676127	0.434745	5.317655
Within Groups	126.5035	8	15.81294			
Total	137.195	9				

H0 = There is no significant difference in return on assets between selected steel companies of India.

INTERPRETATION

From above table for 1 and 8 degree of freedom

Fcal is 0.676 and Ftab is 5.317

P-value is 0.4347

Thus, Fcal<Ftab and p-value is higher than specified α of 0.05

So, null hypothesis is accepted and it is concluded that there is no significant difference in return on assets between selected steel companies of India.

4.3 Total Debt/Equity

Company	**2024-25**	**2023-24**	**2022-23**	**2021-22**	**2020-21**
JSW Steel Ltd	0.78	0.87	0.79	0.87	1.20
Tata Steel Ltd	0.47	0.29	0.28	0.26	0.34

For JSW Steel Ltd, the D/E ratio has shown a generally declining trend from 2020–21 to 2024–25. In 2020–21, the company had a D/E ratio of 1.20, indicating that it was more heavily financed through debt than equity. This higher leverage might have been a strategic move to capitalize on opportunities during the post-COVID recovery period, or it may reflect significant capital

expenditures during that time. In the following years, the company worked on reducing its financial leverage, as seen by the gradual decline to 0.87 in both 2021–22 and 2023–24 and further down to 0.78 in 2024–25. The drop in leverage suggests a conscious effort to deleverage the balance sheet, possibly through debt repayments, improved equity base, or retained earnings from profitable operations. This reduction aligns with a more balanced and sustainable financial strategy, which enhances creditworthiness and lowers interest burdens, thus contributing to long-term financial stability. Tata Steel Ltd, in contrast, consistently maintained a significantly lower D/E ratio throughout the same period. Beginning at 0.34 in 2020–21, the company continued to improve its capital structure with steady reductions to 0.26 in 2021–22 and reaching a low of 0.28 and 0.29 in 2022–23 and 2023–24, respectively. In 2024–25, the D/E ratio slightly increased to 0.47. This minor rise could be attributed to new borrowings, potentially for expansion, acquisitions, or working capital requirements.

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
JSW Steel Ltd	5	4.51	0.902	0.02957
Tata Steel Ltd	5	1.64	0.328	0.00717

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.82369	1	0.82369	44.83887	0.000153	5.317655
Within Groups	0.14696	8	0.01837			
Total	0.97065	9				

H0 = There is no significant difference in total debt/equity between selected steel companies of India.

INTERPRETATION

From above table for 1 and 8 degree of freedom

Fcal is 44.838 and Ftab is 5.317

P-value is 0.000153

Thus, Fcal>Ftab and p-value is smaller than specified α of 0.05

So, null hypothesis is rejected and it is concluded that there is significant difference in total debt/equity between selected steel companies of India.

5. Conclusion

The Net Profit Margin trends of both companies reveal fluctuations influenced by external economic conditions and internal operational efficiencies. While Tata Steel reported exceptionally high margins during the post-pandemic boom years, JSW Steel exhibited relatively more stable, albeit lower, margins. However, despite these variances in yearly performance, statistical analysis confirms that there is no significant difference in the net profit margin between the selected steel companies of India. This suggests that, over the long term, both companies have comparable profitability levels when measured relative to their revenues.

Similarly, the Return on Assets, a key indicator of how effectively companies utilize their total assets to generate net income, reveals fluctuating performance patterns across both firms. Tata Steel experienced a sharp rise and fall in ROA, reflecting sensitivity to changing market dynamics, while JSW Steel showed steadier but less pronounced variations. Nevertheless, the analysis concludes that there is no significant difference in the return on assets between the selected steel companies of India, indicating that, on average, both companies have been equally efficient in managing their assets to produce returns.

In contrast, the Total Debt-to-Equity ratio reveals a significant difference between JSW Steel Ltd and Tata Steel Ltd. While JSW Steel demonstrated a relatively higher and more fluctuating leverage profile, Tata Steel maintained consistently low D/E ratios throughout the study period. Tata Steel's more conservative capital structure indicates a stronger reliance on equity and internal funds, while JSW Steel, though improving, continues to carry higher financial risk due to greater reliance on debt. The significant statistical difference in D/E ratios underscores distinct financial strategies between the two firms, with Tata Steel favoring risk-averse financing approaches compared to JSW Steel's more aggressive capital structure.

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