WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal Homepage: www.ijrpr.com ISSN 2582-7421

A Comparative Study of BSE and NASDAQ with Special Reference to the Iron and Steel Industry

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DOI : https://doi.org/10.55248/gengpi.07.1026.34040

ABSTRACT

Stock exchanges provide the institutional framework through which companies access capital and investors allocate funds. This study comparatively examines selected iron and steel companies associated with the Bombay Stock Exchange (BSE) and the NASDAQ Stock Market, with emphasis on financial performance and capital structure. The revised study uses secondary data from audited annual reports, integrated reports and U.S. Securities and Exchange Commission (SEC) filings. A purposive sample of six companies—three BSE-listed Indian steel companies and three NASDAQ-listed U.S. metals and steel-related companies—is examined using revenue, EBITDA, profit after tax, net profit margin and leverage indicators. Descriptive and ratio analysis is used to identify cross-market patterns. The results show substantial variation within both exchanges, demonstrating that exchange-level generalisations can conceal important company-level differences. In the selected BSE sample, net profit margins ranged from 1.45% to 5.70%, whereas the NASDAQ sample ranged from -9.72% to 8.84%. The analysis therefore supports a more cautious interpretation of exchange differences: financial performance is influenced not only by the market in which a company is listed, but also by business model, operating geography, commodity exposure, cost structure and company-specific financial conditions. The paper strengthens the earlier draft by replacing directional claims with observable secondary-data evidence and by explicitly stating limitations arising from different fiscal years, accounting systems and company characteristics.

Keywords: BSE, NASDAQ, iron and steel industry, secondary data, financial performance, profitability, leverage, comparative analysis.

1. Introduction

The iron and steel industry is a capital-intensive and cyclical sector that is closely connected with construction, infrastructure, manufacturing, transportation and global commodity markets. Because steel producers require substantial fixed investment and are exposed to changes in raw-material prices, demand conditions, trade policy and economic cycles, their financial performance provides a useful context for comparative capital-market research.

BSE and NASDAQ represent structurally different capital-market environments. BSE is a major Indian exchange with a long domestic market history, while NASDAQ operates as a fully electronic U.S. market with a broad international investor base. A comparison of companies in the same broad industrial segment can therefore help identify how profitability, leverage and operating performance vary across the two market environments.

The earlier version of this paper presented several broad directional conclusions about volatility, liquidity and valuation without displaying the underlying company-level dataset. The present version addresses that weakness. It introduces an explicit sample, identifies the source of each major financial observation, calculates comparable ratios and interprets the results cautiously. Where the available data do not support a direct comparison, the limitation is stated rather than inferred.

1.1 Background of the Exchanges

BSE is one of India's oldest organised securities markets and is regulated within India's securities-market framework. Its listed universe includes companies across industrial, financial, consumer and other sectors. NASDAQ is a U.S. electronic stock market and is home to companies from a wide range of sectors, including metals and industrial businesses. The two exchanges differ in market structure, regulatory setting, investor composition and the geographic exposure of listed firms.

1.2 Iron and Steel Industry Context

Steel demand is influenced by infrastructure investment, construction activity, automotive production, industrial output and general economic growth. At the same time, profitability is affected by iron ore, coking coal, scrap and energy prices. International trade measures and exchange rates can also

alter the economics of steel production and distribution. These factors make financial ratios particularly useful for comparing companies, provided that differences in accounting standards, fiscal years and business models are recognised.

2. Research Problem and Research Gap

Existing comparative descriptions of BSE and NASDAQ often focus on broad institutional differences such as trading technology, regulation, liquidity and investor participation. Such comparisons are useful but can become overly general when they are not supported by a clearly defined company-level dataset. In the iron and steel sector, companies listed on the same exchange may also differ substantially in scale, vertical integration, product mix, geographic exposure and financial structure.

The research gap addressed in this paper is therefore empirical: a structured comparison is developed from publicly reported financial information for a defined sample of iron and steel/metals companies. Rather than assuming that one exchange has uniformly higher or lower performance, the analysis documents the range and distribution of selected financial indicators.

3. Objectives of the Study

• To compare selected financial-performance indicators of iron and steel companies listed on BSE and NASDAQ.

• To examine differences in revenue scale, EBITDA performance and profitability across the selected companies.

• To compare net profit margins and identify variation within and between the two exchange samples.

• To examine reported leverage indicators and the capital-structure characteristics of the selected companies.

• To interpret the observed financial differences in relation to the operating and market context of the two exchanges.

• To identify the methodological limitations involved in comparing companies across Indian and U.S. markets using secondary data.

4. Research Questions

• How do the selected BSE and NASDAQ companies differ in reported revenue and operating profitability?

• How does net profit margin vary across the selected companies and between the two exchange samples?

• What differences are visible in the reported leverage/capital-structure indicators?

• To what extent can exchange-level differences be distinguished from company-specific characteristics?

5. Review of Literature

Fama's Efficient Market Hypothesis (1970) provides a foundational framework for understanding the relationship between publicly available information and security prices. Subsequent research in behavioural finance has highlighted investor sentiment, overreaction, herding and other factors that can affect market outcomes. For cyclical industries, however, firm fundamentals and macroeconomic conditions remain important components of financial performance.

Research on the steel industry commonly identifies commodity prices, capacity utilisation, infrastructure demand, industrial production, trade policy and energy costs as important determinants of operating outcomes. Comparative emerging-market research also highlights differences in liquidity, information availability, institutional participation and regulatory development. These strands of literature support a company-level financial comparison but also caution against treating exchange membership as the sole explanation for observed performance.

The present study consequently combines a capital-market comparison with fundamental financial analysis. It uses reported financial figures rather than attempting to infer investor behaviour from qualitative descriptions alone.

6. Conceptual Framework

Dimension	Indicators used in this study	Interpretation
Scale	Revenue / turnover	Indicates the size of operating activity; not directly comparable across currencies without conversion.
Operating performance	EBITDA and EBITDA margin	Indicates operating profitability before interest, tax, depreciation and amortisation.

Dimension	Indicators used in this study	Interpretation
Profitability	Profit after tax; net profit margin	Shows the portion of revenue retained as reported profit after tax.
Capital structure	Reported debt/equity or net-debt/equity indicator	Provides an indication of financial leverage; definitions may differ across companies.
Market environment	Exchange, geography and industry exposure	Provides contextual explanation but is not treated as a quantitative causal variable.

7. Research Methodology

7.1 Research Design

The study follows a descriptive-comparative research design based entirely on secondary data. The unit of analysis is the individual listed company. The analysis is cross-sectional with reference to the latest annual reporting periods used for the selected sample: FY2024-25 for the Indian companies and FY2024 for the U.S. companies. The differing reporting periods are disclosed as a limitation.

7.2 Data Sources

The principal sources are company annual/integrated reports and SEC filings. Tata Steel's FY2024-25 reporting provides consolidated revenue, EBITDA, profit after tax and leverage information. JSW Steel's annual reporting provides consolidated revenue, EBITDA, PAT and debt-equity information. Jindal Steel's FY2024-25 annual report provides total income, EBITDA, PAT, net debt and net worth. For NASDAQ companies, SEC filings provide audited financial information for Steel Dynamics, Olympic Steel and Radius Recycling.

7.3 Sample Selection

Purposive sampling was used to select companies with substantial exposure to iron, steel, metals processing or metal recycling and with publicly available audited financial information. The BSE sample comprises Tata Steel, JSW Steel and Jindal Steel. The NASDAQ sample comprises Steel Dynamics, Olympic Steel and Radius Recycling. The NASDAQ sample includes metals-service and recycling businesses because the exchange does not contain a directly identical set of large integrated steel producers comparable with the selected Indian firms.

Exchange	Company	Primary business relevance	Reporting period
BSE	Tata Steel	Integrated steel	FY2024-25
BSE	JSW Steel	Integrated steel	FY2024-25
BSE	Jindal Steel	Integrated steel	FY2024-25
NASDAQ	Steel Dynamics	Steel production and metals operations	FY2024
NASDAQ	Olympic Steel	Steel and metals service centre	FY2024
NASDAQ	Radius Recycling	Ferrous/non-ferrous recycling and steel production	FY2024

7.4 Variables and Formulae

Indicator	Formula	Purpose
EBITDA Margin	EBITDA ÷ Revenue × 100	Measures operating profitability.
Net Profit Margin	Profit after Tax ÷ Revenue × 100	Measures reported profitability after tax.
Debt/Equity	Debt ÷ Equity	Measures financial leverage; company-reported definitions are retained where available.
Revenue	Reported annual revenue/turnover	Measures operating scale.

7.5 Analytical Techniques

The revised paper uses descriptive statistics, ratio analysis, range analysis and cross-company comparison. Because the sample contains only three companies per exchange and the companies are not homogeneous, inferential tests such as regression or a conventional exchange-level t-test are not used as primary evidence. This avoids presenting a very small purposive sample as if it were a statistically representative population.

8. Data Analysis and Interpretation

8.1 Company-Level Financial Dataset

Company	Exchange	Period	Revenue*	EBITDA*	PAT*	EBITDA Margin	Net Margin	Leverage Indicator
Tata Steel	BSE	FY2024-25	218,543.00	25,802.00	3,174.00	11.81	1.45%	0.44
JSW Steel	BSE	FY2024-25	166,575.00	22,904.00	3,491.00	13.75	2.10%	1.17
Jindal Steel	BSE	FY2024-25	49,932.48	9,494.19	2,845.68	19.01	5.70%	0.25
Steel Dynamics	NASDAQ	FY2024	17,540.39	1,943.04	1,549.96	11.08	8.84%	0.37
Olympic Steel	NASDAQ	FY2024	1,941.67	NA	22.98	NA	1.18%	0.47
Radius Recycling	NASDAQ	FY2024	2,738.69	NA	-266.22	NA	-9.72%	0.66

*Revenue, EBITDA and PAT are reported in each company's local reporting currency (₹ crore for Indian companies; US$ million for U.S. companies). They should not be compared by absolute value without currency and scale adjustment.

The dataset shows clear within-exchange variation. Tata Steel reported consolidated revenue of ₹2,18,543 crore, EBITDA of ₹25,802 crore and PAT of ₹3,174 crore in FY2024-25. JSW Steel reported revenue of approximately ₹1,66,575 crore, EBITDA of ₹22,904 crore and PAT of ₹3,491 crore for FY2024-25. Jindal Steel reported total income of approximately ₹49,932 crore, consolidated EBITDA of approximately ₹9,494 crore and PAT of approximately ₹2,846 crore. These figures produce EBITDA margins of about 11.81%, 13.75% and 19.01%, respectively.

For the NASDAQ sample, Steel Dynamics reported 2024 net sales of about US$17.54 billion and net income of about US$1.55 billion. Olympic Steel reported 2024 net sales of about US$1.94 billion and net income of about US$22.98 million. Radius Recycling reported 2024 revenue of about US$2.74 billion and a net loss of about US$266.22 million. The results demonstrate substantial variation even within the NASDAQ sample.

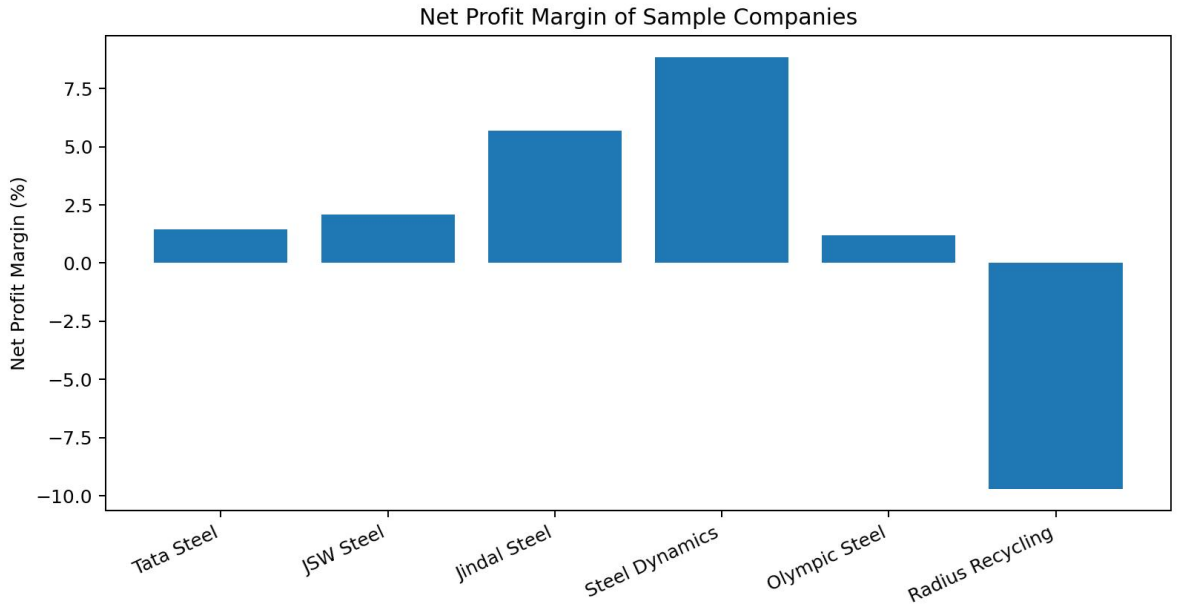


Figure 1. Net profit margin of the selected companies.

8.2 Profitability Analysis

The selected BSE companies recorded net profit margins of 1.45%, 2.10% and 5.70%, giving a simple sample average of 3.08%. The selected NASDAQ companies recorded margins of 8.84%, 1.18% and -9.72%, giving a simple sample average of 0.10%. The average difference should not be interpreted as an exchange effect because the samples contain different types of companies and operate under different industry and geographic conditions.

The most important observation is dispersion. Steel Dynamics had a comparatively high positive net margin in the selected NASDAQ sample, while Radius Recycling reported a substantial loss. Similarly, Jindal Steel had the highest net margin in the selected BSE sample. Therefore, the evidence does not support a uniform exchange-level profitability pattern.

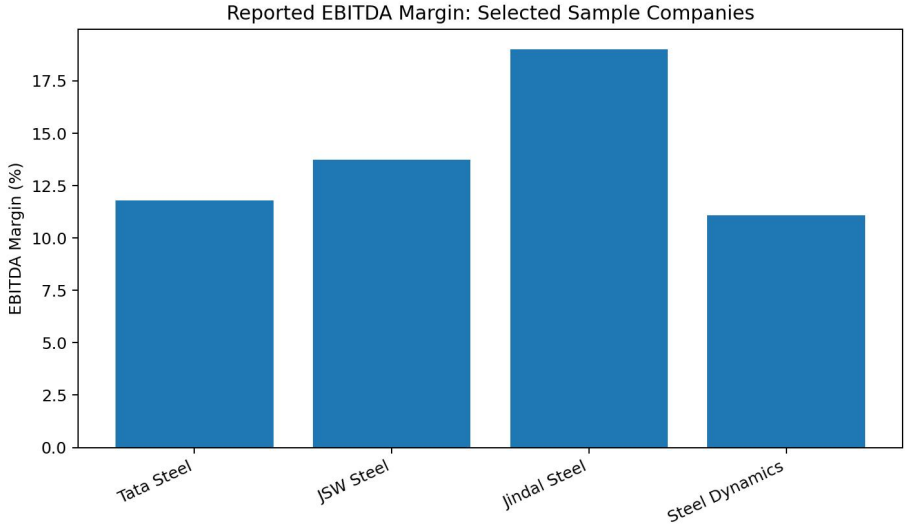


Figure 2. Reported EBITDA margin for companies where directly comparable EBITDA data were available in the selected sources.

8.3 Leverage Analysis

The leverage indicators show variation within both samples. Tata Steel reported net debt-to-equity of 0.44, while JSW Steel reported a debt-equity ratio of 1.17. Jindal Steel's FY2024-25 net debt of ₹11,957 crore relative to net worth of ₹47,185 crore gives an approximate net-debt-to-net-worth ratio of 0.25. On the NASDAQ side, Steel Dynamics' 2024 total debt of approximately US$3.23 billion relative to total equity of approximately US$8.77 billion gives a debt-to-equity ratio of about 0.37. Olympic Steel's reported debt of about US$272.46 million relative to shareholders' equity of about US$573.92 million gives about 0.47, while Radius Recycling's total debt of about US$414.77 million relative to total equity of about US$625.74 million gives about 0.66.

These calculations must be interpreted carefully because the underlying companies do not necessarily define debt and net debt identically. Accordingly, leverage is used here as a descriptive indicator rather than as evidence that one exchange has systematically higher or lower financial risk.

8.4 Range and Dispersion Analysis

Measure	**BSE sample**	**NASDAQ sample**	**Interpretation**
Net profit margin range	1.45% to 5.70%	-9.72% to 8.84%	NASDAQ sample displays wider dispersion.
Highest net margin	5.70% (Jindal Steel)	8.84% (Steel Dynamics)	Both samples contain a relatively stronger performer.
Lowest net margin	1.45% (Tata Steel)	-9.72% (Radius Recycling)	NASDAQ sample includes a loss-making observation.
Number of companies	3	3	Small purposive samples; no population inference.

The wider spread in the NASDAQ sample is mainly driven by the contrast between Steel Dynamics' positive profitability and Radius Recycling's loss. This is an important empirical qualification to the earlier draft's general statement that NASDAQ companies are uniformly more volatile or higher-performing. The present financial dataset does not measure stock-price volatility, so no volatility conclusion is drawn from these figures.

8.5 Interpretation of Findings

• Company-level differences are substantial within each exchange, indicating that exchange membership alone is insufficient to explain financial performance.

• The selected BSE companies are large integrated steel producers, whereas the NASDAQ sample includes a steel producer, a metals service centre and a metals recycling/steel operation. Business-model differences therefore affect comparability.

• The BSE sample shows positive profitability across all three observations in the selected year, but margins vary considerably.

• The NASDAQ sample contains both strong positive profitability and a significant loss, producing wider dispersion in the selected data.

• Leverage varies within both markets. Reported ratios should be interpreted using the company's own definition and the underlying balance-sheet figures.

• The evidence supports a comparative framework based on measurable financial indicators rather than broad claims about one exchange being inherently more efficient, liquid or profitable.

9. Discussion

The findings are consistent with the broader literature in one important respect: steel and metals businesses are heterogeneous and sensitive to cyclical conditions. However, the empirical evidence also shows why exchange-level generalisations require caution. A company such as Steel Dynamics has a very different operating profile from Radius Recycling, even though both are associated with NASDAQ. Likewise, Tata Steel, JSW Steel and Jindal Steel differ in geographic exposure, capacity, vertical integration and capital structure.

The revised analysis therefore treats BSE and NASDAQ as market contexts rather than causal explanations. Financial outcomes are jointly shaped by operating scale, product mix, commodity exposure, cost management, capital structure, geographic footprint and macroeconomic conditions. A stronger future study could add five-year stock-price returns, annualised volatility, market capitalisation, P/E, P/B and macroeconomic variables using a common observation window.

10. Propositions for Future Quantitative Testing

The present sample is too small for strong inferential testing, but the following propositions can guide a larger study:

• H1: Financial-performance indicators differ significantly across comparable steel and metals companies listed in different market environments.

• H2: Macroeconomic and commodity-price variables are associated with variations in steel-company profitability and stock returns.

• H3: Leverage is associated with profitability outcomes in cyclical steel and metals companies.

These propositions are presented for future empirical testing and are not treated as statistically established findings in the present paper.

11. Conclusion

This study develops a more empirical comparison of selected BSE and NASDAQ companies in the iron, steel and metals segment. The revised paper uses a clearly identified secondary-data sample and performs descriptive financial analysis rather than relying only on broad qualitative comparisons. The results show substantial variation in profitability and leverage within both exchange samples.

The selected BSE companies reported positive net margins in the examined FY2024-25 period, ranging from 1.45% to 5.70%. The selected NASDAQ companies showed a wider range, from a loss of 9.72% to a profit margin of 8.84%. This does not establish that one exchange is superior or inferior. Instead, it demonstrates that company-specific characteristics and the precise composition of the sample matter greatly.

The main contribution of the revised paper is methodological: conclusions are linked to observable financial data, calculation methods and source documents. The study can be extended into a stronger empirical research paper by building a five-year panel of comparable companies and adding stock-price volatility, market capitalisation, valuation ratios and macroeconomic variables.

12. Implications

12.1 For Investors

Investors evaluating steel and metals companies should examine profitability, operating margins, leverage, cash flows and the company's specific commodity and geographic exposure rather than relying on exchange identity alone.

12.2 For Companies

Companies operating in cyclical metals markets can strengthen market confidence through transparent financial reporting, disciplined leverage management, efficient capital allocation and clear communication of commodity and macroeconomic risks.

12.3 For Researchers

Researchers should use matched samples, common fiscal periods and consistent definitions of financial ratios when comparing companies across countries. Currency conversion and differences in accounting standards should also be explicitly documented.

13. Limitations of the Study

• The sample contains only six companies and is purposively selected; it is not statistically representative of all BSE or NASDAQ companies.

• The Indian and U.S. companies use different fiscal reporting periods and operate in different economic environments.

• Absolute revenue figures are reported in different currencies and are therefore not directly comparable without currency conversion.

• Leverage ratios are not perfectly harmonised because companies may report debt and net-debt measures differently.

• The present analysis is financial and descriptive; it does not directly calculate stock-price volatility, beta, market capitalisation or investor sentiment.

• Because the companies differ in business model, a future study should construct a more closely matched sample before applying inferential statistical tests.

14. Scope for Future Research

• Construct a five-year panel dataset of matched steel and metals companies from BSE/NSE and NASDAQ/NYSE.

• Calculate annual stock returns, standard deviation, beta, Sharpe ratio, market capitalisation, P/E and P/B using a common observation window.

• Examine the relationship between steel prices, iron ore/coking coal/scrap prices, interest rates, inflation and company stock returns.

• Apply panel regression or fixed-effects models after establishing a sufficiently large and comparable sample.

• Study ESG disclosures, green-steel investment and the effect of decarbonisation expenditure on valuation.

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Olympic Steel, Inc. (2025). Form 10-K for the fiscal year ended December 31, 2024. U.S. Securities and Exchange Commission.

Radius Recycling, Inc. (2024). Form 10-K for the fiscal year ended August 31, 2024. U.S. Securities and Exchange Commission.

Bombay Stock Exchange. Company and exchange information.

Nasdaq. Historical and company market information.

Appendix A: Key Source Documents Used for the Financial Analysis

Tata Steel FY2024-25 Integrated Report: https://www.tatasteel.com/investors/integrated-report-2024-25/

JSW Steel FY2024-25 Annual Report: https://www.jswsteel.in/jsw-steel-annual-report-2024-25/

Jindal Steel FY2024-25 Integrated Report: https://docs.jindalsteel.in/jspsteelpower20/custom/1754894191_Annual_Report_FY25.pdf

Steel Dynamics 2024 Form 10-K: https://www.sec.gov/Archives/edgar/data/1022671/

Olympic Steel 2024 Form 10-K: https://www.sec.gov/Archives/edgar/data/917470/000143774925004742/zeus20241231_10k.htm

Radius Recycling 2024 Form 10-K: https://www.sec.gov/Archives/edgar/data/912603/000095017024117007/rdus-20240831.htm