

A Study on Volatility of Defence Sector Securities Traded on NSE

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Abstract - *The Indian defence sector has gained significant importance in recent years due to increased government spending, strategic geopolitical considerations, and policy initiatives such as Make in India and Atmanirbhar Bharat. These developments have attracted growing investor interest in defence-related equities listed on the National Stock Exchange (NSE). This study examines the volatility and return behavior of selected defence sector stocks traded on the NSE over the period May 2020 to May 2025. The research is based entirely on secondary data collected from NSE fact sheets, financial databases, and company disclosures. Ten leading defence companies were selected for analysis. Volatility and market sensitivity were measured using statistical tools such as Rate of Return, Standard Deviation, Beta, Correlation, and Regression Analysis. The findings reveal that while certain defence stocks exhibit stable growth with moderate volatility, others display high volatility driven by policy announcements, order inflows, and geopolitical events. The study concludes that defence stocks offer strong long-term growth potential but require careful risk assessment due to their event-driven nature.*

Keywords: *Defence Stocks, Volatility, NSE, Beta, Risk-Return, Indian Capital Market*

I. INTRODUCTION

The Indian defence sector has undergone a structural transformation driven by increased indigenization, modernization of armed forces, and rising defence budgets. Policy initiatives such as *Make in India* and *Atmanirbhar Bharat* have encouraged domestic manufacturing and reduced dependence on imports, resulting in enhanced growth prospects for defence-related companies. As a result, defence sector stocks listed on the National Stock Exchange (NSE) have attracted significant attention from investors and analysts.

Stock market volatility is a crucial indicator of investment risk and investor sentiment. Defence stocks are uniquely influenced by geopolitical tensions, government procurement decisions, defence budget allocations, and global strategic developments. Unlike conventional sectors, defence

companies often experience sharp price fluctuations in response to policy reforms, international conflicts, and large defence contracts.

Understanding the volatility behavior of defence sector securities is therefore essential for investors, portfolio managers, policymakers, and researchers. This study aims to analyze the volatility patterns of selected defence stocks traded on the NSE and assess their market sensitivity using standard financial risk measures. By examining historical price movements and statistical relationships, the study provides insights into the risk-return characteristics of defence sector investments.

II. RESEARCH METHODOLOGY

Research Design

The study adopts a quantitative and analytical research design, relying exclusively on secondary data. Statistical tools are applied to measure volatility, market sensitivity, and return behavior of selected defence sector stocks.

Data Sources

The study is based on secondary data collected from reliable sources including:

- National Stock Exchange (NSE) official website
- NSE Fact Sheets
- Trading View and Yahoo Finance
- Money control and Business Standard reports

These sources ensure data accuracy and consistency

Sample Selection

Ten major defence sector companies listed on NSE were selected based on market significance, liquidity, and availability of consistent data:

- Hindustan Aeronautics Limited (HAL)
- Bharat Electronics Limited (BEL)
- Bharat Heavy Electricals Limited (BHEL)
- Mazagon Dock Shipbuilders Limited
- Cochin Shipyard Limited

- Bharat Dynamics Limited (BDL)
- Solar Industries India Limited
- Astra Microwave Products Limited
- Data Patterns (India) Limited
- Garden Reach Shipbuilders & Engineers Limited (GRSE)

Period of Study

The study covers a five-year period from May 2020 to May 2025, capturing pre-pandemic, pandemic, and post-pandemic market phases along with major defence policy reforms.

Tools and Techniques

- Rate of Return
- Standard Deviation
- Beta Coefficient
- Correlation Analysis
- Regression Analysis

All calculations were performed using Microsoft Excel.

III.RESULTS AND DISCUSSION

Descriptive Statistics and Volatility Measures

Table 1: Summary of Volatility and Correlation

Company	Mean Return (%)	Std. Deviation	Correlation with NIFTY
HAL	4.92	11.22	0.55
BEL	4.59	9.59	0.55
Solar Industries	4.89	10.60	0.29
Mazagon Dock	-62.42	18.31	0.21
Cochin Shipyard	5.28	14.97	0.91
BDL	5.52	15.18	0.40
Astra Microwave	5.36	14.00	0.44
Data Patterns	1.12	20.66	0.23
GRSE	5.84	15.93	0.29
BHEL	4.28	15.15	0.42

Discussion

- Low to Moderate Volatility: HAL, BEL, and Solar Industries show relatively stable performance suitable for long-term investors.
- High Volatility: Data Patterns and Mazagon Dock exhibit high volatility, indicating speculative and event-driven behavior.
- Strong Market Sensitivity: Cochin Shipyard shows a high correlation with the NIFTY index, reflecting responsiveness to macroeconomic trends.
- Company-Specific Influence: Stocks like Mazagon Dock and Data Patterns are less influenced by market movements and more by contract announcements and policy decisions.

3Risk–Return Characteristics

Defence stocks demonstrate diverse risk–return profiles. While aggressive stocks such as Astra Microwave and BDL offer higher returns, they carry greater market risk. Defensive stocks like Solar Industries provide stable returns with lower volatility.

IV.CONCLUSION

The study concludes that defence sector stocks traded on the NSE exhibit varied volatility and market sensitivity. While some companies display stable growth with moderate risk, others are highly volatile and influenced by geopolitical and policy-driven events. Overall, the defence sector offers strong long-term investment potential supported by government initiatives and strategic importance. However, investors must carefully evaluate risk factors and volatility patterns before making investment decisions.

V.APPENDIX

- Appendix A: List of Selected Defence Companies
- Appendix B: Volatility and Beta Calculations
- Appendix C: Regression and Correlation Outputs

VI.ACKNOWLEDGMENT

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