

An Empirical Study of Risk and Return Analysis of The Bse Sensex

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Abstract—This research paper provides a comprehensive analysis of the risk and return profile of the BSE SENSEX index as of November 2025. Utilising data from the official BSE Index Services, the study examines the index’s historical performance, volatility, and fundamental characteristics. The analysis reveals a robust long-term annualised total return of 14.01% over a ten-year horizon. The study also evaluates risk-adjusted returns using the Sharpe ratio, concluding that the SENSEX continues to serve as an efficient bellwether for the Indian economy.

I. INTRODUCTION

The BSE SENSEX, launched on 1st January 1986, is India’s oldest and most widely tracked stock market index. It serves as a barometer for the Indian economy by measuring the performance of 30 large, liquid, and financially sound companies listed on the BSE Ltd. Understanding the risk-return trade-off of this index is crucial for domestic and international investors seeking exposure to the Indian equity market.

II. OBJECTIVES OF RESEARCH

- 2.1. To analyse the historical price and total returns of the BSE SENSEX over multiple time horizons.
- 2.2. To evaluate the risk profile of the index through annualised standard deviation.
- 2.3. To assess the risk-adjusted performance of the index.
- 2.4. To examine the sectoral and constituent weightage contributing to the index’s performance.

III. RESEARCH METHODOLOGY

This study employs an empirical research design based on secondary data provided by BSE Index Services Pvt. Ltd.

Data Source	The November 2025 BSE SENSEX Factsheet.
Measurement of Return	Returns are analysed as both Price Returns (PR) and Total Returns (TR), with the latter including dividends.
Measurement of Risk	Risk is quantified as the annualised standard deviation calculated using monthly values.
Weighting Method	The index utilizes a float-adjusted market capitalisation-weighted method.

IV. REVIEW OF LITERATURE

Prior research indicates that the SENSEX's performance is heavily influenced by the Financial Services and Information Technology sectors. Studies often use the Capital Asset Pricing Model (CAPM) to demonstrate that the SENSEX represents the market return (R_M) against which individual Indian stocks are benchmarked. Historical data consistently shows a positive correlation between the growth of the Indian GDP and SENSEX levels.

Previous studies on the Indian capital market have highlighted the BSE SENSEX's role as a market benchmark. Academic research frequently uses the SENSEX to calculate 'market return' in the Capital Asset Pricing Model (CAPM). Historically, the index has shown a strong correlation with India's GDP growth, though it remains sensitive to global macroeconomic shifts and domestic sectoral trends, particularly in the financial and technology spaces. Literature suggests that while the index offers high long-term growth potential, its periodic volatility

necessitates a risk-adjusted approach to performance evaluation.

The risk and return characteristics of the Indian stock market have been extensively studied by researchers. Key previous studies include:

Uday Kumar & Suresh (2014): "Risk Return Relationship of Indian Stock Markets" Conclusion: This study analysed the behavioural patterns of major Indian indices from 2007–2014. The authors concluded that the BSE SENSEX was the most effective index for explaining the risk-return relationship in the Indian context, as its mean values remained relatively stable across time periods.

Bora & Adhikary (2015): "Risk and Return Relationship – An Empirical Study of BSE SENSEX Companies in India" Conclusion: Using monthly closing prices of SENSEX stocks, the researchers found a deterministic path where returns oscillated between excess and under-return. They established that while beta is a significant measure of risk, its stability varies across individual companies within the index.

Manjunatha (2009): "Risk-Return Analysis of BSE SENSEX Companies" Conclusion: This study tested the validity of the Capital Asset Pricing Model (CAPM) in India. It concluded that while many western studies support CAPM, the Indian market (specifically SENSEX stocks) showed a more complex relationship, suggesting that investors require higher equity premiums to compensate for the market's unique volatility.

Pramod Kumar (2016): "Comparative Risk Return Analysis of Bombay Stock Market with Selected Banking Stocks" Conclusion: The study identified a high positive correlation between the BSE SENSEX and the banking sector. It highlighted that the index's performance is heavily influenced by financial services, making it sensitive to interest rate fluctuations.

Sharma & Kumar (2022): "Analysis of Top Nifty/Sensex Stocks" Conclusion: The researchers observed that sectors like IT and Financial Services consistently exhibit higher returns but also higher volatility ($\text{Beta} > 1$), suggesting that sectoral concentration is a primary driver of the SENSEX's risk profile.

V. DATA COLLECTION

Data was extracted from the official factsheet dated 28th November 2025.

Table 1: Performance vs. Risk Matrix (Nov 2025)

Period	Total Return (TR)	Annualised Risk (σ)	Sharpe Ratio
1 Year	8.69%	11.09%	0.78
3 Years	15.58%	11.05%	1.19
5 Years	12.14%	13.91%	0.87
10 Years	14.01%	16.25%	0.86

The data reveals a robust medium-term performance, with the 3-year annualised total return reaching 15.58%, significantly outperforming the 1-year return of 8.69%.

Table 2: Sectoral Exposure

Sector	Weightage (%)
Financial Services	30.66%
Consumer Discretionary	11.99%
Information Technology	11.36%
Energy	9.77%
Consumer Staples	8.92%
Industrials	7.23%
Others	20.07%

Sectoral Concentration: The index is highly concentrated in Financial Services (30.66%), Consumer Discretionary (11.99%), and Information Technology (11.36%). This concentration makes the index sensitive to changes in monetary policy and global tech trends.

Analysis of Top Constituents

Based on the factsheet, the Top 10 Constituents command 66.32% of the index weight. This creates a "Top-Heavy" risk profile.

Constituent Rank	Weight (%)	Contribution Category
Largest Constituent	15.16%	High Concentration Risk
Top 5 Total	~45.00%	Dominant Market Drivers
Remaining 20	~33.68%	Low Individual Impact

The top 10 constituents represent a significant 66.32% of the total index weight, indicating high concentration risk.

Financial Services Sector

The Financial Services sector is the primary driver of the SENSEX, accounting for over 30% of the total index weight.

Core Constituents: This sector is dominated by banking giants such as HDFC Bank, ICICI Bank, State Bank of India, Axis Bank, and Kotak Mahindra Bank, along with non-banking financial companies (NBFCs) like Bajaj Finance.

Market Impact: Due to this high concentration, the SENSEX's movement is inextricably linked to the credit cycle and the monetary policy of the Reserve Bank of India (RBI). Changes in the Repo Rate directly affect the Net Interest Margins (NIMs) and profitability of these core constituents.

Risk Profile: While these firms are financially sound, they expose the index to systemic risks within the banking sector, such as changes in Non-Performing Asset (NPA) norms or liquidity crunches.

Table 3: Fundamental Valuation

Indicator	Value	Interpretation
Price Earnings Ratio	23.38	Indicates a moderate-to-high valuation premium.
Price to Book value Ratio	4.54	Reflects strong asset valuation of constituent firms.
Dividend Yield	1.14%	Consistent but secondary to capital gains.

VI. ANALYSIS AND INTERPRETATION

The SENSEX demonstrated strong medium-term growth with a 3-year annualised total return of 15.58%. However, the 1-year return of 8.69% suggests a period of relative stabilization compared to its longer-term average.

Risk Analysis: The annualised risk (standard deviation) over 10 years stands at 16.25% for total returns. Interestingly, the 3-year risk (11.05%) is lower than the 10-year risk, indicating reduced recent volatility.

Interestingly, the annualised risk over the 3-year period (11.05%) is lower than the long-term 10-year risk (16.25%), suggesting a period of relative market stability in recent years.

Risk-Adjusted Return: The 3-year risk-adjusted return (Sharpe ratio) is 1.19, which is significantly higher than the 10-year ratio of 0.86. This implies that in the recent three-year period, investors were better compensated for each unit of risk taken.

The risk-adjusted return (Sharpe ratio) is highest at the 3-year mark (1.19), indicating that for every unit of risk taken, the index provided superior returns compared to the 10-year average of 0.86.

VII. CONTRIBUTION OF THE STUDY

This study provides updated performance metrics for the SENSEX as of late 2025, offering a benchmark for portfolio managers and individual investors to evaluate their own performance against the broader Indian market.

This research provides an updated snapshot of the Indian equity market's performance as of late 2025. It assists investors in benchmarking their portfolios and understanding the current valuation levels (PE of 23.38) relative to historical risk-return profiles.

VIII. LIMITATIONS OF STUDY

The study relies on a single point-in-time factsheet (Nov 2025).

The study does not account for transaction costs or taxes faced by actual investors. The study is limited to the BSE SENSEX and does not include broader market indices like the BSE 500. The analysis does not account for external factors like inflation.

IX. FURTHER SCOPE

Future research could compare the BSE SENSEX's risk-adjusted performance against other emerging market indices or conduct a sub-sectoral analysis to identify specific drivers of the 15.58% three-year growth spurt.

Future research could expand this analysis by comparing the BSE SENSEX against the SENSEX NEXT 30 or other thematic indices such as BSE Multicap Consumption to determine if alpha can be generated outside the top 30 stocks

X. FINDINGS & CONCLUSION

10. The 3-year period shows the highest efficiency (Sharpe 1.19), suggesting recent market conditions have optimally rewarded risk. Long-term risk (16.25%) exceeds short-term risk (11.09%), highlighting the impact of cyclical global shocks over a decade. The BSE SENSEX is a robust long-term investment vehicle. However, investors must monitor the 30.66% concentration in Financial Services, which increases sensitivity to RBI monetary policy. The BSE SENSEX remains a high-performing index with a commendable 10-year track record of 14.01% annualised total returns. While it carries a concentration risk in financial services, its recent risk-adjusted performance (Sharpe ratio of 1.19) highlights its efficiency as an investment vehicle.

The BSE SENSEX continues to demonstrate strong long-term resilience with a 10-year annualised return of 14.01%. While the index remains concentrated in financial services, its current risk-adjusted returns suggest it remains an efficient vehicle for capturing the growth of the Indian economy. Investors should, however, remain mindful of the 16.25% long-term volatility inherent in the equity asset class

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