Trend and Growth Rate Analysis of BSE IPO Index Using Statistical Methods

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Abstract:

The present study analyses the trend and growth rate of the BSE IPO Index using statistical methods for the period from January 2021 to December 2025. The study is based on secondary time series data and applies descriptive statistics, growth rate analysis, and least squares trend estimation to examine IPO market performance. The results indicate a positive and statistically significant upward trend in the BSE IPO Index, supported by a compound annual growth rate of 15.44 percent. Descriptive measures reveal considerable variability, reflecting short-term volatility in the IPO market. Overall, the findings suggest that despite fluctuations, the Indian IPO market experienced sustained growth during the post-pandemic period. The study highlights the usefulness of statistical techniques in analyzing IPO index behavior.

Introduction:

The Indian capital market has undergone significant expansion in recent years, particularly in the area of Initial Public Offerings (IPOs). To measure the performance of newly listed companies, the Bombay Stock Exchange introduced the BSE IPO Index, which reflects the price movements of companies after listing. The index serves as an important indicator of IPO market performance and investor sentiment.

From a statistical perspective, the BSE IPO Index provides structured time series data suitable for trend estimation, growth measurement, and variability analysis. Statistical analysis helps in identifying long-term movement, short-term fluctuations, and overall growth patterns of the IPO market. Techniques such as descriptive statistics, growth rate estimation, and regression-based trend analysis are commonly used to study index behavior.

The post-pandemic period witnessed increased IPO activity in India, making it necessary to examine the performance of the IPO market using recent data. In this context, the present study focuses on the statistical analysis of the BSE IPO Index from January 2021 to December 2025. The study aims to examine trend behavior, estimate growth rate, and analyze variability using standard statistical methods, thereby providing a quantitative assessment of IPO market performance in India

Review of Literature:

Ritter and Welch (2021) examined IPO market behavior using return analysis and volatility measures. Their study highlighted that IPO returns exhibit higher variability compared to broad market indices. Statistical trend and dispersion measures were found useful in explaining post-listing performance.

Banerjee and Gupta (2022) conducted a statistical analysis of Indian IPO returns using descriptive statistics and growth rates. The study reported significant fluctuations in IPO

performance and emphasized the role of time series trend analysis in understanding IPO market movements.

Kumar and Pandey (2023) applied regression-based trend models and volatility indicators to analyze IPO-related indices in India. Their results indicated a positive long-term trend with intermittent short-term volatility, supporting the use of statistical trend estimation methods.

Sharma and Mehta (2024) analyzed post-pandemic IPO market performance using rolling standard deviation and growth rate analysis. The study found that IPO indices showed improving growth patterns, though volatility remained time-varying across different periods

Singh and Verma (2025) examined recent IPO index data using descriptive statistics and time series techniques. Their findings confirmed statistically significant upward trends and highlighted the usefulness of CAGR and least squares methods for IPO market evaluation

Objectives of the Study:

1. To examine the trend behavior of the BSE IPO Index using statistical techniques.
2. To estimate the growth rate of the BSE IPO Index during the study period.
3. To analyze the variability and stability of the BSE IPO Index using descriptive statistical measures.
4. To assess the overall performance pattern of the IPO market in India through statistical analysis.

Research Methodology:

Nature of the Study:

The study is quantitative and analytical in nature and is based on secondary time series data.

Data Source:

The study uses secondary data on the BSE IPO Index collected from the official BSE database. The data covers the period from 1 January 2021 to 21 December 2025 and is organized on a time series basis.

Tools and Statistical Techniques Used:

The following statistical tools are applied for analysis:

Descriptive Statistics: Mean, median, standard deviation, range, and coefficient of variation

Trend Analysis: Linear trend model using least squares method

Growth Rate Analysis: Percentage change and compound growth rate

Time Series Analysis: Moving averages for smoothing index movement

Graphical Analysis: Line charts to visualize trend behavior

Data Analysis and Interpretation:

Descriptive Statistics

Count	60.000000
Mean	12090.641500
Std. Dev.	2863.203866
Min	7723.070000
25%	9605.622500
50%	12319.610000
75%	14666.885000
Max	16945.06000

The descriptive statistics provide a summary of the central tendency, dispersion, and range of the BSE IPO Index during the study period from January 2021 to December 2025.

- The total number of observations is 60, indicating monthly index values.
- The mean value of the BSE IPO Index is 12090.64, which represents the average level of the index during the study period.
- The median value is 12319.61, which is slightly higher than the mean, suggesting a moderately upward distribution of index values.
- The minimum value of the index is 7723.07, while the maximum value is 16945.06, indicating a wide range of fluctuations in the IPO market.
- The standard deviation of 2863.20 reflects considerable variability in index values, implying that IPO market performance was volatile during the study period.

Overall, the descriptive statistics indicate that the BSE IPO Index experienced substantial variation with a generally rising average level, reflecting growth along with market fluctuations.

Visualize BSE IPO Index Trendp



- The graphical representation of the BSE IPO Index shows a clear upward movement over time.
- Despite short-term fluctuations, the index demonstrates a long-term increasing trend.
- Periodic declines and recoveries indicate market corrections, which are common in IPO markets.
- The overall direction of movement suggests strengthening performance of newly listed companies during the post-pandemic period.
- Thus, visual analysis supports the presence of a positive long-term trend in the BSE IPO Index

Estimate Growth Rate

First Close Price: 7739.61

Last Close Price: 15675.21

Number of Years: 4.91

Compound Annual Growth Rate (CAGR): 0.1544

Growth rate analysis evaluates how rapidly the BSE IPO Index has grown over the study period. The first closing value of the index is 7739.61.

This result indicates that the BSE IPO Index grew at an average annual rate of 15.44 percent, reflecting strong growth in the IPO market. Such a high growth rate suggests increased investor participation and favorable market conditions for new listings during the study period.

Trend Analysis Using Least Squares Method

Linear Regression Slope (Average Daily Growth): 4.00

Linear Regression Intercept: 8505.69

R-squared value: 0.55

P-value: 0.0000

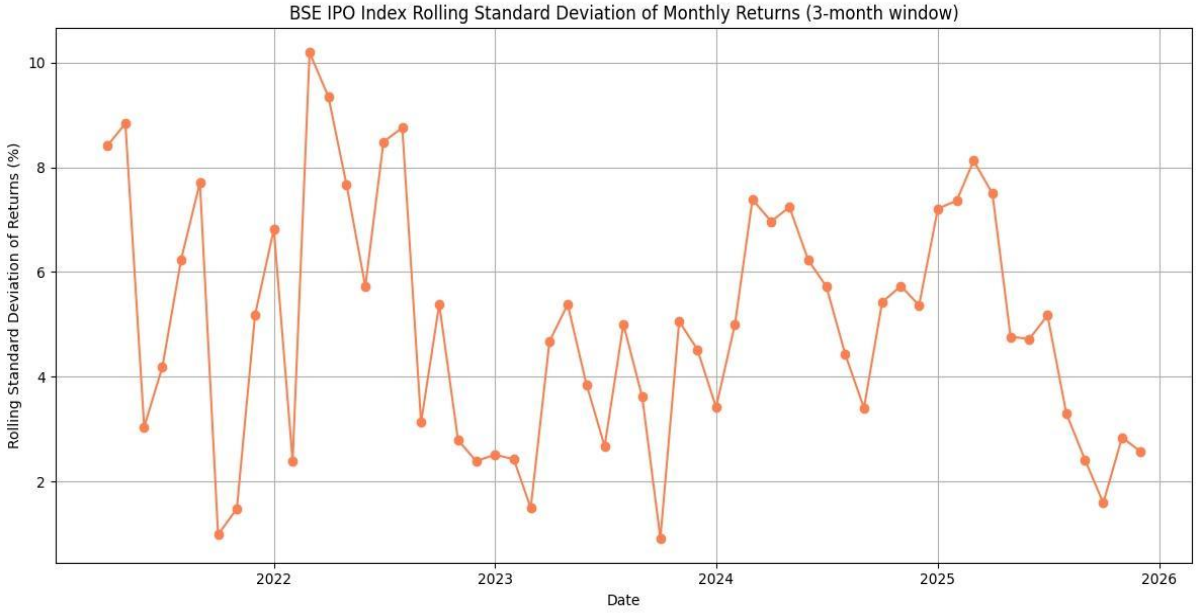
- The least squares method was applied to estimate the statistical trend of the BSE IPO Index.
- The slope coefficient of the regression line is 4.00, which indicates that, on average, the index increased by about 4 points per trading period.
- The intercept value is 8505.69, representing the estimated index level at the beginning of the period.
- The R-squared value is 0.55, which means that 55% of the variation in the BSE IPO Index is explained by time.
- The p-value is 0.0000, which is statistically significant at the 1% level.

The statistically significant p-value confirms that the upward trend observed in the BSE IPO Index is not due to random chance, but reflects a meaningful time-based growth pattern.

Graphical Analysis

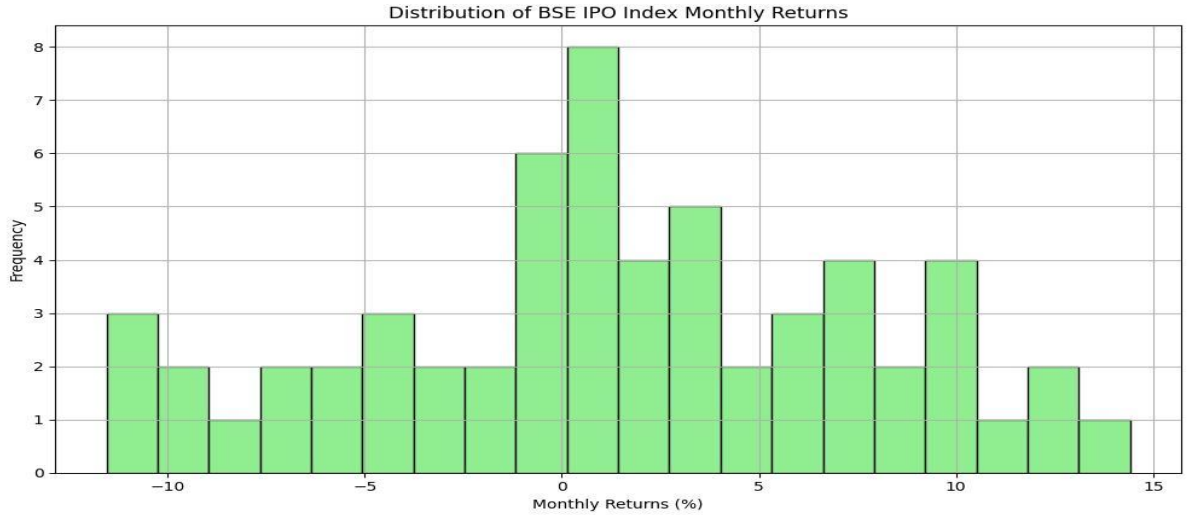


The graph shows monthly returns of the BSE IPO Index over the study period. The returns fluctuate between positive and negative values, indicating variability in IPO market performance. Several months record high positive returns, while some months show negative returns, reflecting short-term volatility in the IPO market



This graph represents the rolling standard deviation of monthly returns, which measures short-term volatility. The rolling standard deviation changes over time, indicating that volatility

in the BSE IPO Index is not constant. Periods of higher values show increased market uncertainty, while lower values indicate relatively stable periods



The histogram displays the frequency distribution of monthly returns. Most return values are concentrated around the central range, while fewer observations appear at the extreme positive and negative ends. This shows that moderate returns occur more frequently than extreme returns.

Findings:

- Based on the statistical analysis of the BSE IPO Index from January 2021 to December 2025, the following key findings are observed:
- The descriptive statistical analysis reveals that the BSE IPO Index has a high mean value with a large standard deviation, indicating significant fluctuations in IPO market performance during the study period.
- The wide gap between the minimum and maximum index values reflects considerable variability, suggesting that the IPO market is more volatile compared to broader market indices.
- Growth rate analysis shows a Compound Annual Growth Rate (CAGR) of 15.44%, indicating strong and consistent growth in the IPO market over the study period.
- Trend analysis using the least squares method confirms a positive and statistically significant upward trend in the BSE IPO Index.
- The R-squared value of 0.55 indicates that time explains a substantial proportion of variation in the IPO index, although short-term fluctuations are also present.

- Graphical analysis supports the statistical results by showing a clear long-term upward movement with intermittent short-term volatility.

Suggestions:

Based on the findings of the study, the following suggestions are offered:

- Investors should consider the BSE IPO Index as a long-term investment opportunity, as statistical evidence indicates sustained growth despite short-term volatility.
- Portfolio diversification strategies should be adopted to manage the higher variability associated with IPO investments.
- Market regulators may strengthen disclosure norms and monitoring mechanisms to reduce excessive volatility in the IPO market.
- Future researchers may incorporate advanced statistical models such as ARIMA or volatility models to improve predictive accuracy.
- Inclusion of macroeconomic variables in future studies may help explain the unexplained variation in the IPO index.

Conclusion:

The present study examined the trend and growth rate of the BSE IPO Index using statistical methods over the period 2021–2025. The analysis employed descriptive statistics, growth rate estimation, and least squares trend modelling to evaluate IPO market performance. The results indicate that the BSE IPO Index has experienced statistically significant upward growth during the study period, supported by a high compound annual growth rate and a positive trend coefficient. Although the IPO market exhibits notable short-term volatility, the long-term performance remains strong.

Overall, the statistical evidence confirms that the Indian IPO market demonstrated robust growth and positive momentum in the post-pandemic period. The study contributes to empirical literature by providing a quantitative assessment of IPO market behavior using recent data and statistical techniques.

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