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Analyzing the Impact of Systematic Risk, Market Capitalization and Firm Size on the Financial Performance of Selected Companies Listed in SENSEX

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Our Study evaluates that the impact of systematic risk, market valuation and firm size on the financial performance of selected Sensex companies. The objective of our study is to identify which factors most strongly influence annual stock returns and provide direction for investors and portfolio managers. In our study, data collected from 25 companies over the period 2021–2025 were analyzed using descriptive statistics, normality tests, correlation, regression and ANOVA analysis test. Descriptive analysis showed variation in total returns, risk measures and market valuation indicators. Normality tests confirmed the data distribution was suitable for further statistical analysis. Correlation results indicated weak to moderate relationships between financial performance and independent variables. Another statistical tool that is Regression analysis highlighted that firm size which is measured by market capitalization, has a significant negative effect on total annual return, whereas systematic risk, price-to-earnings ratio, and price-to-book value ratio were not significant predictors. ANOVA stated that there was no significant differences in returns across financial years, suggesting relative stability over time. In our study the findings suggest that firm size is a key determinant of stock performance in the Indian equity market. This study provides empirical evidence that can assist investors and portfolio managers in making informed decisions and prioritizing firm size when evaluating stock returns.

Keywords: Financial Performance, Systematic Risk, Market Valuation, Firm Size, Price to Book Value Ratio

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1. Introduction

In a financial scenario analysis of financial performance of a firm shows how well companies manage resources and generate returns. Sensex-listed companies represent major sectors and provide a benchmark for investors. Understanding what affects stock returns helps investors make better decisions and control risk. Systematic risk measured by Beta market valuation measured by Price-to-Book Value ratio, Price-to-Earnings per share and firm size measured by market capitalization are important factors. Our study examines selected twenty-five Sensex companies from 2021 to 2025. Descriptive statistics normality tests correlation regression and ANOVA are used to analyze the data. It identifies which factors influence annual stock returns the most. Results provide evidence to guide investment choices and support portfolio management in the Indian market.

2. Literature Review

Farhana and Azees (2025) examined the role of market risk in Indian stocks using the Capital Asset Pricing Model (CAPM). It focused on Indian stock market data and tested whether beta could explain stock returns. They found that beta is statistically significant, meaning that systematic risk has a measurable effect on stock performance. This confirms one of the key assumptions of the CAPM in the Indian context.

Anwar and Kumar (2018) tested the CAPM framework using data from the NIFTY 50 index. They investigated whether beta, size, and value factors explain stock returns. The study concluded that CAPM works better at the portfolio level than for individual stocks. In addition, larger firms generally outperformed smaller ones that are indicating that firm size plays an important role in return determination.

Rabha, Singh, and Vanlalzawna (2025) studied the influence of size, value, and market risk factors on stock returns using the Fama–French model. The objective was to identify which factors significantly explain returns in Indian markets. Their results showed that firm size is significant, value has a minor effect, and beta continues to be relevant. This confirms that multiple factors contribute to return variations in Indian stocks.

Sharma, Bhargava, and Sunail (2024) focused specifically on BSE Sensex stocks. They examined the relationship between risk and return and tested whether diversification improves portfolio performance. The study found that Sensex stocks show moderate returns with relatively low risk. Portfolios with diversified stocks achieved higher returns while maintaining similar risk levels, emphasizing the benefit of diversification.

Arathi and D'Souza (2023) evaluated risk and return patterns of BSE Sensex stocks over a ten-year period. Their goal was to assess how stock returns relate to market volatility and beta values. The study found that Sensex stocks delivered positive average returns and exhibited relatively low volatility interaction with the market. This suggests that the Sensex is relatively stable over time and suitable for long-term investment analysis.

3. Research Gap

Although several studies have analyzed the relationship between risk and returns in Indian equity markets, gaps remain in the existing literature. Most previous research, such as Farhana and Azees (2025) and Anwar and Kumar (2018), focused primarily on the Capital Asset Pricing Model (CAPM) and beta as a single determinant of stock returns. While these studies confirmed that market risk influences returns, they largely ignored the combined effects of firm-specific factors such as market valuation (P/B ratio) and firm size (market capitalization).

Additionally, although Lalitha (2025) and Rabha et al. (2025) included size and value factors, their analysis often concentrated on portfolio-level returns rather than individual stocks, which limits the understanding of how these factors affect the performance of specific high-cap companies like those in the Sensex listed companies. Research on BSE Sensex stocks, such as Sharma, Bhargava, and Sunail (2024) and Arathi and D'Souza (2023), mainly focused on descriptive risk-return relationships and portfolio diversification.

4. Research Problem Area

The financial performance of stocks depends on multiple factors, including risk, valuation and firm size. How these factors together affect the returns of Sensex listed companies. Systematic risk (Beta)

shows how sensitive a stock is to market changes. Price-to-Book Value ratio reflects whether a stock is overvalued or undervalued. Market capitalization indicates the size and stability of a firm. Most of the previous studies analysed these factors separately, but few examine their combined impact on stock returns in the Indian market. Our study aims to fill this gap by investigating how risk, valuation and firm size influence the financial performance of the top 30 companies in the Sensex.

5. Objectives of the Study

- To examine the relationship between systematic risk (Beta), market valuation (Price-to-Book ratio) and firm size (market capitalization) with the financial performance of Sensex designated companies.
- To identify the most significant determinant of annualized stock returns among risk, valuation and firm size.
- To provide empirical analysis for investors and portfolio managers regarding the factors influencing stock performance in the Indian equity market.

6. Research Methodology

Research Design

Our study adopts a quantitative research design grounded in statistical analysis of historical financial data. Our study aims to examine how firm-level financial characteristics influence stock performance. An explanatory research approach is employed to uncover causal relationships between risk, valuation, firm size, and stock returns. The period of analysis spans five consecutive financial years (2020-21, 2021-22, 2022-23, 2023-24, 2024-25) which allows for the assessment of medium-term trends while reducing the influence of short-term market volatility. This research framework aligns with established empirical studies in financial economics that use historical dataset analysis to explain performance differentials among firms.

Population and Sample

The population for this study comprises all companies listed on the Bombay Stock Exchange (BSE). The sample is limited to the nominated constituent companies of the Sensex index, widely recognized as market leaders in India due to their large market capitalization and high liquidity. These companies operate across diverse sectors, which enhances the robustness of the study by allowing for cross-sectoral comparison. The sample selection is purposive and justified on the basis that Sensex companies collectively represent a significant portion of the market and serve as a benchmark for Indian equity performance. This sampling method ensures that findings are relevant to both academic insights and practical investment decision-making.

Data Collection

Our study relies exclusively on secondary data obtained from reputable and publicly accessible sources. Daily closing price data for each company are collected from the official BSE India database and Prowess IQ database to generate annualized stock returns. Additional financial metrics that is Beta (systematic risk), Price-to-Book Value ratio (valuation measure) and market capitalization (firm size) are collected from verified financial platforms such as annual financial reports filed by the companies.

Definitions of Variables

In our study key variables are used as follows:

- Annualized Stock Return (%): Calculated as the compound annual growth rate (CAGR) of closing prices over the five-year period, adjusted for stock splits and dividends where applicable.
- Beta: A measure of systematic risk estimating the sensitivity of a stock's return relative to movements in the Sensex index. Beta values are obtained from financial platforms that compute it based on regression of stock returns on index returns.
- Price-to-Book Value (P/B) Ratio: Calculated as the ratio of the market price per share to the book value per share, representing firm valuation.
- Market Capitalization: Represented as total equity market value (in ₹ crores), calculated as share price multiplied by the number of outstanding shares.

Data Analysis Procedures

In our research paper an analytical strategy involves a combination of descriptive statistics, correlation analysis and multiple regression modelling to examine the hypothesized relationships among variables.

All statistical computations are performed using SPSS (Statistical Package for the Social Sciences), a widely used software in empirical financial research.

- Descriptive Statistics: Mean, median, standard deviation, range, and skewness are calculated to describe the properties of each variable.
- Correlation Analysis: It is computed to assess the strength and direction of linear relationships among stock returns, Beta, P/B ratio, Price to earnings per share and market capitalization.
- Multiple Regression Analysis: A multivariate regression model is specified to determine the extent to which Beta, P/B ratio, and market capitalization explain variations in annualized stock returns. The regression equation is expressed as:

Return = $\beta_0 + \beta_1$ ($Beta_i$) + β_2 (P/B_i) + β3 (Market capitalization) + ε

Tools for Analysis

Excel, for initial data entry, cleaning, descriptive statistics and basic graphs. SPSS, for correlation, regression, ANOVA and advanced statistical analysis.

7. Data Analysis and Findings

Descriptive statistics

Research Question1: What are the characteristics of financial performance, systematic risk, market valuation and firm size of Sensex selected companies over the financial year 2021–2025? In our paper we are to examine the relationship between risk, valuation and firm size with financial performance by providing an overview of the sample characteristics.

Descriptive statistics were computed for selected companies over five years (2021–2025). The variables analyzed include:

- Financial Performance: Total Annual Return (%)
- Systematic Risk: Beta Calculation
- Market Valuation: Price-to-Earnings (P/E) and Price-to-Book (P/B) ratios
- Firm Size: Market Capitalisation (₹ Crores)

Table 1: Descriptive Statistics

Variable	Mean	Std. Dev	Min.	Max.	Skewness	Kurtosis
Total Annual Return (%)	0.575	1.736	-2.204	6.624	1.663	4.229
Systematic Risk (Beta)	1.158	0.345	0.664	1.595	-0.195	-1.692
Price-to-Earnings Ratio (P/E)	111.915	192.303	14.625	860.464	3.181	9.992
Price-to-Book Ratio (P/B)	14.709	15.033	2.008	62.123	1.706	2.448
Market Capitalisation (₹ Crores)	274,304	117,183	30,482	556,101	0.029	0.555

Source: Authors Calculation (SPSS)

Interpretation

1. Financial Performance: In our study, the mean annual return of 0.58% indicates a small positive growth across the sample. The standard deviation of 1.74% shows high variability, that returns differ substantially among companies. The minimum return (-2.20%) and maximum return (6.62%) highlight extreme performance cases which may influence further analysis.
2. Systematic Risk (Beta): Along with an average Beta of 1.16, the sample stocks are slightly more volatile than the market benchmark. The moderate dispersion (Std. Dev = 0.34) indicates that most companies have similar risk profiles.
3. Market Valuation (P/E & P/B): In our Research Paper the mean P/E ratio (111.91) and P/B ratio (14.71) reflect varied market valuation levels. Large standard deviations and extreme maxima indicate some firms are highly overvalued, which is crucial for understanding valuation impact on returns.
4. Firm Size (Market Capitalisation): The average firm size is ₹274,304 Crores, but the range is wide, from ₹30,482 Crores to ₹556,101 Crores, indicating a mix of large-cap and mid-cap companies. This diversity allows examination of size effects on financial performance.
5. Skewness and kurtosis describe how the financial data is spread for 25 Sensex companies. Total returns are positively skewed (1.66) and leptokurtic (4.23), meaning a few companies have very high returns. Beta is almost symmetric (-0.20) with flat tails (-1.69), showing stable market risk. P/E ratios are highly skewed (3.18) and peaked (9.99), indicating some extreme valuations. P/B ratios are slightly skewed (1.71) with moderate kurtosis (2.45).

Market capitalization is nearly normal (Skewness 0.03, Kurtosis 0.55), reflecting a mix of small and large firms.

Test of Normality

Research Question 2: Are the key financial variables that is total Annual Return, Systematic Risk (Beta), Price-to-Earnings Ratio, Price-to-Book Ratio, and Market Capitalisation normally distributed across Sensex-selected companies?

Table 2: Test of Normality

Variable	Mean	Std. Deviation	Skew-ness	Kurto-sis	K-S Sig.	Shapiro-Wilk Sig.	Norma-lity
Total Annual Return	0.5755	1.7363	1.663	4.229	0.037	0.068	Normal
Systematic Risk (Beta)	1.1584	0.3449	-0.195	-1.692	0.037	0.103	Normal
Price-Earnings Ratio (P/E)	111.9149	192.3032	3.181	9.992	0.000	0.000	Normal
Price-to-Book Ratio (P/B)	14.7086	15.0330	1.706	2.448	0.000	0.001	Normal
Market Capitalisation	274304.375	117182.674	0.029	0.555	0.148	0.419	Normal

Source: Author's Calculation (SPSS)

Interpretation

In our Research paper all variables show approximate normal distribution. It has been indicated by skewness, kurtosis and significance values from Kolmogorov-Smirnov along with Shapiro-Wilk tests. This test confirms the data is appropriate for parametric analyses such as correlation and regression. Total Return, Systematic Risk, P/E, P/B and Market Capitalisation do not show extreme deviation from normality that may be supporting our study's objectives to analyze the effect of risk, valuation and size on financial performance of Sensex companies.

Correlation Analysis

Research Question 3: What is the relationship between systematic risk (Beta), market valuation (Price-to-Book Value ratio), firm size (Market Capitalisation) and financial performance (Total Annual Return) of Sensex-selected companies?

Table 3: Correlation Analysis

Variables	Total Annual Return	Systematic Risk (Beta)	Price Earnings Ratio	Price to Book Ratio	Market Capitali-sation
Total Annual Return	1	0.207	0.088	0.045	-0.349
Significance (2-tailed)	–	0.272	0.645	0.814	0.059
Systematic Risk (Beta)	0.207	1	0.229	0.040	0.216
Significance (2-tailed)	0.272	–	0.223	0.835	0.252
Price Earnings Ratio	0.088	0.229	1	0.816**	-0.146
Significance (2-tailed)	0.645	0.223	–	0.000	0.443
Price to Book Ratio	0.045	0.040	0.816**	1	-0.047
Significance (2-tailed)	0.814	0.835	0.000	–	0.804
Market Capitalisation	-0.349	0.216	-0.146	-0.047	1
Significance (2-tailed)	0.059	0.252	0.443	0.804	–

Source: Author's Calculation (SPSS)

Interpretation

In the above table, it shows that Total Return is weakly negatively related to Market Capitalization (-0.349, p=0.059). So, this indicates that larger firms in the Sensex sample do not automatically provide higher returns. Beta (systematic risk) has a weak positive correlation (0.207, p>0.05) which is suggesting that market risk is not strongly linked to returns for these companies. Price-to-Earnings per share and Price-to-Book Value ratios show marginal direct correlation with returns, except that P/E and P/B are strongly related to each other (0.816, p<0.01), reflecting consistent valuation measures. So, these are helps to understand which factors that is risk, valuation, or firm size may influence stock performance, providing useful guidance for investors and portfolio managers.

Regression Analysis

Research Question 4: How do systematic risk (Beta), market valuation (P/E and P/B ratios) and firm size (Market Capitalisation) influence the financial performance (Total Annual Return) of Sensex-selected companies?

Table 4: Regression Analysis and Multicollinearity							
Predictor	B	Std. Error	Beta	t	Sig.	Tole-rance	VIF
Constant	0.303	1.277	—	0.238	0.814	—	—
Systematic Risk (Beta)	1.710	0.997	0.340	1.715	0.099	0.85	1.18
Price Earnings Ratio (P/E)	-0.002	0.003	-0.189	-0.556	0.583	0.35	2.86
Price to Book Ratio (P/B)	0.019	0.038	0.165	0.507	0.616	0.35	2.86
Market Capitalisation	-0.00000655	0.000003	-0.442	-2.335	0.028	0.90	1.11

Source: Author's Calculation (SPSS)

Model Summary: R = 0.464, R^2 = 0.216, Adjusted R^2 = 0.090, Std. Error = 1.656, Durbin-Watson = 2.094

Interpretation

In the above table the regression results indicate that market capitalization has a significant negative effect on total annual returns suggesting that larger firms in the Sensex may yield slightly lower stock returns. Systematic risk (Beta) shows a positive but marginally significant relationship indicating that firms with higher market risk tend to have slightly higher returns. Both Price-to-Earnings per share (P/E) and Price-to-Book Value ratio (P/B) ratios do not significantly influence returns in this sample. The model explains 21.6% of the variation in total annual returns and the Durbin-Watson value (2.094) indicates no autocorrelation in residuals. Multicollinearity diagnostics show all VIF values below 3 that is confirming that the predictors are not highly correlated and the regression estimates are unchanging.

Single Factor ANNOVA

Null Hypothesis (H_0): There is no significant difference in the total annual returns of Sensex companies across different financial years.

Alternative Hypothesis (H_1): There is a significant difference in the total annual returns of Sensex companies across different financial years.

Table 5: ANOVA for Total Annual Return Across Financial Years					
Source	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	24.035	4	6.009	2.370	0.080
Within Groups	63.393	25	2.536		
Total	87.428	29			

Source: Author's Calculation

Interpretation

In the above ANOVA shows that the differences in total annual returns across financial years are not statistically significant (F = 2.370, p = 0.080). It stated that average returns do not vary meaningfully from year to year in the selected Sensex companies. The findings indicate stability in annual returns over the study period.

8. Conclusion

Our study examined the impact of systematic risk, market valuation and firm size on the financial performance of selected Sensex companies. Descriptive statistics showed that the returns, risks and valuation measures differ across companies. Normality tests confirmed that most variables follow a normal distribution that can be supporting the reliability of further analysis. Correlation analysis indicated weak relationships between total annual returns and the independent variables that the market capitalization showing a moderate negative association. Regression results revealed that, among the factors studied, firm size that is market capitalization had a significant negative effect on stock returns, while systematic risk, price-to-earnings, and price-to-book ratios were not statistically significant. The ANOVA showed that annual returns did not differ significantly across financial years, suggesting stability in performance over time. The findings from our study states that the firm size influences return more than risk or valuation measures.

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