Original Researcher Article

Does the Price-to-Earnings Ratio Forecast Returns? An Empirical Study on BSE Sensex

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ABSTRACT

Stock selection in the contemporary global economy is a complex process, with investors striving for reliable returns that not only protect their interests but also strengthen capital market and foster economic growth. Price-to-earnings (P/E) ratio is one of the most widely used valuation metrics in finance, much of the existing literature has analysed it in conjunction with other indicators, leaving its standalone predictive power rather unexplored. This has left a critical gap in analysing whether the P/E ratio, when considered in isolation, holds significant predictive capacity for stock returns and risk assessment. This study investigates the predictive efficacy of the P/E ratio in the Indian context by analysing firms listed on the BSE Sensex over a five-year period from 2020-25. Further, it examines whether P/E ratio can forecast future returns and whether the high-P/E firms deliver superior shareholder value. Using one-way ANOVA, linear regression, independent sample *t* test and correlation, the findings indicate that the P/E ratio does not possess predictive validity during the study period. Furthermore, firms with higher P/E ratios did not consistently generate above-average returns. The results highlight the limitations of using the P/E ratio in seclusion for equity investment decisions. Investors are encouraged to incorporate corresponding financial indicators and technical analysis to improve decision-making and portfolio performance.

Keywords: Price-to-Earnings Ratio; Stock Returns; Equity Valuation; BSE Sensex; Investment Decisions

INTRODUCTION

In today's global economy, analysing vast amounts of information to arrive at an investment decision is very difficult. The challenge lies in selecting the right information for assessing a specific stock and evaluating it correctly. Price-to-earnings ratio can be regarded as a rough benchmark for selecting a stock as an investment avenue. It is the ratio of a company's share price to the company's earnings per share which measures how expensive the stock is when compared to the scrips within the same industry or with other industry. It is a popular ratio that gives investors a better idea of the value of the company. It shows the expectations of the market and the price you must pay per unit of current or future earnings of the company. This ratio often serves as a proxy for assessing whether a stock is undervalued or overvalued. A higher P/E ratio typically signals future growth prospects, reflecting investor expectations of enhanced earnings.

P/E ratio may be trailing or forward. The former one is based on previous period's earnings per share while a leading or forward P/E ratio is one which is calculated on the basis of future EPS. Companies with a high P/E ratio are often considered to be growth stocks. This indicates a positive future performance and investors expect higher growth in future earnings and are willing to pay more for them. Such stocks with high P/E are highly volatile which puts a lot of pressure on companies to do more to justify their higher valuation. For this reason, investing in growth stocks will more likely be seen as risky investment. Stocks with high P/E ratios can also be considered overvalued and vice versa. Indian stock market is one of the earliest in Asia and being in operation since 1875. S&P BSE SENSEX, first compiled in 1986, was calculated on a 'Market Capitalization-Weighted' methodology of thirty component stocks representing well-established, large and financially sound companies across key sectors. It is regarded as the pulse of the Indian stock market and economy as well. P/E ratio can produce wonky results in situations where there are negative earnings per share resulting negative P/E ratio and high P/E ratio with close to zero net income.

Among the numerous valuation metrics in finance, the Price-to-earnings (P/E) ratio remains one of the most influential, yet its independent predictive efficacy has not been conclusively established. Building on this understanding, the present study focuses on analysing the P/E ratio to assess its effectiveness in predicting stock returns. Further, it intends to evaluate whether the

companies, listed in BSE Sensex, with higher P/E ratios reward their shareholders by providing more return from the market.

REVIEW OF LITERATURE

Numerous studies analyse the efficacy of financial ratios and macro variables, such as price-to-earnings, dividend pay-out and book to market ratios, inflation rate, interest rates and aggregate output, to predict stock returns. In order to contextualize the current study, this section surveys existing financial literatures which are related to price-to-earnings ratio.

Anderson and Brooks (2006) established that the traditional one-year price–earnings (P/E) ratio underestimates the value premium in UK stocks. By averaging earnings over the previous eight years, they nearly doubled the premium, highlighted the significance of long-term earnings measures in predicting returns. They proposed a modified, decomposed price–earnings ratio that accounts for influences such as firm size, measurement year and industry sector. Their regression-based approach of decomposed P/E ratio nearly doubled the return gap between value and glamour stocks.

Luoma, Sahlstrom and Ruuhela (2006) recommended an alternative method to estimate the equity risk premium using easily obtainable financial statement and market data that allows investors to spot mispriced stocks and evaluate feasible growth and P/E ratio combinations while remaining relatively robust to errors in growth estimates.

Wu (2014) found a U-shaped relationship between forward P/E ratios and return on equity by sorting the samples into deciles, showing that firms with higher P/E ratios often experience lower, more volatile ROE in succeeding years. This study applied Mohanram's (2005) GSCORE and demonstrated that high-GSCORE firms within the high-P/E group achieve more earnings growth, ROE, and additional returns.

Phan, Sharma, and Narayan (2015) studied out-of-sample forecasting of stock returns and observed that the predictive ability of oil prices varies by data frequency, estimator, and industry sector. The study further identified that return predictability is linked to industry features such as price earnings ratio, book-to-market ratio, dividend yield, firm size and volume of trading.

Kumar (2017) explored the effect of EPS and P/E ratio on market price of shares on a sample of eight companies listed on the Nifty Auto Index over a five-year period (2011–12 to 2015–16 by employing multiple regression and found out that the P/E ratio had a significant, though relatively less dominant, influence on share price movements.

Wang, H, Chatpatanasiri, R, and Sattayatham, P (2017) opined that price earnings ratio is one of the most widely applied methods being used as a firm valuation tool by investment experts. The purpose of the research was to formalize a process of fundamental P/E estimation by employing advanced dynamic Bayesian network (DBN) methodology. The study concluded that the trading strategy they developed equipped with the inferenced P/E ratios consistently outperforms standard investment benchmarks.

Yadnyana, Sunarwijaya, Wirama, and Wirajaya (2025) conducted a systematic review of 46 studies published between 2014 and 2023 on firm relative value by focusing on price–earnings ratios and price-to-book ratios. They found that quantitative methods dominated the literature and their analysis emphasized the use of multiple theoretical frameworks which includes Signaling, Agency, Capital structure and Stakeholder theories, while also identifying gaps in underexplored sectors and the need for broader methodological approaches, specifically qualitative methods concerning practitioners.

Anggreni and Wijaya (2025) have conducted a systematic literature review of eleven studies on the use of the Price Earnings Ratio in stock valuation and investment decision-making across industries and found that P/E ratio is widely applied to identify undervalued stocks for purchase and overvalued stocks for sale, often in combination with additional financial metrics such as Price-to-Book Value, Dividend Yield and Return on Equity to improve analytical precision. This research emphasized that P/E ratio is effective for investment decisions but should be understood considering sectoral differences, macroeconomic factors and complementary financial ratios.

The existing literatures examined the significance of P/E ratio in combination with other financial indicators rather than evaluating its independent predictive power. Further, the review of existing studies highlights the significance of extending the efficacy of P/E ratio, in isolation, in predicting future stock price returns to firms listed in the Indian stock market, where empirical evidence remains relatively scarce.

Statement of the Problem

One of the major benefits of investing in the stock market is that investors get the chance to earn more money. The investors should be protected by providing good returns which is highly essential for the development of a good stock market which in turn will lead to the development of the nation. Investors may be over-relying on P/E ratio, potentially leading to incomplete and biased decisions. While the P/E ratio has long been regarded as one of the most widely used valuation metrics in financial markets, much of the existing literatures has analysed it in combination with other financial ratios, leaving its standalone predictive capacity relatively unexplored. By focusing exclusively on P/E ratio, the current research contributes to a clearer understanding of its role in investment decision making and assessing market risk. Here, the present study raises the following research questions:

1. Whether the valuation ratio has predictive power of stock returns in India
2. Does today's valuation predict tomorrow's return?
3. Did the companies, listed in Sensex, with high P/E ratio actually reward the investors with high returns?

Objectives of the study
The present study intends to:

1. To analyse the relationship between Price-to-Earnings (P/E) ratio and subsequent stock returns of firms listed in BSE Sensex over a period of five years.
2. To examine the predictive efficacy of P/E ratio in forecasting the future performance of firms across different years.
3. To analyse whether the companies with higher P/E ratios rewarded the investors with higher returns as compared to companies with lower P/E ratios.

Hypotheses of the study
The study evaluates the relationship between P/E ratio and stock returns of firms listed in BSE Sensex over a period of five years. Hypotheses were formed in accordance with the research objectives and tested using appropriate statistical methods.

Hypotheses	Test used
H_0: The stock returns and P/E ratios are not significantly correlated H_1: The stock returns and P/E ratios are significantly correlated.	Correlation analysis
H0: The P/E ratio does not significantly predict stock returns. H_1: The P/E ratio significantly predicts stock returns.	Linear regression
H_0: The average stock returns are equal across all quintiles. H_1: At least one P/E ratio group has stock returns that differ significantly from the others.	One-way ANOVA
H_0: Stock returns do not differ between low and high P/E companies. H_1: Companies with high P/E ratios generate significantly higher stock returns than companies with low P/E ratios.	Independent sample t test

Scope of the study
The present study is conducted on stocks which are listed in BSE Sensex. For the purpose of the study, P/E ratios and returns for five years from 2020 to 2025 were taken. In the present study, the P/E ratio at fiscal yearend, March t, is employed as the explanatory variable to predict the stock return for the subsequent financial year, April t to March $t+1$, thereby ensuring temporal consistency and avoiding look-ahead bias. Closing prices of April t were adjusted to incorporate bonus and split. The analyses were conducted separately for each year to highlight annual differences and for the aggregate five-year dataset to identify broader trends. This dual-level approach provided both short-term insights and long-term evidence on the association between P/E ratio and stock returns.

RESEARCH METHODOLOGY
Research Design
This study adopts a quantitative explanatory research design to examine the predictive efficacy of P/E ratio in forecasting the future performance of firms across different years. Both year-wise cross-sectional analysis and an aggregated five-year dataset analysis were conducted to capture short-term variations as well as long-term patterns.

Data Source and Sample
The study is based on secondary data collected from BSE Sensex. The sample comprises thirty companies listed in BSE Sensex during the period 2020 to 2025. Both stock returns and P/E ratios were winsorized at the fifth and 95th percentiles (5% in each tail) in order to minimise the effect of extreme outliers without changing the sample size.

Variables of the Study

Independent Variable: Price-to-Earnings (P/E) ratio of companies.

Dependent Variable: Stock returns, computed as the annual percentage change in share prices.

Grouping Variable: The listed companies were split into quintiles based on their P/E for each five years as market conditions change every year. Those companies with negative EPS (and hence negative or undefined P/E) were excluded from quintile classification for that year. P/E ratios of Eternal Ltd. were available only for four years. This unbalanced panel data set was also considered for the study. For the missing year(s), it will not appear in the data set. Yearly return for five years was analysed for short term predictive power and pooled analysis was conducted to examine long term predictive power.

Normality Testing
The assumption of normality was examined using the Shapiro-Wilk test. Normality was tested separately for each year as well as for the aggregated dataset. Results indicated that most yearly datasets followed normal distribution, with the exception of one year, while the pooled five-year dataset violated the normality assumption. Accordingly, parametric tests were employed where assumptions were satisfied, and non-parametric alternatives were applied otherwise.

Descriptive Analysis
Descriptive statistics including mean and standard deviation were calculated to summarize the central tendency and dispersion of both P/E ratios and stock returns.

Statistical Techniques

Correlation Analysis

To test the relationship between P/E ratios and stock returns, Pearson correlation was used.

Regression Analysis

Simple linear regression was applied to examine the predictive capacity of the P/E ratio on stock returns, both year-wise and for the pooled dataset.

Group Comparison Tests

For two-group comparisons (low vs. high P/E companies), an independent sample *t* test was conducted. For multiple P/E categories, i.e. quintiles, a one-way ANOVA was performed under normality, while the Kruskal-Wallis H test was employed as a non-parametric alternative when assumptions were not met.

Results and Discussion

Consistent with prior empirical studies (Basu, 1977; Fama & French, 1992), firms were ranked annually for the five financial years from 2021 to 2025 on the basis of their P/E ratios and sorted into quintile portfolios. Q1-Q5 indicate quintiles ranked by winsorized P/E ratios. Quintile 1 (Q1) includes firms with the lowest P/E ratios, interpreted as value stocks, while Quintile 5 (Q5) comprises firms with the highest P/E ratios, interpreted as volatile and growth stocks. Q2-Q4 firms are intermediate firms (firms in the middle range of P/E ratios. Given that a few firms exhibited extremely high P/E ratios (P/E > 100), these companies were included within Q5 in accordance with the standard practice in the literature, as such ratios reflect heightened investor expectations regarding growth of future earnings. Firms which had negative P/E ratios were excluded from this quintile-based ranking and instead assigned to an independent category labelled "Loss-making firms."

Descriptive statistics for winsorized Price-to-Earnings ratio (P/E_Win) and stock returns (Return_Win) for the five financial years from 2020 to 2025 across quintiles are presented in Table 1 and Table 2 respectively. Quintile-wise pooled descriptive statistics of winsorized P/E and stock returns for the five years are presented in Table 3.

Table 1 *Quintile-wise Descriptive statistics of Winsorized Price-to-Earnings Ratios (2020-24)*

Quintiles	2020		2021		2022		2023		2024	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
1	9.47	0.83	12.05	2.75	10.89	2.87	11.55	2.57	10.92	1.18
2	14.11	1.85	19.99	2.23	19.72	2.04	20.25	1.71	17.90	2.06
3	19.42	2.05	25.52	2.26	26.65	2.00	25.52	2.21	26.63	2.53
4	29.43	12.90	37.19	7.29	39.92	9.61	36.96	9.25	40.03	7.97
5	79.87	23.26	75.63	18.19	82.25	21.88	70.99	19.16	97.10	5.08
Total	29.82	27.49	35.31	23.61	40.38	30.63	32.01	21.36	38.00	26.76

From Table 1, it can be inferred that the average P/E ratios indicated a non-linear pattern across five years. The mean P/E ratios increased for the first three years (M= 29.82, SD= 27.49 in 2020, M= 35.31, SD= 23.61 in 2021 and M= 40.38, SD= 30.63 in the year 2022), followed by a decline in the year 2023 (M= 32.01, SD 21.36) and a modest increase in the year 2024 (M= 38.00, SD 26.76). The standard deviation of the year 2022 indicates the highest variability in stock valuation with highest dispersion around the mean.

Table 2 *Quintile-wise Descriptive statistics of Winsorized stock Returns (2020-25)*

Quintiles	2020-21		2021-22		2022-23		2023-24		2024-25	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
1	76.99	43.33	41.85	17.18	9.53	22.54	62.09	17.72	-4.05	12.66
2	97.93	38.36	27.59	16.24	45.12	54.55	21.12	20.66	19.75	12.82
3	101.11	24.46	12.61	13.78	-0.87	15.43	47.28	43.88	13.36	33.06
4	78.23	29.33	23.63	27.83	-7.16	20.32	38.49	15.76	6.63	18.76
5	72.67	46.83	21.25	30.58	16.34	49.97	62.67	70.51	17.93	28.20
Total	85.58	36.15	25.59	23.53	13.22	39.41	46.46	40.23	10.96	21.54

Table 2 shows the fluctuating mean and variability of stock returns across five years. The mean return was highest in the year 20-21 (M= 85.58, SD= 36.15) followed by the year 23-24 (M= 46.46, SD= 40.23), 21-22 (M= 25.59, SD= 23.53), 22-23 (M= 13.22, SD= 39.41) and 24-25 (M= 10.96, SD= 21.54), indicating considerable differences in both average returns and spread of returns for the five years. The stock price returns of the year 22-23 varied significantly across firms.

Table 3 *Quintile-wise Pooled Descriptive Statistics of Winsorized P/E and Returns (2020-25)*

	N	P/E_Win	Return_Win

Quintiles		Mean	SD	Mean	SD
1	27	11.28	2.23	47.64	41.54
2	28	19.25	2.15	49.79	44.69
3	28	25.87	2.26	30.48	41.37
4	28	38.65	7.90	15.21	25.29
5	28	79.79	19.91	37.56	50.51
Total	139	35.14	26.07	36.05	42.83

The pooled winsorized data across the five - year period was used to analyse the trends in stock returns and P/E ratios across quintiles. Descriptive statistics shows an increase in P/E ratios across quintiles, reaching highest value in the final quintile with highest variability (M= 79.79, SD= 19.91). Stock price returns exhibited irregular pattern across quintiles with highest return in second quintile (M= 49.79, SD= 44.69). During the sample period, high P/E firms could not outperform the market with high return. Greater standard deviation of returns than P/E ratios indicate more variability in returns relative to valuation, leading to no clear upward or downward trend in returns across quintiles over five years.

Normality assessment of variable
Shapiro–Wilk test was used to assess the normality of stock returns for each year and also and the result of which is given in Table 4.

Table 4 *Result of normality testing*

Variable	Year	Shapiro-Wilk		
		Statistic	df	P value
Return_Win	2020-21	.953	27	.251
	2021-22	.970	26	.631
	2022-23	.695	28	.000
	2023-24	.934	29	.071
	2024-25	.943	29	.119

Result of Shapiro–Wilk test revealed that returns were approximately normally distributed in the year 2020–21 (p = .25), 2021–22 (p = .63), 2023–24 (p = .07), and 2024–25 (p = .12), as the p-values were greater than .05. However, in the year 2022–23, the Shapiro–Wilk test was significant (p < .001), indicating a deviation from normality in that year. The stock returns were normally distributed for the years except 2022–23.

Hypotheses testing
The present study evaluates the relationship between P/E ratio and stock returns of firms listed in BSE Sensex over a period of five years and which was tested using correlation analysis. One-way ANOVA was used to examine whether stock returns differ across five quintiles. Independent sample *t* test was used to compare the performance of firms in Q1 and Q5 in order to analyse whether the companies with higher P/E ratios rewarded the investors with higher returns as compared to companies with lower P/E ratios. Hypotheses testing was also conducted to examine the predictive efficacy of P/E ratio in forecasting the future performance of firms across different years and the same was tested using linear regression.

One-way ANOVA
A standard one-way ANOVA test was conducted in five years as the Levene's test indicated equal variances across groups. The results show no significant differences in mean stock returns among the quintiles, $F_{(4, 22)} = 0.66$, p=0.63; $F_{(4, 21)} = 0.96$, p=0.45; $F_{(4, 23)} = 1.4$, p=0.27; $F_{(4, 24)} = 0.93$, p=0.46 and $F_{(4, 24)} = 0.82$, p=0.52, indicating that P/E ratios did not have predictive capacity for stock returns. As the data of 22-23 was non-normal, a Kruskal–Wallis H test was also conducted to examine differences in stock returns across P/E quintiles. Results indicated that median returns did not differ significantly across quintiles, $\chi^2 (4) = 6.40$, p = .17. This confirms the result of one-way ANOVA test.

Independent sample *t* test
Independent sample *t* test was conducted to examine whether the companies with higher P/E ratios rewarded the investors with higher returns as compared to companies with lower P/E ratios. Levene's test indicated equal variances could be assumed, $F_{(1,48)} =2.42$, p=.126. The analysis indicates that the difference in returns of high and low P/E quintiles is not statistically significant, $t_{(48)} =0.34$, p= .74, 95% CI [-21.67, 30.41]. Stock returns do not differ between low and high P/E companies.

Regression-Linear
A simple linear regression was conducted to examine the predictive efficacy of P/E ratio in forecasting the future stock price returns for the period 2020-25.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	P value
1	.078[a]	.006	-.001	42.85615	.006	.833	1	137	.363
a. Predictors: (Constant), P/E_Win									

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	P value
1	Regression	1529.955	1	1529.955	.833	.363[b]
	Residual	251620.956	137	1836.649		
	Total	253150.912	138			
a. Dependent Variable: Return_Win						
b. Predictors: (Constant), P/E_Win						

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	P value.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	40.540	6.114		6.630	.000	28.449	52.631
	P/E_Win	-.128	.140	-.078	-.913	.363	-.404	.149
a. Dependent Variable: Return_Win								

The regression model was not statistically significant, $F(1, 137) = 0.833$, $p = .363$, and explained only 0.6% of the variance in returns ($R^2 = .006$). The unstandardized regression coefficient for P/E ratio was negative and nonsignificant ($B = -0.128$, $SE = 0.140$, $\beta = -0.078$, $t = -0.913$, $p = .363$, 95% CI [-0.404, 0.149]), indicating that increases in the P/E ratio were associated with a negligible decrease in returns. For every 1 unit increase in P/E ratio, the return decreases by 0.128 units, but the effect is not statistically significant ($p = 0.363$). The results suggest that the P/E ratio had no meaningful predictive capacity for future stock price returns over this five-year period.

The ANOVA table show no significant differences in mean stock returns among the quintiles, $F (1, 137) = 0.83$, $p=0.36$, indicating that relationship between P/E ratio and returns is not statistically significant over the 2020–2025 period and the model is not statistically significant.

This was further confirmed by correlation analysis and the result is presented below.

Correlations			P/E_Win	Return_Win
P/E_Win	Pearson Correlation		1	-.078
	Sig. (2-tailed)			.363
	N		139	139
Return_Win	Pearson Correlation		-.078	1
	Sig. (2-tailed)		.363	
	N		139	139

Pearson correlation analysis reveals that P/E ratio was not significantly correlated with future stock returns, $r = -0.08$, $p = .36$. Both regression and correlation together confirm that P/E has no predictive efficacy during the five years.

CONCLUSION

In today's dynamic global economy, investors face the daunting task of sifting through vast amounts of financial information to make informed decisions. The critical challenge for investors lies in distinguishing relevant data from noise and accurately evaluating the potential of individual stocks. Reviewing the massive amount of data available on public companies is vital for assessing the quality of companies and determining whether they are suitable for their portfolios. The study set out to examine the predictive efficacy of the Price-to-Earnings ratio in explaining subsequent stock returns of BSE Sensex firms over a five-year period. The empirical evidences derived from linear regression, one-way ANOVA, independent sample *t* test and correlation analyses validates that the P/E ratio does not possess significant predictive validity in the Indian context during the study horizon. Contrary to the conventional belief that higher P/E ratios signal stronger growth prospects and superior returns, the results indicate that firms with higher P/E ratios did not consistently reward investors with enhanced market performance. These findings suggest that dependence on the P/E ratio alone as an investment strategy is inadequate and may lead to erroneous decisions. While the P/E ratio remains a useful reference for preliminary valuation, investors

should adopt a more comprehensive approach by integrating additional financial ratios, fundamental indicators and technical analysis. Such a multidimensional strategy will not only improve the accuracy of investment decisions but also contribute to more efficient capital allocation in the stock market. Future research may extend this analysis by including longer time horizons, sector-specific comparisons or cross-market studies to provide deeper insights into the role of valuation ratios in investment performance.

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