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# A Detailed Analysis of Stock Market Valuation: A Multi-Model Approach

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**ABSTRACT :**

This research report provides a detailed examination of stock market valuation in India, employing a multi-model approach to offer a comprehensive assessment of market conditions. The study utilizes three established valuation models—the Buffett Valuation Model, the Interest Rate Valuation Model, and the PE Ratio Valuation Model—to evaluate the extent to which the Indian stock market is overvalued or undervalued. Historical data from December 2000 to December 2024, sourced from reputable financial databases and stock exchanges, forms the basis of the analysis. The findings of the report indicate a degree of overvaluation in the Indian stock market across all three models. However, the extent of overvaluation varies, highlighting the importance of a multi-model approach. Specifically, the Buffett Valuation Model and the Interest Rate Valuation Model suggest a more pronounced overvaluation compared to the PE Ratio Valuation Model. The report concludes that relying on a single valuation model may provide an incomplete or skewed perspective. Instead, the use of multiple models offers a more robust and nuanced understanding of stock market valuation, capturing different dimensions of market dynamics and ultimately leading to more informed investment decisions.

**Keywords**: Stock Market Valuation, Buffett Valuation Model, Interest Rate Valuation Model , PE Ratio, Indian Stock Market, NSE, BSE, Intrinsic Value, Macroeconomic Factors, Investment Decision-Making, Market Overvaluation, Financial Modeling, Investor Sentiment, Fundamental Analysis, Market Trends

## INTRODUCATION

With the continuous expansion of global economies, stock market valuation has become an essential aspect of financial decision-making. The stock market serves as a fundamental indicator of a country's economic health, reflecting the performance of businesses and industries. Understanding stock valuation is crucial for investors, policymakers, and financial analysts, as it helps in making informed investment decisions and assessing market trends. This study, titled **"A Detailed Analysis of Stock Market Valuation: A Multi-Model Approach"**, aims to evaluate stock valuation techniques by utilizing multiple financial models. The focus is on three key valuation methods: **Buffett Valuation Model, Interest Rate Valuation Model, and PE Ratio Valuation Model**. These models provide different perspectives on stock pricing, helping investors determine the intrinsic value of stocks and identify investment opportunities.

The Indian stock market, represented by major exchanges like the **Bombay Stock Exchange (BSE)** and the **National Stock Exchange (NSE)**, plays a crucial role in capital generation and economic growth. The presence of these structured platforms allows companies to raise capital from the public effectively, fostering financial stability. The research also explores how macroeconomic factors such as **interest rates and market trends** impact stock valuation, offering insights into the dynamic nature of financial markets.

## 1.1 Review of Literature

The stock market has played a vital role in financing economic growth. As part of financial liberalization, stock markets have evolved to become an essential mechanism for resource mobilization and corporate financing. With advancements in financial modeling, various valuation techniques have emerged to assess stock performance. This section presents a comprehensive review of relevant literature on stock market valuation, its impact on economic growth, and the various models used for stock valuation.

Gupta (1972) studied the working of stock exchanges in India and emphasized the need for regulations to control speculation and improve liquidity. The study suggested that listing corporate securities on multiple exchanges could enhance liquidity and reduce transaction costs. He also highlighted that better regulation could improve investor confidence, thereby leading to increased participation in the stock market.

Panda (1980) analyzed stock market developments before and after Indian independence. His findings indicated that stock investments were no longer restricted to a specific class but had gained traction among middle-class individuals. The study highlighted that a significant portion of household savings was directed toward securities investment. Furthermore, Panda argued that the growth of the stock market had contributed to greater capital formation and economic expansion in India.

Buffett (1984) introduced the concept of intrinsic valuation, emphasizing fundamental analysis to identify undervalued stocks. His approach focused on long-term investments based on financial stability and profitability metrics. Buffett's valuation principles, such as assessing a company's earnings

consistency, debt levels, and competitive advantage, remain widely used by investors to this day.

Fama (1991) contributed to the Efficient Market Hypothesis (EMH), stating that stock prices reflect all available information. This theory suggests that valuation models must incorporate macroeconomic indicators and investor sentiment to predict stock movements accurately. EMH posits three forms of market efficiency: weak, semi-strong, and strong, which indicate how much information is factored into stock prices. Critics of this theory argue that behavioral biases and market anomalies challenge the notion of a perfectly efficient market.

More recent studies have explored the impact of interest rates on stock valuation. Mishkin (2001) found that changes in monetary policy significantly affect stock returns, as lower interest rates tend to increase stock prices by reducing the cost of capital. His research highlighted that central bank policies play a crucial role in shaping stock market dynamics, influencing investor sentiment and valuation models.

Graham and Dodd (2009) reinforced the importance of value investing, emphasizing financial statement analysis and the significance of the price-to-earnings (P/E) ratio in stock valuation. Their study provided empirical evidence that undervalued stocks, determined through fundamental analysis, tend to outperform the market over the long run. The principles of value investing introduced in their work continue to influence modern investment strategies.

More recently, scholars have examined the relationship between macroeconomic variables and stock market behavior. Rjoub et al. (2017) investigated the link between inflation, GDP growth, and stock market performance. Their findings suggested that high inflation rates tend to negatively impact stock prices, while GDP growth positively correlates with market performance. Such insights are critical for investors using macroeconomic indicators for stock valuation.

Several studies have compared multiple valuation models to determine their effectiveness in stock price prediction. Chan and Lakonishok (2019) conducted a comparative study on various valuation models, including the Price-to-Book (P/B) ratio, Discounted Cash Flow (DCF) model, and the P/E ratio. Their study concluded that a multi-model approach to valuation offers more accurate insights into stock pricing, as different models capture different market dynamics.

The literature highlights the importance of valuation models in financial decision-making. This study builds on past research by comparing multiple valuation models to understand stock market performance better. The findings will provide insights into effective investment strategies and enhance our understanding of stock valuation techniques. By incorporating a multi-model approach, this research aims to bridge the gap between theoretical valuation frameworks and real-world market applications.

### *1.1.1 History*

The Indian stock market is one of the oldest in Asia, dating back to the late 18th century when the East India Company began transacting loan securities. In the 1830s, trading involving corporate stocks and shares in banks and cotton presses occurred in Bombay. Although trading was widespread, there were only about six brokers operating during the 1840s and 1850s. An informal group of 22 stockbrokers started trading under a banyan tree opposite the Town Hall in Bombay in the mid-1850s, each investing what was then a significant amount of 1 Rupee. This banyan tree still stands in Horniman Circle Park, Mumbai.

By 1860, the exchange had grown to accommodate 60 brokers. The 'Share Mania' in India began during the American Civil War when the cotton supply from the United States to Europe was halted. This led to an increase in the number of brokers to 250. The informal group organized themselves into the Native Share and Stockbrokers Association, which was formally established as the Bombay Stock Exchange (BSE) in 1875. The BSE was relocated to an old building near the Town Hall.

In 1928, the land where the current BSE building stands, at the intersection of Dalal Street, Bombay Samachar Marg, and Hammam Street in downtown Mumbai, was acquired, and the building was completed in 1930. Premchand Roychand was a leading stockbroker of that time and played a significant role in establishing the traditions, conventions, and procedures for trading at the Bombay Stock Exchange, many of which are still in use today. Several stock broking firms in Mumbai were family-run enterprises named after the heads of the family.

In 1956, the Government of India recognized the Bombay Stock Exchange as the first stock exchange in the country under the Securities Contracts (Regulation) Act. The most pivotal period in BSE's history occurred after 1992, following a major market manipulation scandal involving BSE member Harshad Mehta. In response to calls for reform, the BSE was slow to act, which radicalized the government's stance and led to the creation of the National Stock Exchange (NSE), establishing an electronic marketplace. The NSE began trading on November 4, 1994, and within a year, its turnover surpassed that of the BSE.

Although the BSE automated its processes, it never matched the NSE's spot market turnover. The second strategic failure for the BSE occurred in the following two years when the NSE launched equity derivatives trading. In an attempt to counter this, the BSE, supported by a friendly SEBI chairman (shri Tuhin Kanta Pandey ), sought to delay equity derivatives trading. They successfully postponed this trading by roughly five years. However, equity derivatives and the accompanying transition to rolling settlement materialized in 2000 and 2001, following another scandal at the BSE involving then-President Anand Rathi.

As a result, NSE captured nearly 100% market share in the successful equity derivatives market, relegating the BSE to a clear second place. Today, the NSE accounts for approximately 66% of equity spot turnover and nearly 100% of equity derivatives turnover. Stock exchanges provide a trading platform where buyers and sellers can meet to transact in securities.

### *1.1.2 BOMBAY STOCK EXCHANGE (BSE)*

The Bombay Stock Exchange (BSE) is the largest and oldest stock exchange in India. Established in 1875, BSE has played a significant role in the growth of the Indian corporate sector by providing an efficient platform for raising capital. Its origins date back to the 1850s when four Gujarati stockbrokers and one Parsi stockbroker would gather under banyan trees in front of Mumbai's Town Hall.

As the number of members increased, this group relocated to Dalal Street, Mumbai, in 1874 and officially became known as "The Native Share & Stock Brokers Association" in 1875. In 1956, the BSE became the first stock exchange to be recognized by the Indian government under the Securities Contracts Regulation Act.

In 1986, the Bombay Stock Exchange developed the BSE Sensex, which serves as a measure of the overall performance of the exchange. In 1995, BSE

transitioned to an electronic trading system, completing this change in just fifty days. By 2000, BSE utilized the Sensex index to launch its derivatives market, offering trading in Sensex futures contracts. The introduction of Sensex options, along with equity derivatives, followed in 2001 and 2002, further expanding BSE's trading platform.

### *1.1.3 NATIONAL STOCK EXCHANGE (NSE)*

National Stock Exchange (NSE) is located at Mumbai, India. It is the 11th largest stock exchange in the world by market capitalization. NSE's key index is the S&P CNX Nifty, known as NIFTY (NSE fifty), an index of fifty major stocks weighted by market capitalization. NSE is mutually owned by a set of leading financial institutions, banks, insurance companies and other financial intermediaries in India. But its ownership and management operate as a separate entity. There are at least 2 foreign investors "NYSE Euronext" and "Goldman Sachs" who have taken a stake in the NSE. It is the second fastest growing exchange in the world with a recorded growth of 16.6%.

NSE offers trading and investment in the following segments :

**¬ Equity**

- Equities
- Indices
- Mutual Funds
- Exchange Traded Funds
- Initial Public Offerings
- Security Lending and Borrowing Scheme etc

**¬ Derivatives**

- Equity Derivatives (including Global Indices like CNX 500, Dow Jones and FTSE )
- Currency Derivatives
- Interest Rate Futures

**¬ Debt**

• Corporate Bonds Trading schedule: Trading on the equities segment takes place on all days of the week (except Saturdays and Sundays and holidays declared by the Exchange in advance). The market timings of the equities segment are:

(1) Pre-open session: (Order entry & modification Open: 09:00 hours ) Order entry & modification Close: 09:08 hors with random closure in last one minute. Pre-open order matching starts immediately after close of pre-open order entry.

(2) Regular trading session ( Normal/Retail Debt/Limited Physical Market Open: 09:15 hours ) Normal/Retail Debt/Limited Physical Market Close: 03:30 hrs.

### *1.1.4 Trading Mechanism*

Trading on both exchanges occurs through an open electronic limit order book, where a trading computer handles order matching. There are no market makers involved, which means the market is entirely order-driven. In this system, market orders placed by investors are automatically matched with the best available limit orders, allowing buyers and sellers to remain anonymous.

One advantage of order-driven markets is their increased transparency, as all buy and sell orders are displayed in the trading system. However, without market makers, there is no guarantee that all orders will be executed.

All orders in this trading system must be placed through brokers, many of whom offer online trading facilities to retail customers. Institutional investors can also utilize the Direct Market Access (DMA) option, which allows them to use trading terminals provided by brokers to place orders directly into the stock market trading system.

### *1.1.5 Settlement and Trading Hours*

Equity spot markets follow a T+2 rolling statement This means that any trade taking place on Monday gets settled by Wednesday. All trading on stock exchanges takes place between 9:55 a.m. and 3:30 p.m., Indian Standard Time (+ 5.5 hours GMT), Monday through Friday. Delivery of shares must be made in dematerialized form, and each exchange has its own clearing house, which assumes settlement risk by serving as a central counterparty.

### *1.1.6 Market Indexes*

The two prominent Indian stock market indices are Sensex and Nifty. Sensex, which is the oldest market index for equities, comprises shares of 30 companies listed on the Bombay Stock Exchange (BSE). These companies represent approximately 47% of the index's free-float market capitalization. Sensex was created in 1986 and provides time series data from April 1979 onward.

The other index, known as the Nifty 50 or Standard and Poor's CNX Nifty, includes 50 shares listed on the National Stock Exchange (NSE). This index accounts for about 46.9% of its free-float market capitalization. The Nifty was established in 1996 and offers time series data from July 1990 onward.

Regarding market regulation, the overall responsibility for developing, regulating, and supervising the stock market rests with the Securities and Exchange Board of India (SEBI). Established in 1988 and granted statutory powers by the SEBI Act of 1992, SEBI operates as an independent authority. Since its formation, SEBI has consistently worked to implement market rules that align with best practices. The board has extensive powers to impose penalties on market participants in cases of violations. Both the NSE and BSE are monitored by SEBI to ensure compliance and uphold market integrity.

## *1.2 Factors Affecting Stock Market:*

Determining stock returns is a complex and conflicting task. There are number of forces which influence the share returns of stock market. Although, there is no pre-planned system which can trace the exact movement in the stock returns of the stock market. However, fundamental factors, external

factors and market behaviour can cause increase or decrease in the demand and supply of individual stock. Major factors working on this case consist of indicators of firm's performance, investor's perception, market perception, and some macro economic variables such as Inflation, GDP, FDI, Interest Rate, Oil Prices, etc. Majorly, there are two thoughts related to this concept, first is the technical analysis and the second is the fundamental analysis. Former is a technique which is actually a statistical tool used to predict share price by the use of past data whereas the latter one is the method of stock valuation by using financial information with the help of a specific model. Fundamental Analysis is further classified into two categories; one is company specific variables and the other is macro economic variables. Company specific variables include Earning Per Share, Dividend Per Share, Price/ Earning Ratio, Book Value Per Share, Return On Equity, Net Asset Value etc. and macro economic variables include Gross Domestic Product, Inflation, Foreign Direct Investment, Interest Rate, Oil Prices etc.

### *1.3 Who Can Invest in India?*

India began allowing foreign investments in the 1990s. Foreign investments are categorized into two types: Foreign Direct Investment (FDI) and Foreign Portfolio Investment (FPI).

Foreign Direct Investment (FDI) refers to investments where an investor is involved in the day-to-day management and operations of a company.

-Foreign Portfolio Investment (FPI)involves investments in shares without any control over management or operations.

To make portfolio investments in India, an investor must be registered as a Foreign Institutional Investor (FII) or as a sub-account of a registered FII. These registrations are granted by the Securities and Exchange Board of India (SEBI).

Foreign Institutional Investors primarily include mutual funds, pension funds, endowments, sovereign wealth funds, insurance companies, banks, and asset management companies. Currently, India does not permit foreign individuals to invest directly in its stock market. However, high-net-worth individuals (those with a net worth of at least $50 million) can register as sub-accounts of an FII.

FIIs and their sub-accounts can invest directly in any stocks listed on Indian stock exchanges. Most portfolio investments involve securities in both primary and secondary markets, including shares, debentures, and warrants of companies listed or to be listed on recognized stock exchanges in India.

FIIs can also invest in unlisted securities outside stock exchanges, subject to price approval by the Reserve Bank of India. Additionally, they can invest in units of mutual funds and derivatives traded on any stock exchange. An FII registered as a debt-only FII can invest 100% of its funds in debt instruments, while other FIIs are required to invest a minimum of 70% of their funds in equity; the remaining 30% can be allocated to debt investments.

FIIs must use special non-resident rupee bank accounts to transfer money in and out of India, and the balances in these accounts can be fully repatriated.

### *1.4 Characteristics or features of the stock exchange are:-*

1. Market for Securities: A stock exchange is a marketplace where the securities of corporate bodies, government entities, and semi-government organizations are bought and sold.

2. Deals in Second-Hand Securities: The stock exchange primarily handles shares, debentures, bonds, and other securities companies that have already issued. Therefore, it focuses on existing or second-hand securities, which is why it is called the secondary market.

3. Regulation of Trade in Securities: The stock exchange does not buy or sell securities on its own behalf. Instead, it provides the necessary infrastructure and facilities for its members and brokers to conduct trading. It regulates trading activities to ensure that they are free and fair.

4. Dealing Only in Listed Securities: Stock exchanges maintain an official list of securities that can be bought and sold on their floors. Securities that do not appear on this official list are termed unlisted securities and cannot be traded on the stock exchange.

5. Transactions Through Authorized Members: All securities transactions at the stock exchange must be conducted through authorized brokers and members. Outsiders or direct investors are not permitted to participate directly in trading; they must buy or sell securities through these authorized brokers.

6. Association of Individuals: A stock exchange is essentially an association or body consisting of individuals, which can be either registered or unregistered.

7. Recognition by the Central Government: As an organized market, a stock exchange requires official recognition from the Central Government.

8. Adherence to Rules: All buying and selling transactions in securities at the stock exchange are governed by the rules and regulations of the stock exchange itself, as well as the guidelines set by the Securities and Exchange Board of India (SEBI). No deviations from these rules and guidelines are permitted.

9. Specific Location: A stock exchange is a specific marketplace where authorized brokers gather daily (on working days) in trading circles to conduct trading activities. The prices of various traded securities are displayed on electronic boards. The market closes after working hours, and all operations of the stock exchange are managed and controlled through computers and electronic systems.

10. Financial Barometers: Stock exchanges serve as financial barometers and indicators of a nation's economic development. The index of a stock exchange reflects the industrial growth and stability of the country's economy..

### *1.5 FACTORS AFFECTS STOCK EXCHANGE:*

(A) Company news and performance Here are some company-specific factors that can affect the share price:

- news releases on earnings and profits, and future estimated earnings
- announcement of dividends
- introduction of a new product or a product recall
- securing a new large contract
- employee layoffs
- anticipated takeover or merger
- a change of management

(B) Industry performance often, the stock price of the companies in the same industry will move in tandem with each other. This is because market conditions generally affect the companies in the same industry the same way. But sometimes, the stock price of a company will benefit from a piece of bad news for its competitor if the companies are competing for the same market.

(C) Investor sentiment Investor sentiment or confidence can cause the market to go up or down, which can cause stock prices to rise or fall. The general direction that the stock market takes can affect the value of a stock:

- Bull market – a strong stock market where stock prices are rising and investor confidence is growing. It's often tied to economic recovery or an economic boom, as well as investor optimism.
- Bear market – a weak market where stock prices are falling and investor confidence is fading. It often happens when an economy is in recession and unemployment is high, with rising prices.

(D) Economic factors:

1. Interest rates The RBI can raise or lower interest rates to stabilize or stimulate the Indian economy. This is known as monetary policy. If a company borrows money to expand and improve its business, higher interest rates will affect the cost of its debt. This can reduce company profit sand the dividends it pays shareholders. As a result, its share price may drop. And, in times of higher interest rates, investments that pay interest tend to be more attractive to investors than stocks.
2. Economic outlook if it looks like the economy is going to expand, stock prices may rise. Investors may buy more stocks thinking they will see future profits and higher stock prices. If the economic outlook is uncertain, investors may reduce their buying or start selling.
3. Inflation Inflation means higher consumer prices. This often slows sales and reduces profits. Higher prices will also often lead to higher interest rates. For example, the RBI may raise interest rates to slow down inflation. These changes will tend to bring down stock prices. Commodities however, may do better with inflation, so their prices may rise.
4. Deflation Falling prices tend to mean lower profits for companies and decreased economic activity. Stock prices may go down, and investors may start selling their shares and move to fixed income investments like bonds. Interest rates may be lowered to encourage people to borrow more. The goal is increased spending and economic activity. The Great Depression (1929-1939) was one of the worst periods of deflation ever.
5. Economic and political shocks Changes around the world can affect both the economy and stock prices. For example, a rise in energy costs can lead to lower sales, lower profits and lower stock prices. An act of terrorism can also lead to a downturn in economic activity and a fall in stock prices.
6. Changes in economic policy If a new government comes into power, it may decide to make new policies. Sometimes these changes can be seen as good for business, and sometimes not. They may lead to changes in inflation and interest rates, which in turn may affect stock price.

As of February 2025, the BSE had 5,595 listed firms, whereas the rival NSE had about 2,084 as of February, 2025. Out of all the listed firms on the BSE, only about 500 firms constitute more than 90% of its market capitalization the rest of the crowd consists of highly illiquid shares.

Almost all the significant firms of India are listed on both the exchanges. The BSE is the older stock market but the NSE is the largest stock market, in terms of volume. As such, the NSE is a more liquid market. In terms of market cap, they're both comparable at about $ 5,666.221 bn in Sep 2024.

Both exchanges compete for the order flow that leads to reduced costs, market efficiency, and innovation. The presence of arbitrageur keeps the prices on the two stock exchanges within a very tight range.

Indian stock market is the oldest among all in Asia. Today BSE and NSE are the two most advanced and best stock exchanges of India. In this article, we will take you through the history of BSE and NSE.

### *1.6 Research Objectives*

The primary objectives of this study are:

1. To analyze the effectiveness of different stock valuation models, including **Buffett Valuation Model, Interest Rate Valuation Model, and PE Ratio Valuation Model**.
2. To assess the impact of macroeconomic factors such as **interest rates and market fluctuations** on stock prices.
3. To compare the effectiveness of valuation models in predicting stock market trends and investment opportunities.
4. To provide insights into investment decision-making by evaluating the applicability of various stock valuation techniques.
5. To contribute to financial literature by offering a structured comparative analysis of valuation models.

### *1.7 Limitations of research*

Every research study, irrespective of its design or methodology, is subject to certain limitations that can influence the depth, accuracy, and generalizability of its findings. This study is no exception. Although it endeavors to present a comprehensive evaluation of the Indian stock market through a multi-model valuation approach, several constraints may have affected the outcomes and scope of the analysis.

Dependence on Secondary Data: The entire analysis is based solely on secondary data collected from financial databases, stock exchanges, and published reports. The study period is confined to a fixed timeline—from 31st December 2000 to 31st December 2024—which may not fully capture broader economic cycles or future market trends.

Limited Factors Considered: The research focuses on stock market valuation using three specific models (Buffett, Interest Rate, and PE Ratio Valuation Models) and considers a select set of macroeconomic factors. However, other significant determinants—such as political events, fiscal policy, global economic shifts, investor psychology, or geopolitical tensions—are not incorporated, which could influence market valuation.

Software and Analytical Limitations: The data analysis in this study was conducted using statistical and financial software tools. While these tools enhance accuracy and efficiency, there is always a margin of error associated with the computation of coefficients and variables. Therefore, the results generated by such tools cannot be assumed to be 100% accurate or error-free.

## 2.Research Methodology

### *2.1Research Problem:*

Stock market valuation is critical for investors, policymakers, and financial analysts to make informed decisions. However, the accuracy and effectiveness of valuation models remain a challenge due to varying market conditions, macroeconomic factors, and investor sentiments. This study seeks to evaluate the efficiency of three prominent stock valuation models—Buffett Valuation Model, Interest Rate Valuation Model, and PE Ratio Valuation Model—in predicting stock prices and investment opportunities in the Indian stock market. It also aims to examine how macroeconomic factors such as interest rates, inflation, and market trends influence stock valuation.

#### 2.1.1 Hypothesis:

**Alternative Hypothesis (H1):**

The effectiveness of stock valuation models varies significantly in predicting stock market trends and investment opportunities.

Sub-Hypotheses:

- H1a: The Buffett Valuation Model provides a more accurate estimation of stock intrinsic value compared to the other two models.
- H1b: Interest rate fluctuations significantly impact stock prices and their valuation under the Interest Rate Valuation Model.
- H1c: The PE Ratio Valuation Model is a reliable indicator of stock overvaluation and undervaluation in the Indian stock market.

**Null Hypothesis (H0):**

There is no significant difference in the effectiveness of different stock valuation models in predicting stock prices and investment opportunities.

### *2.2 Research Design*

The study follows a **quantitative research method** , employing a **comparative and analytical research design** to evaluate stock market valuation models. The methodology integrates financial modeling techniques with statistical analysis to assess the accuracy of stock price movements and valuation.

### *2.3 . Data Collection and Methods*

**Secondary Data**

- **Stock Price Data:** Historical and real-time stock prices sourced from stock exchanges (NSE, BSE, NYSE, NASDAQ).
- **Macroeconomic Indicators:** Interest rates, inflation rates, and GDP trends.
- **Financial Databases:** Data retrieved from Bloomberg, Yahoo Finance, and official stock exchange reports.
- **Regulatory Reports:** Documents from SEBI, RBI, and the Federal Reserve regarding stock market regulations and monetary policies.
- **Academic Literature:** Peer-reviewed journal articles, financial reports, and previous research studies on stock valuation models.

### *2.4. Research Models Used*

Three distinct stock valuation models are employed:

**Buffett Valuation Model**

The Buffett valuation model helps investors determine if a country's stock market is undervalued or overvalued.

**Interest Rate Valuation Model**

- Assesses how fluctuations in interest rates impact stock prices.

**PE Ratio Valuation Model**

- Analyzes the price-to-earnings (P/E) ratio as an indicator of stock overvaluation or undervaluation.
- Compares industry benchmarks to assess stock performance.

## 3.Data analysis

### *3.1 Buffett valuation model analysis*

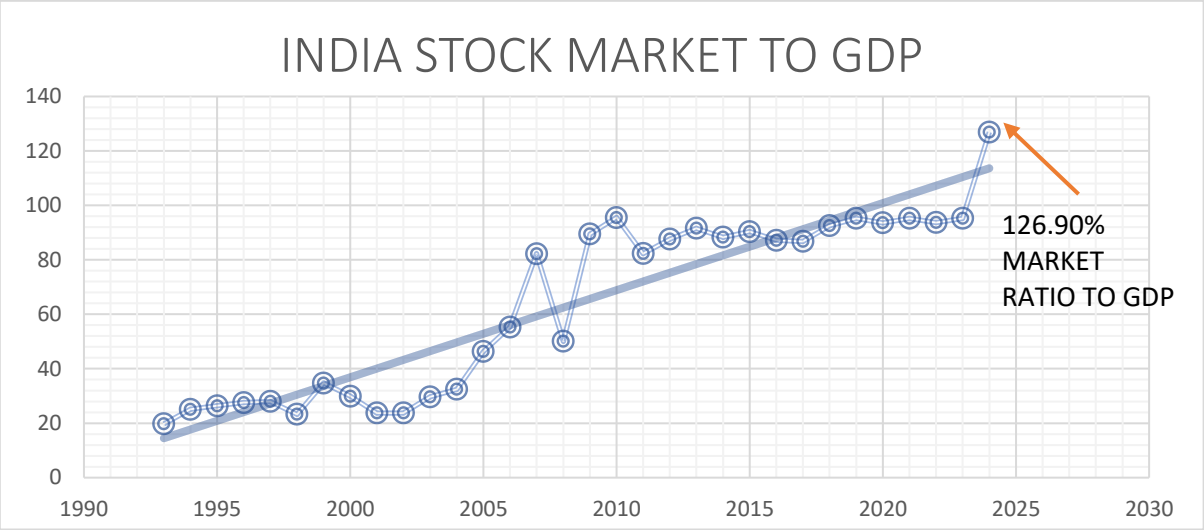



**Fig no. 3.1.1: Indian market compare to trand line**

**INTERPRETATION:-**

In this chart, the "Historical Trend Line" is an exponential regression line illustrating the historic growth rate of the Buffett Indicator ratio. Given the high volatility of the stock market value, the ratio tends to deviate from the trend line quite materially, sometimes for decades at a time.

The standard deviation gives insight into how relatively high or low the observed Buffett Indicator values are from the historical trend line. Bands showing +/- one and two standard deviations can be mapped onto the data, and are shown below:

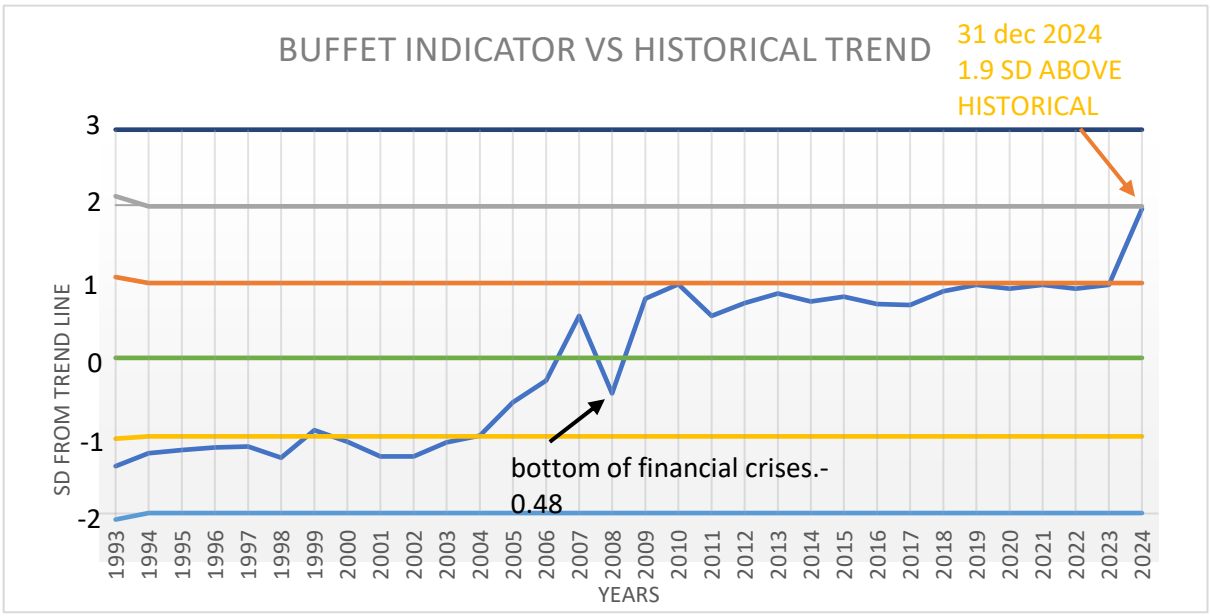



**Fig no .3.1.2: buffet indicator vs historical trend**

These standard deviation bands correspond with CMV ratings to estimate overall stock market over/undervaluation. As illustrated, **the current Buffett Indicator value of 126.90% is 1.90 standard deviations above the trend line, indicating the market is overvalued by 13.90%.**

And finally, below is the same chart normalized to show the historical average and standard deviation bands as straight horizontal lines, making it a bit easier to view trends over time.

***3.2 PE Ratio Valuation Model analysis***

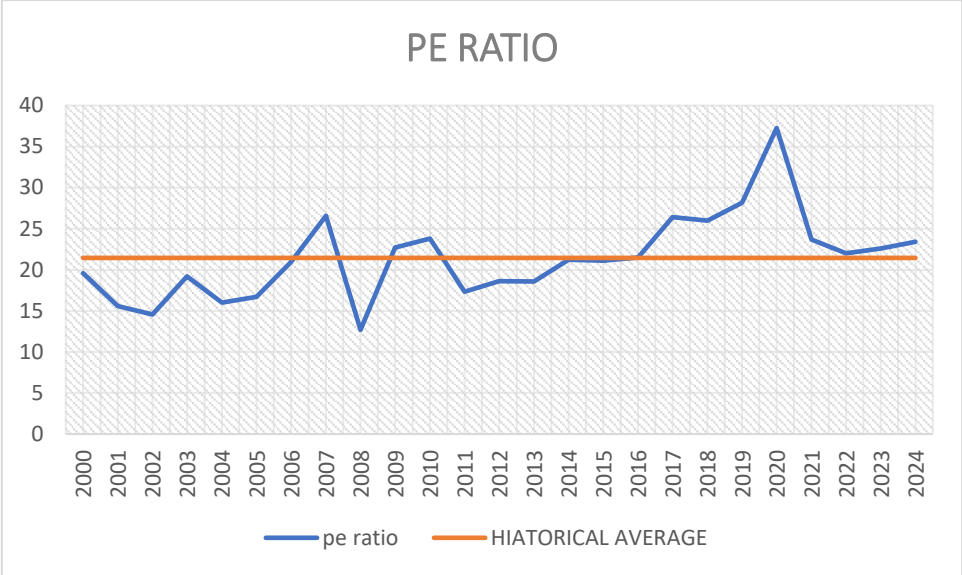



**Fig no . 3.2.1: pe ratio**

**INTERPRETATION:-**

- The PE Ratio Valuation Model decisively analyzes the Price-to-Earnings (P/E) ratio of the Nifty 50 index against its historical average, clearly revealing whether the market is overvalued, undervalued, or fairly valued.

Key Observations:

Historical Average PE Line (Orange):

- This benchmark is crucial; a current P/E ratio above this line unequivocally indicates overvaluation, while a ratio below it signifies undervaluation.

Year-wise Interpretation:

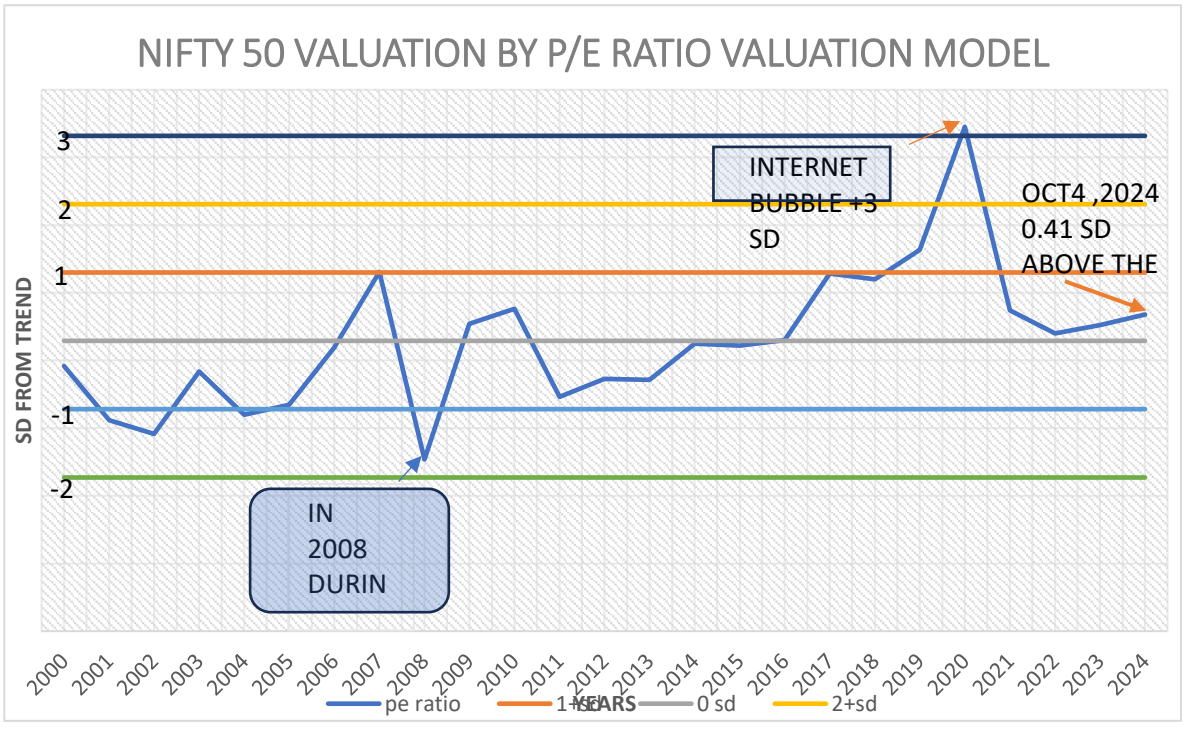
Undervalued Periods (P/E Ratio < Historical Average):

- 2001–2005: The P/E ratio consistently lagged below the historical average, presenting an attractive opportunity for long-term investors.
- 2008–2009:A dramatic decline underscored significant undervaluation during the Global Financial Crisis, offering a prime value-buying opportunity.
- 2011–2014: The ratio remained slightly under the average, confirming a fair value or undervaluation scenario.

Overvalued Periods (P/E Ratio > Historical Average):

- 2006–2007:A sharp rise in the P/E ratio signaled a speculative market phase that should have raised red flags.
- 2017–2021 (especially 2020): Extreme overvaluation was evident, driven by post-COVID recovery euphoria coupled with suppressed earnings.
- 2022–2024: Although P/E ratios have declined, they are stabilizing near the average, indicating that the market is confidently transitioning toward fair valuation.

**Fig no .3.2.2: nifty 5o valuation by p/e ratio valuation model**



The chart above displays the same ratio data series as the previous chart; however, the y-axis has been adjusted to a baseline of 0, corresponding to the average CAPE ratio value of 21.45. It now illustrates horizontal bands that indicate standard deviations from this average. This presentation aligns with our other valuation models.

Current Position

As of December 31, 2024, the Nifty 50 P/E ratio stands at 23.4%, which is 0.41 standard deviations above its modern era average. Based on this valuation, the market is considered to be slightly overvalued by 9.1%.

***3.3Interest Rates Valuation model***

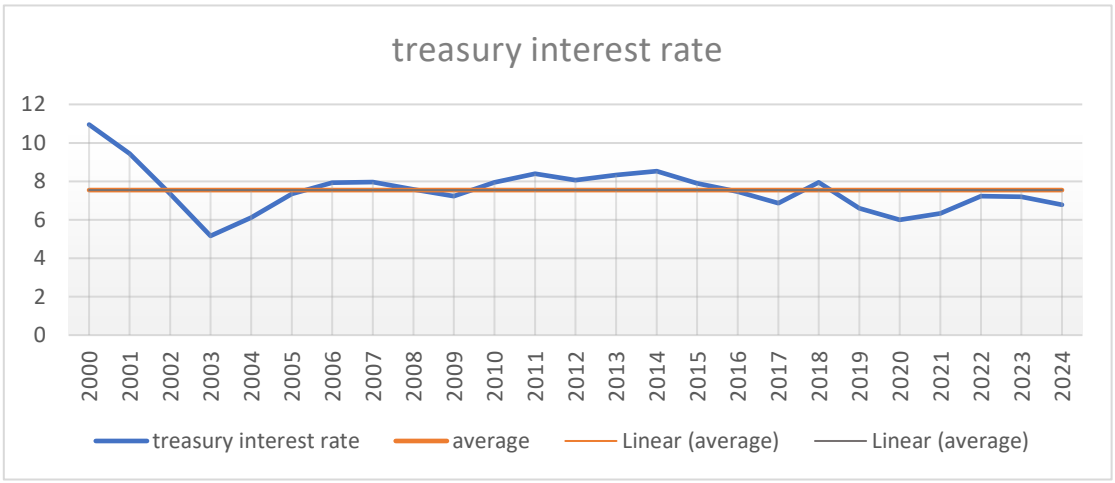



**Fig no .3.3.1:treasury interest rate**

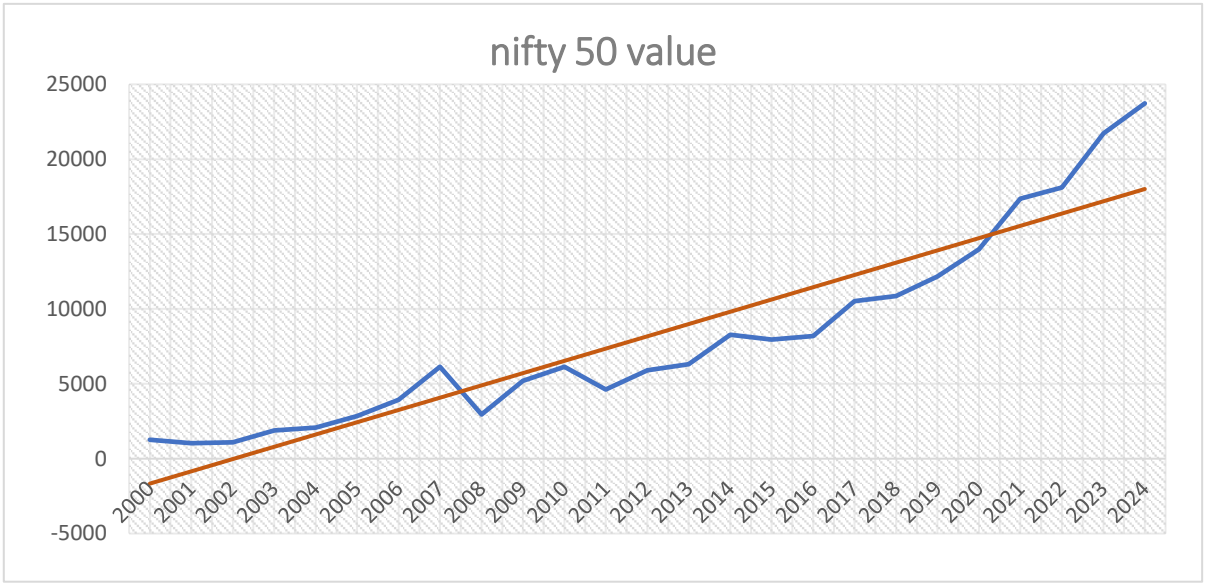



**Fig no .3.3.2:nifty 50 value**

**INTERPRETATION:-**

Over the past 24 years, Treasury bond rates have fluctuated significantly, peaking in 2013 and 2014 due to high inflation. Since then, rates have steadily declined, reflecting a prolonged period of accommodative monetary policy.

The long-term average rate during this period is 7.54%, a level not reached in nearly two decades. This suggests that in a healthy economy, rates may eventually revert to higher levels, though the timing remains uncertain. When compared to the inflation-adjusted Nifty 50 index, an inverse relationship is observed: as interest rates declined, the Nifty 50 consistently rose, reflecting increased investor interest in equities amid lower bond yields.

This trend has kept the Nifty 50 above its long-term trendline in recent years. However, if interest rates rise again, equity valuations may face pressure. Understanding this relationship is essential for evaluating future market risks and opportunities, especially in the context of changing monetary policy.

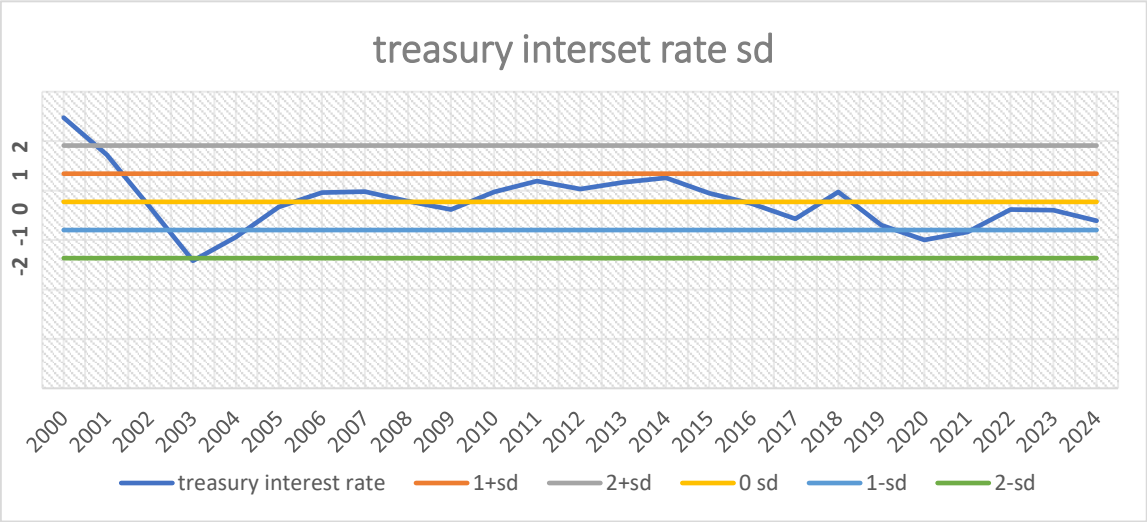



**Fig no .3.3.3: treasury interest rate sd**

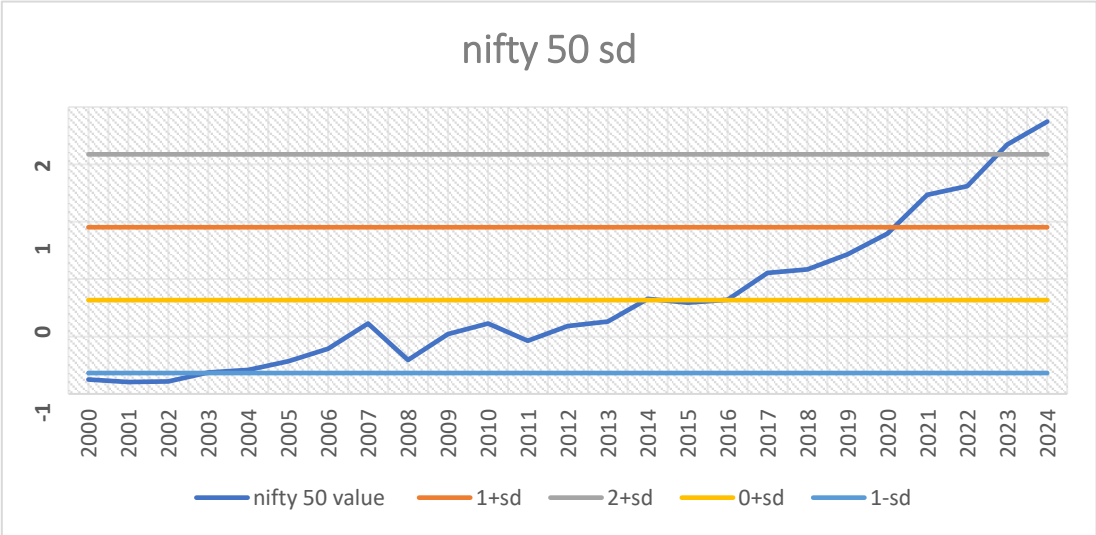



**Fig no .3.3.4:nifty 50 sd**

Instead of analyzing raw values, we can assess Treasury interest rates and equity indices relative to their respective long-term trend lines. By measuring deviations in terms of standard deviations (SD), we gain a clearer perspective on whether each metric is currently over- or under-performing.

In the left chart, the latest Treasury bond rate stands at 0.68 SD below its historical average, indicating rates are still relatively low compared to the norm. On the other hand, the right chart reveals that the Nifty 50 (inflation-adjusted) is 2.48 SD above its trend line.

This significant divergence suggests that the stock market is highly overvalued relative to historical performance. Such a large positive deviation in equities, coupled with suppressed interest rates, highlights a potentially overheated market environment.

### *3.4 Key Findings of the Report*

1. **All three valuation models—Buffett, Interest Rate, and PE Ratio—indicate that the Indian stock market is currently overvalued.**
2. **The Buffett Valuation Model shows the market is highly overvalued**, with the current value at **1.90 standard deviations above** its historical trend line.
3. **The Interest Rate Valuation Model reveals that the Nifty 50 is 2.48 standard deviations above trend**, while Treasury bond rates are 0.68 SD below average—indicating a significantly overheated market.
4. **The PE Ratio Valuation Model suggests the market is only slightly overvalued**, with a current deviation of **0.41 standard deviations above** its long-term average.
5. **Each model offers a different perspective**—the Buffett model focuses on overall market value, the Interest Rate model links equity returns to bond yields, and the PE Ratio model focuses on company earnings.
6. **No single model provides complete accuracy**, so a multi-model approach is essential for understanding true market conditions.
7. **Among the three, the PE Ratio Valuation Model is considered most effective**, as it offers a stable and earnings-based view of market valuation.

## 4.conclusion

This research report aimed to provide a comprehensive evaluation of the Indian stock market's valuation through a **multi-model approach**, applying three well-recognized valuation models: the **Buffett Valuation Model**, the **Interest Rate Valuation Model**, and the **Price-to-Earnings (PE) Ratio Valuation Model**. Each of these models serves a unique purpose, offering a different lens through which to assess whether the market is overvalued, undervalued, or fairly valued. The study focused not only on model effectiveness but also on the importance of considering macroeconomic variables like interest rates, inflation, and investor sentiment in stock valuation.

All three models suggest that the **Indian stock market is currently overvalued**, though they vary in the degree of deviation from the historical trend. The **Buffett Valuation Model** shows a sharp deviation of **1.90 standard deviations above the long-term trend**, reflecting that the market is **highly overvalued by approximately 13.9%**. Similarly, the **Interest Rate Valuation Model** highlights a significant imbalance: while the Nifty 50 is **2.48 standard deviations above its inflation-adjusted trend line**, Treasury bond yields are **0.68 standard deviations below their long-term average**, further reinforcing the perception of an overheated equity market.

In contrast, the **PE Ratio Valuation Model** shows that although the market is overvalued, the extent is relatively moderate. As of December 2024, the Nifty 50's PE ratio stands **0.41 standard deviations above** its historical average, implying a **mild overvaluation of around 9.1%**. This suggests a more stable market position when compared with the other two models, making the PE ratio approach more balanced and grounded in real-time earnings dynamics.

The analysis also emphasizes that **no single model offers a complete or perfect understanding of market conditions**. Each model has limitations based on the variables it uses—some focusing on macroeconomic indicators, others emphasizing historical growth or earnings patterns. Therefore, relying solely on one method could present a narrow or skewed picture. Instead, this report recommends a **multi-model valuation strategy** for investors and analysts to capture a broader, more nuanced understanding of the market.

Among the three models assessed, the **PE Ratio Valuation Model emerges as the most practical and investor-friendly** tool. It aligns closely with actual earnings performance and reflects market behavior more consistently. Its effectiveness lies in its simplicity, real-time application, and historical relevance, especially in rapidly changing market conditions.

### *4.1 Future Recommendations*

In light of the comprehensive analysis presented in this study, several directions are suggested for future research to enhance the scope, depth, and practical relevance of stock market valuation frameworks:

**1. Inclusion of Additional Valuation Models**

While this research employed the Buffett Valuation Model, Interest Rate Valuation Model, and PE Ratio Valuation Model, future studies can integrate more advanced or alternate models such as the Discounted Cash Flow (DCF) Model, Price-to-Book (P/B) Ratio, and Residual Income Model. These models can provide a broader perspective on intrinsic valuation, particularly for sectors where earnings-based models may not suffice.

**2. Sectoral and Company-Specific Analysis**

Future research should consider conducting sector-specific evaluations (e.g., IT, pharma, banking, FMCG) using the selected models. Such segmentation would help in identifying valuation anomalies unique to industries and improve the practical application of valuation insights for sector-based investment strategies.

**3. Comparative Global Analysis**

An effective extension would be to compare Indian stock market valuation with global stock indices like S&P 500, FTSE 100, or Nikkei 225. This would not only position the Indian market within a global framework but also identify inter-market valuation trends and spillover effects.

**4. Integration of Behavioral and Sentiment Analysis**

Investor sentiment and behavioral finance factors such as market overreaction, herd behavior, and psychological biases were not addressed in this study. Including quantitative sentiment indices or survey-based investor confidence data could enrich the understanding of price deviations beyond economic fundamentals.

**5. Real-Time Dynamic Modeling**

The current study is based on historical data up to December 2024. A future recommendation is to develop a real-time valuation monitoring tool, possibly integrating APIs from financial platforms (e.g., NSE, BSE, Yahoo Finance), allowing continuous tracking of market valuation aligned with each model.

**6. Broader Macroeconomic Variables**

Although key macroeconomic variables such as interest rates and inflation were analyzed, future work can include additional indicators like exchange rates, crude oil prices, fiscal policy changes, GDP forecasts, and FDI inflows, which significantly affect stock market behavior in emerging markets like India.

**7. Model Accuracy Backtesting and Portfolio Simulation**

Future research should employ backtesting techniques to evaluate how accurately each valuation model would have predicted actual market returns. Furthermore, constructing model-based hypothetical portfolios can help assess the real-world applicability of these models in investment decision-making.

**8. Investor-Type Specific Strategy**

Future studies can differentiate the relevance of these valuation models based on investor categories such as institutional investors, retail traders, long-term investors, or value investors. This classification will provide more customized and applicable valuation tools for varying risk appetites and investment goals.

**9. Longitudinal and Crisis-Period Analysis**

Expanding the data range to include historical events such as the 1991 Indian economic reforms, the 1997 Asian crisis, the 2008 global financial crisis,

and the 2020 COVID-19 crash can help test model robustness across market cycles and black swan events.

**10. Policy and Regulatory Implications**

Given that valuation models can signal periods of market overvaluation or instability, future research can explore how such frameworks could be used by regulatory bodies like SEBI or RBI to develop early warning systems, investor awareness programs, or market intervention strategies.

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