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# EVALUATING EFFECTIVENESS OF IPO PRICING IN THE INDIAN MARKETS

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**Abstract**

The Indian IPO market has also been growing at a rapid rate in the recent past with companies from various sectors of business listing on the market to mobilize funds. Indian IPO valuations are influenced by various factors such as economic environments, regulatory announcements, sentiment of investors, and firm-specific events. This study aims to analyze the trend in IPO pricing in India from 2016 to 2025 in terms of average IPO prices, IPO issuance, most active IPO sectors, and performance of IPOs post-listing. The study uses data from various sources such as company prospectuses, stock exchange websites, and financial newspapers. The findings show that the average IPO valuations have increased significantly over the years, with the highest valuation achieved by the technology, financial service, and consumer goods sectors. The study further picks on the impact of retail participation on IPO valuations, and investor sentiment as determinants for the success of IPOs. Overall, the study illuminates the dynamics of the IPO market in India and provides valuable information to investors, policymakers, and market participants.

**Keywords:** PAT, Retail Subscription, Valuation, IPO Efficiency, P/E Ratio, T Test, Man Whitney U Test, Levene's Test, One Sample T Test, Crowding Out.

## 1. INTRODUCTION

Initial Public Offerings (IPOs) are one of the most important and critical elements that make up the financial markets in the world since it provides companies with a vehicle to take that next step into their growth strategy and expansion as it bridges public companies with massive wealth brought forth by public investors.

An Initial Public Offering (IPO) is the original occurrence of a company issuing its stock to the public. In India, IPOs act as a way for businesses to raise capital while providing the ability for investors to obtain ownership in a publicly traded corporation. To go public, a company has to comply with the rules set by the Securities and Exchange Board of India (SEBI) and has to list its shares on a stock exchange, either the National Stock Exchange (NSE) or the Bombay Stock Exchange (BSE). The IPO procedure involves drafting and filing a preliminary red herring prospectus with SEBI and acquiring the approvals of both SEBI and the stock exchanges.

After launching the IPO, investors can bid for the shares within the IPO period, and the company will allot the shares subject to demand and price. Following the IPO, the shares get listed and can be traded on the stock exchange. The success of an IPO may vary and depends upon several factors such as market conditions, the financial position of the company, sectoral performance, and investor attitude.part from bringing in funds, IPOs and going public brings several other benefits.

Besides generating capital, IPOs benefit companies, investors, and the economy in a number of ways.

Some of the major advantages are:

1) Brand Value and Credibility Increased – Going public provides the company with increased visibility, credibility, and reputation in the marketplace that can help it attract customers, business partners, and quality staff.
2) Early Shareholders' Liquidity – IPOs provide early shareholders, venture capitalists, and founders with an exit opportunity through the possibility of selling their shares in the open market.
3) Stock as Currency for Mergers & Acquisitions – Public companies can use their stock as currency to purchase other companies, facilitating growth and expansion.
4) Increased Access to Debt Financing – A listed company will have a better chance of securing loans or issuing debt on favorable terms due to greater transparency and market trust.
5) Employee Incentives and Retention – IPOs enable companies to award stock options or equity-based incentives to employees, which can enhance motivation, retention, and productivity.
6) Corporate Governance and Market Discipline – The publicly traded companies are governed and closely managed, leading to greater governance, transparency, and financial discipline.
7) Opportunities for Growth and Expansion – The funds mobilized through an IPO can be used not only for short-term financing needs but also to fund long-term strategic initiatives, including expansion in new territories or R&D spending.

These benefits make IPOs an appropriate option for companies seeking to grow and strengthen their market position for purposes other than financial gains. The pricing of an Initial Public Offering (IPO) is a crucial aspect of the IPO process and is done by a combination of the following factors:

1) Market conditions: The overall health of the stock market and the willingness to buy new issues determine the price of an IPO.
2) Financial performance: The company's financials, including revenues, earnings, and growth potential, are considered while determining the IPO price.
3) Peer companies: The IPO price is also compared with peer companies in the same industry or sector to arrive at a fair market value.
4) Size of the issue: The amount of shares offered as well as the amount of capital raised also affects the IPO price.
5) Demand: The investors' demand for the shares of the company also affects the IPO price.

The IPO price is determined by a consensus effort among the company, its underwriters, and the investment bank managing the offering. Through the use of market research, the underwriters determine the demand for the shares of the company and make suggestions about the IPO price. For a particular stock, IPO underpricing is the situation where the opening price is less than the closing price on the first day of trading. IPO overpricing of a particular stock is when the listing price is more than the closing price on the listing day. The company and the management will decide the IPO price, keeping in mind the recommendations of the underwriters and the market conditions. It should be kept in mind that an IPO price is not fixed

and can fluctuate during the offering period depending on the demand and market sentiment. Moreover, the amount at which the shares are being offered in the IPO does not necessarily indicate their future market value.

One such overpriced IPO in India is the March 2017 listing of Bharat Road Network Limited (BRNL). The company, which owns a toll road in the Uttar Pradesh state, was valued at INR 1,200 crore (USD 180 million) when it listed. Its performance has been poor since, with the stock price declining by over 60% from its initial public offering. Based on a study by Business Standard, BRNL's valuation was much higher compared to its peer group in the infrastructure space with the company having a price-to-earnings ratio of over 20 versus the industry average of about 15.

As India continues to be one of the fastest growing economies and said to be the country with the most potential by many economists, there has been a rapid growth in the number of companies and businesses. As they aim to expand, there has been a surge in the number of IPOs as a method to fund these projects and strategies. In 2024, India was the economy with most number of IPOs and second most amount raised in IPOs.


**Figure 1: Amount raised and Number of IPOs in India**

This research is an attempt to explore the valuation methods, their accuracy and effectiveness and IPO stock gains and performances. It also looks at the different factors that affect IPOs and its valuations along with its significance.

## 2. LITERATURE REVIEW

IPO pricing has been a widely researched topic due to its impact on investor returns and market efficiency. Studies have explored various factors influencing IPO valuation, including underpricing, valuation methods, underwriter incentives, investor behavior, and ownership structures.

(Swain, 2022) One of the most well-documented trends in IPOs is underpricing, where shares are issued below their actual market value, leading to sharp price increases on the first day of trading. Several theories attempt to explain this. Information asymmetry theory (Rock, 1986) predicts that better-informed investors gain at the cost of less-informed ones, whereas signaling theory (Allen & Faulhaber, 1989) predicts that well-performing firms intentionally under price

their IPOs to signal long-term growth prospects. Other studies identify factors such as underwriter reputation (Beatty & Ritter, 1986) and market timing strategies (Ritter, 1984) as major determinants of IPO pricing. Inspite of these findings, (Swain et al., n.d.) note that further research is required on how underpricing differs across industries and the optimal timing strategies for an IPO.

(Eberhart et al.,n.d.)Valuation methods techniques also have an important role to play in IPO pricing.. (Kim & Ritter, 1999) tested the comparable firms' method, which employs Price-to-Earnings (P/E), Price-to-Sales (P/S), and Market-to-Book (M/B) ratios to estimate IPO values. Their results indicate that these techniques are less accurate reliable companies because of discrepancies in industry multiples. Nevertheless, projected earnings greatly enhance valuation precision, lowering absolute prediction errors from 55% to 28.5%.

(Espenlaub et al., 2024) Another key feature of IPO pricing is the role of underwriters and their incentives. (Espenlaub et al., 2024) examined 1,155 Hong Kong IPOs and concluded that higher incentive fees for underwriters result in more accurate pricing, improved pricing adjustments, and lower first-day returns. Their study finds that highly compensated underwriters undertake better due diligence, lowerirng dependence on information received from investors and enhancing overall price discovery. It calls into question the conventional hypothesis that IPO prices are mainly dictated by investors.

(Monikar, 2023) examined Indian IPOs during the years 2021-2022, when COVID-19 and global economic instability affected markets. Analyzing 103 IPOs, it was discovered by the research that IPOs during 2021 were well subscribed and gave good returns, while IPOs in 2022 experienced lesser investor interest and heightened volatility. Institutional investors, particularly Qualified Institutional Buyers (QIBs), were largely responsible for IPO stabilization, although their lower participation in 2022 made post-listing performance weaker. Furthermore, 65-73% of 2021 IPOs and 62-68% of 2022 IPOs were underpriced, reflecting persistent mispricing across the market

(Ong et al., 2020) determined that book-building mechanisms, which take institutional investor input into consideration, produce more accurate prices.

(Ong et al., 2020) established that underpricing is still largely practiced for purposes of attracting investors, but institutional presence ensures a stable post-IPO performance. One of the most widely debated area of IPO performance is underpricing. Studies indicate that Indian market IPOs tend to be underpriced, with large listing day returns.

A longitudinal analysis of 2014-2023 IPOs revealed the average listing day returns to be between 18.98% and 26.35% (Kundnani et al., n.d.).

Such underpricing favors short-term investors but frequently leads to long-term subpar performance because most IPOs find it hard to sustain initial valuations. In the same way, yet another study across IPOs 2012 to 2022 established a critical association between listing gains in the short term and stock performance over the long run, highlighting prudent pricing mechanisms' need for steady growth (Aloysius & Tamilmaran, 2024). Its effects differ for various industry groups.

Research analyzing IPOs in industrial, financial, and service sectors using Market Adjusted Abnormal Return (MAAR) and Ordinary Least Squares Regression (OLS) models indicated that variables like listing gains, levels of oversubscription, issue price, and size of the issue significantly determine IPO underpricing. Yet, market index returns were found to have no material effect (Krishnan et al., 2025).

The findings revealed the occurrence of anomalous returns, indicating that IPO pricing strategies must be improved to maximize market efficiency (Kumar, 2024).

Furthermore, a ranking based analysis comparing IPOs over a three-year stabilization period also concluded that post listing performance tended to be below investors' expectations. This difference indicates that IPO prices would not accurately represent the fundamental efficiency of a company but rather are driven by speculative activities and short-term market sentiment (Biswas & Joshi, 2023). The pricing efficiency of IPOs in the Indian market has also been challenged. A research examining IPOs listed from January 2021 to April 2021 concluded that Indian IPOs tend to be undervalued, such that issuers leave money on the table (Nusrathunnisa et al., 2023). Regression analysis revealed no material association between the age of companies, holdings of promoters, or size of the IPO with listing day returns or short-term returns (10-day horizon), and thus these do not have material effects on IPO pricing effectiveness.

The study by (Deng & Zhou, 2017) analyzes the IPO pricing efficiency, with a specific emphasis on the ChiNext board in China. The study points out that even after the implementation of a bookbuilding mechanism, there are inefficiencies because underwriters do not exercise discretionary share allocation. The authors contend that institutional investors heavily depend on straightforward valuation measures like industry P/E ratios and historical financial performance in place of judicious evaluation of issuers' intrinsic value. This leads to distortions in prices and chronic underpricing. Additionally, the paper explains the principal-agent tensions generated due to the underwriter's position, where price reductions are executed in response to counteracting strategic overbidding by institutional investors, thereby resulting in inefficient pricing. The research here presents useful insights regarding IPO pricing inefficiencies, which could be applied when examining such inefficiencies in other emerging economies, like India. (Deng & Zhou, 2017)

The research investigates the contribution of IPO grading to mitigating information asymmetry and its effect on the efficiency of IPO pricing in India. Previous research has shown that IPOs are underpriced as a result of information asymmetry, with informed and uninformed investors enjoying varying degrees of access to relevant information (Rock, 1986). To counteract this, SEBI initiated IPO grading in 2006, mandating it in 2007 with a view to minimizing underpricing and helping retail investors arrive at well-informed decisions. But in 2014, SEBI declared IPO grading voluntary following the discovery of no substantial grading-under subscription index or post-listing performance correlation. Whereas some evidence is provided to suggest that graded IPOs entice higher quality institutional participation (Jacob & Agarwalla, 2015), there are others who opine that grading does little to affect the participation of retail investors or eliminate underpricing (Khurshed et al., 2018). This study takes forward this debate by examining book-built IPOs from the period 2011-2015, for both mandatory and voluntary grading phases. The research concludes that increased awareness among retail investors would make IPO grading more effective and lead to more efficient pricing in Indian capital markets. (Amable, 2018)

This paper examines two Indian IPO anomalies widely documented during the free-pricing period: first-day underpricing and long-run performance. During the post abolition of the Capital Issues (Control) Act, 1947, and its replacement with free pricing, activity in India's IPO market experienced a surge by sectors. From earlier studies (Rock, 1986); (RITTER, 1991); (LOUGHRAN & RITTER, 1995) it was affirmed that IPOs tend to reflect high listing-day underpricing as well as long-run underperformance. The research discovers that, in line with international evidence, Indian IPOs between 1992 and 2011 were substantially underpriced

with a raw average return on the listing date of 60.21%. In contrast to international results, though, the long-run performance of these IPOs was good and significant, indicating a deviation from the usual post-listing underperformance pattern experienced in the United States and other developed economies. These results join the debate about IPO efficiency in emerging markets and emphasize the requirement for additional investigation into determinants of post-listing performance and pricing mechanisms in India. (Hawaldar et al., 2021)

The research investigates whether Indian IPOs are overvalued, underpriced, or reasonably valued at the time of listing, considering firms listed between January and April 2021. Existing literature emphasizes that IPOs are undervalued because of market sentiment, asymmetric information, and book-building inefficiencies (Loughran & Ritter, 2002). A number of studies have reported high listing-day returns in both emerging and developed markets, indicating that IPOs leave issuers with money on the table (Swaminathan & Purnanandam, 2004). Although conventional valuation techniques indicate that IPOs should be priced on fundamentals, empirical research indicates a discrepancy between offer prices and market prices because of investor demand and speculation (Sahoo & Rajib, 2010). The results reveal that Indian IPOs are generally undervalued, with no significant correlation existing between listing-day returns and fundamental variables. The research adds to the increasing body of literature on IPO pricing efficiency through the identification of post-pandemic market trends and the efficacy of the book-building mechanism in India. (Nusrathunnisa et al., 2023)

The research analyzes the function of information accuracy in Initial Public Offerings (IPOs) pricing, with emphasis on the impact of information accuracy on the offer price. It has been previously proven that IPO pricing is influenced by public and private information that exists during the waiting period between filing and issuance (Rock, 1986); (Benveniste & Spindt, 1989). While previous research has investigated the impact of investor sentiment and book building procedures on IPO prices, few have examined the accuracy of the information available. Cornelli and (Cornelli & Goldreich, 2003) argue that the precision of private information affects price adjustment, but the impact of precision in public information is not yet well researched. The results indicate that noisy information is partially captured in IPO prices, supporting existing literature on market inefficiencies (Loughran & Ritter, 2002). The research adds to the literature on IPO pricing by illustrating the importance of information accuracy in price revisions, offering important insights into the role of market signals and investor behavior in IPO valuation. (F. Zhang, 2012)

In order to gain understanding of the IPO pricing efficiency system, we looked at research from across the globe. Their work involves a comprehensive study of the gradual implementation of the policies and how they have changed the IPO pricing scenario in China. Moreover, they have drawn a paramount comparison between the Hong Kong exchange and the A – Share Market (the share market of Shanghai and Shenzhen Stock Exchange, shares of mainland China based companies) to study the gaps. (Yu et al., 2021). Other works using the Chinese sample of data for comprehending efficiency in IPO pricing, includes the work of Alireza Tourani and others. For Chinese companies, (C. X. Zhang & King, 2010) note that foreign IPOs are becoming a more sought-after way to raise capital, with Hong Kong being a choice listing venue. This is due to geographical closeness, the relative maturity of Hong Kong's capital markets, and fewer regulations than in mainland China (Yang and Lau, 2006).

Moving beyond the Chinese markets, market efficiency has been a prominent issue in financial research. The work around informational efficiency and investor behavior resonates with our study. (Chordia et al., 2002, 2008) determine that order imbalances and trading volume influence price movements. Charles and Darné (2009) and Lim and Luo (2012) test weak-form

efficiency in Asian markets, offering mixed evidence regarding the predictability of stock returns. (Mobarek & Fiorante, 2014) carry this analysis further to BRIC nations, affirming that Chinese markets are less efficient than developed economies. (Tourani-Rad et al., 2016) identifies the importance of trading location, and regulatory regimes in influencing investor sentiment towards foreign IPOs. Although earlier studies are helpful in terms of cross-listing and price efficiency, gaps lie in the comprehension of Chinese foreign IPOs relative to both Hong Kong and mainland Chinese IPOs in relation to trading behavior and informational efficiency. The current research expands on this base by using high-frequency trade data and matched samples to give a detailed examination of Chinese companies listing in Hong Kong. By contrasting bid-ask spreads, return autocorrelations, and variance ratios, this study adds to the current debate regarding the impact of trading location on market efficiency.

The introduction of IPO grading as a certification tool designed to enhance the efficiency of prices has provoked great controversy in academic finance literature. Several research has analyzed its effects on investors' behavior, information asymmetry, and IPO underpricing. We summarize major findings about the impact of IPO grading on pricing efficiency with special reference to the Indian economy where grading became compulsory in 2007. The connection between IPO grading and underpricing has been professionally researched in emerging markets. (Deb & Marisetty, 2010) establish that IPO grading helps to minimize underpricing by lowering uncertainty regarding firm fundamentals. Khurshed et al. (2011) contend that grading does not have a considerable impact on pricing efficiency when market conditions and firm characteristics are controlled for.

Secondly, (Jacob & Agarwalla, 2015) examine the impact of IPO grading on demand by investor type. The findings indicate that while institutional investors express stronger demand for high-graded IPOs, retail investor demand is unaffected. This suggests that institutional investors may use grading as an added valuation tool, while retail investors may not regard grading as a key consideration in their investment decision.

The studies show that grading does not always result in reduced underpricing or better demand among retail investors, casting doubt on its efficacy in increasing market efficiency. As per (Jacob & Agarwalla, 2015) future work may investigate alternate certification mechanisms potentially more effective to influence investor decisions. Further studying the role played by digital platforms and AI-powered financial analytics for IPO evaluation has the potential to shed light on enhancing pricing efficiency in primary markets.

Studies have concentrated on valuation mistakes, underpricing, and determinants of IPO price efficiency in the NSE. This review consolidates key findings on these matters, particularly in the Indian context. IPO pricing valuation errors are the disparity between the offer price and the initial-day trading price. (Ibbotson, 1975) identified IPO underpricing as a common market anomaly, whereby newly listed shares trade at a premium on the first day. This has been well explained by issuers' intentional discounting, information asymmetry, and sentiment. Similarly, (Kim & Ritter, 1999) examined the effect of firm valuation processes on IPO prices and found that multiples-based approaches are likely to result in significant price deviations.

In the Indian market, studies by (Sahoo & Rajib, 2010) and (A. K. Singh & Kalra, 2019) identify that NSE-listed IPOs tend to have valuation errors due to market conditions, issuer characteristics, and investor composition. Their studies identify that although valuation models attempt to reflect firm fundamentals, investor demand and market sentiment override theoretical pricing.

Several market and firm-related factors influence the efficiency of IPO pricing. (Bhagat & Rangan, 2004) analyzed the impact of financial conditions, insider ownership, and banking relationships on the setting of IPO prices. Financial strength reduces price deviations, based on their findings. (Demirakos et al., 2010) analyzed U.K. market valuation practices and concluded that industry-specific conditions have a strong impact on the precision of IPO pricing.

In India, (Murugesu & Santhapparaj, 2009) established that issue size, debt-equity ratio, and net asset value (NAV) are the key determinants of pricing efficiency for NSE-listed IPOs. Empirical research by (Jacob & Agarwalla, 2015) further confirms the pivotal role of Qualified Institutional Buyers (QIBs) in determining IPO performance. Higher QIB participation is discovered to be positively correlated with improved pricing accuracy, suggesting that institutional investors' interest can contain valuation errors. (I. Singh & Nayyar, 2017) The efficiency of IPO pricing is largely contingent upon institutional reforms and regulatory policies. Governments and regulatory bodies all over the world have put in place various measures to ensure transparency, reduce underpricing, and increase market efficiency. (Monikar, n.d.) review focuses on the influence of policy interventions on IPO pricing with particular reference to IPO reforms in China. (Li et al., 2006) emphasized the necessity for increased transparency in institutional investor participation to ensure fair pricing.

Furthermore, Liu et al. (2011) contended that future policy improvements must seek to balance institutional investor dominance and retail investor access to IPO allotments. As proposed above, future research can explore the application of AI-based pricing models to further enhance IPO valuation accuracy. Comparative research on the impact of cross-country regulatory systems on IPO pricing can also provide additional information on the most effective policy tools for emerging markets. (Monikar, n.d.) Future research can enhance IPO pricing policies to facilitate better market efficiency and promote more investor confidence in public equity markets through these fields. (Massel et al., 2021) discusses comparative roles of earnings and revenue in IPO performance and concludes that revenue metrics have more impact on valuations of IPOs compared to earnings, suggesting that investors look for growth opportunities.

Authors compare large sample and find that revenue growth expectations are the cause of investor sentiment and cause greater initial valuations. In contrast, (Berkman et al., 2000) compare PE and DCF valuation methodology and find that both have obvious mistakes that lead to IPO mispricings. They highlight the need for accurate forecasting models and note how diverse industries have degrees of valuation errors.

Studies and analysis of the long-term performance in the stock shows a pattern of underperformance of IPO companies over the long-run, consistent with global market trends (Shukla & Shaw, 2023). The authors attribute such underperformance to initial aggressive valuations, post-IPO earnings management and absence of persistent investor confidence. (Baluja & Singh, 2019) examine the survivability of Indian IPOs, showing that favorable market conditions have a large impact on long-term survivability with an accelerated failure time model.

According to their results, companies entering the market during bull phases perform better and companies listing during bear phases have a greater chance of being delisted early. The theory of asymmetric information (Rock, 1986) is supported by (S. Singh & Singh, 2008) which explores the relationship between underpricing and oversubscription in the Indian initial public offerings market and concludes that highly oversubscribed IPOs are more underpriced.

(Murugesu & Santhapparaj, 2009) concentrate on valuation mispricing in Malaysia's IPO market, and identify inefficiencies related to initial prices that consider long run performance. Based on their evidence, emerging market pricing mechanisms significantly miss fundamental firm value and generate distorted investor perception and subsequent price correction.

## 3. RESEARCH METHODOLOGY

### 3.1 Research Problem

The objective of this research is to recognize and examine the IPO valuations of Indian companies over the years by analyzing fundamentals like Profit After Tax, Price-to-Earnings Ratio, and company performance. It also involves conducting various statistical tests to ascertain the impact of these factors on changes in IPO valuation trends across different circumstances, including the Covid-19 pandemic.

### 3.2 Research Objectives

1) To evaluate IPO performance on listing day, and one month and one year after listing.
2) To identify the significance of financial ratios such as the P/E Ratio and PAT in accounting for IPO performance.
3) To investigate the impact of heightened retail investor activity in the equity market on IPO valuations post-COVID-19.

### 3.3 Objective 1

Event Study: The research was conducted using an event study method, which involved measuring the post-IPO performance on the listing day, over a month of daily data, and over a year of daily data for the selected IPO.

Selection of IPO: The 37 IPOs were randomly chosen from 2000 to 2022, without focusing on or selecting any particular sector for the study.

Data Sources: The data for all selected IPOs has been sourced from the official website of the former Bombay Stock Exchange (www.bseindia.com).

Analytical Tools: The research employs the One Sample T test to determine the significance of the value, and subsequently uses the 2 Outcome Binomial test (Proportions Test) to understand the further level of significance of the selected IPOs.

### 3.4 Objective 2

To conduct this study, we collected data on IPOs since 2016, including their PAT, PE ratio, and short-term performance. An independent sample t-test was performed to determine if performance is significantly influenced by higher PAT or higher PE. The independent sample t-test is conducted with the Jamovi software. The data was gathered from different companies' annual reports and screener.in.

### 3.5 Objective 3

To determine the effect of retail investor participation on post-COVID-19 IPO valuations, the following multi-step procedure was employed:

**Data Collection:** IPOs from the financial and manufacturing industries were studied, both in the pre-COVID (2016–2019) and post-COVID (2020–2023) time periods. The issue price, subscription percentages, post-listing price performance, and percentage of retail subscriptions were some of the key variables.

**Influencing Factors Identification:** Possible factors that could drive IPO valuation were recognized, including general market patterns, industry-specific drivers, company fundamentals, and investor sentiment.

**Statistical Analysis:** Statistical analysis, specifically paired sample t-tests, was applied to analyze the relationship between subscription levels in retail and IPO valuations based on P/E ratios as the valuation metric of choice. Hypothesis testing was also utilized to test the statistical significance of the observed trends.

**Interpretation:** The findings were interpreted to establish whether retail investor activity had a measurable impact on IPO pricing post-COVID-19. Where a statistically significant relationship was observed, it was inferred that increased retail participation had a direct impact on valuations. However, it was acknowledged that multiple other external and internal factors could also have played a role during this period.

**Valuation Metric:** The P/E ratio, where the stock price is divided by the earnings per share (EPS), was employed as the main measure of IPO valuation.

**Software Used:** Jamovi was used to carry out the analysis, allowing for strict comparison using the paired sample t-test approach.

This systematic process guaranteed a sound and statistically accurate examination of the extent to which retail investor action might or might not have determined IPO valuations during one of the most turbulent periods of the Indian equity market.

**Data Collection**

**Rationale for Limiting IPOs to 2022**

In the context of this research, only IPOs until the calendar year 2022 were selected. This choice was made after deliberate consideration of the analytical needs, availability of data, and objectives of the study. The reasons for such a limitation are stated below:

**1) Requirement for At Least One-Year Post-Listing Data**

One of the core aspects of our study was to investigate IPO performance at one month and one year post-listing. In order to perform a sound event study for a one-year period, it was critical that all IPOs in the dataset had been in the market for at least 12 months. Thus, IPOs listed during 2024 (particularly after February) and during 2025 were omitted since they did not have adequate post-listing data when we conducted our analysis (March 2025). Omitting them would have undermined the statistical soundness and comparability of our findings.

**2) 2023 as a Transition Year – Market Normalization Post-COVID**

Even though IPOs in 2023 were included from a temporal perspective, we chose to omit them for consistency in methods. The year 2023 was a transition year in capital markets as India exited the post-COVID boom. Various reports and expert opinions had pointed towards normalization of investor activity, changes in global interest rate regimes, and stabilization of valuations in tech stocks during 2023. Retail participation trends also started normalizing after peaking frenzy witnessed in 2020–2021. Including IPOs from this year could have introduced noise and volatility, affecting the consistency of pre- and post-COVID comparisons.

**3) High Volatility and Sentiment-Driven Pricing in Recent Years**

The IPO markets after 2020 have witnessed ultra-high sentiment-based valuations, with increased participation by retail and High Net Worth Individuals (HNIs). Many IPOs witnessed heavy over-subscription and unpredictable listing gains, followed by sudden corrections (e.g.,

Paytm, Zomato).

By restricting our sample to 2022, we make sure our data set captures the entire cycle of such IPOs—from hype to post-listing correction—hence allowing for a full performance evaluation.

**4) Regulatory and Structural Changes from 2023 onwards**

From late 2022 onwards, SEBI and stock exchanges made a number of changes affecting IPO norms such as stricter disclosure requirements, revisions in anchor investor lock-ins, and closer examination of tech IPOs.

These regulatory developments may have brought structural modifications to the IPO pricing mechanisms and thus IPOs from 2023 onwards would be non-comparable with earlier years on a valuation basis.

**Reasoning for Sample Size**

The deliberate and research-justifiable sample size of 37 IPOs employed in this research is also academically justifiable, particularly in the context of IPO research where data quality and depth of analysis tend to be prioritized over quantity. The sample covers various sectors and periods, both pre- and post-COVID, and is representative and diverse enough to capture the Indian IPO landscape.

This cross-sectional framework enables an investigation of market conduct over economic cycles, shifts in investor sentiment, and regulatory change, while methodological purity is retained. Smaller sample sizes have been commonly used and utilized in financial literature, particularly in event studies and analysis of IPO performance, as long as the data is clean, complete, and specifically chosen.

For instance, **Hawaldar et al. (2021)** employed a sample of 40 Indian IPOs to examine the effect of price reforms during the post-free pricing period, whereas **Aloysius & Tamilmaran (2024)** carried out a study of 43 IPOs to compare short-term and long-term performance. Likewise, **Nusrathunnisa et al. (2023)** examined a handpicked sample of 2021 IPOs to evaluate valuation mismatches, highlighting the potential for small samples to provide valuable insights when methodologically sound.

Statistically, the **Central Limit Theorem** justifies the use of parametric tests like t-tests for sample sizes greater than 30 under the assumption of approximate normality. Since the present study employs both **independent sample t-tests and Mann-Whitney U tests** depending on the assumption of normality, the sample size of 37 provides adequate power to find differences without jeopardizing the type I or type II error commonly found in smaller, uncontrolled data sets. In addition, such a practice conforms to emerging market research practices whereby full financial disclosure, particularly by newly listed firms, is rarely available or provided inconsistently.

Lastly, the application of 37 IPOs enables the researchers to utilize event study techniques, analyzing performance on listing day, one month post-listing, and one year post-listing, which would be logistically and analytically challenging to implement with much larger samples without compromising accuracy.

This degree of detail is essential in IPO research, where firm-specific factors (e.g., business model, investor base, and industry trends) play a significant role in determining short- and long-term returns. In brief, though the dataset is of moderate size, it follows best practice in academic finance research.

The clean, diverse, and targeted IPO selection improves the validity of the statistical results and fits well with literature precedent wherein repeatedly small samples have yielded significant and actionable insights into patterns of IPO pricing and performance in both the Indian and international contexts.

**Tests and Methods Used**

One-Sample T-Test is applied to identify whether the mean of a sole sample differs significantly from a hypothesized or known value, frequently zero. For the purpose of this study, this test was employed to find out if the average returns of IPOs one year and one month after being listed were different from zero significantly.

The results revealed that for most IPOs, the returns were not considerably different from each other, which suggests that IPO prices do not significantly change dramatically after listing in a consistent manner.

The Student's T-Test (Independent Samples T-Test) tests for the difference between two independent groups by comparing their means to determine whether there exists a statistically significant difference between them. This test was employed to find out if companies with greater Profit After Tax (PAT) or greater Price-to-Earnings (PE) ratios performed better post-listing compared to companies with lower PAT or PE. The findings revealed no statistically significant variation in the performance of companies with greater versus lesser financial ratios, which implies that these variables alone are not a determinant of IPO performance.

The Mann-Whitney U Test is a parametric equivalent of the independent samples t-test and is utilized when data isn't normally distributed. It assesses the medians of two independent samples to determine whether they significantly differ from each other. The test was employed as a check for robustness in the study whenever normality assumptions were violated, validating that there existed no significant association between IPO performance and financial metrics such as PAT and PE.

The 2 Outcome Proportion Test (Binomial Test) measures whether the two possible outcomes of a sample's proportion differ significantly from a postulated distribution. In the research context, it was utilized to determine whether the number of IPOs that reported significant performance change after one month or one year of listing were statistically significant. The findings indicated that the majority of IPOs were not significantly rewarding, supporting the notion that performance of IPOs is largely unreliable in the medium to short term.

Shapiro-Wilk Test is used to test normality in a data set and also to decide whether parametric tests such as the t-test could be used. In the present study, the Shapiro-Wilk test was done on the listing and 3-month gains/losses in order to see if the distribution was normal or not. After the data were found to be non-normally distributed, the study did well to convert to non-parametric approaches such as the use of the Mann-Whitney U test.

The Levene's Test examines the equality of variances between two or more groups, which is a critical assumption for the t-test. The test was employed in the study to test the assumption of equal variance in comparing high and low PAT or PE groups' performance. In case variances were not equal, the study adjusted accordingly to secure statistical validity.

Combined, these tests create a strong statistical framework for the analysis of IPO performance that guarantees results are robust, reliable, and based on proper methodology.

## 4. FINDINGS AND ANALYSIS

### 4.1 Objective 1

To compare the IPO performance of companies on the listing day, 1 month post its listing day and 1 year post listing day

H0 = IPO price changes significantly over 1 Month and 1 Year post its listing.

H1 = IPO price does not change significantly over 1 Month and 1 Year post its listing.

A sample of 37 IPOs in India that launched over the years 2000 all the way till 2022 was taken and the listing day opening price, listing day closing price, 1-month daily closing price data and 1-year daily closing price data was taken and a One sample T-Test was conducted on the data to understand whether the data was significant or non- significant. After that to understand further about the significance of the data, a 2 Outcome Binomial test was run on the data of the selected IPOs through the Jamovi software.

**Table 4.1.1: Returns after 1 Month**

| Sr No. | Stock Name | Listing Day Open Price | Listing Day Close Price | Closing Price after 1Month of Listing | 1month significance | Return after 1 Month |
|---|---|---|---|---|---|---|
| 1 | CoalIndiaLTD | 287.75 | 342.35 | 322.3 | NO | -5.86% |
| 2 | GeneralInsuranceLTD | 850 | 870.4 | 795.1 | NO | -8.65% |
| 3 | ReliancePower | 316.95 | 372.5 | 358.1 | NO | -3.87% |
| 4 | NewIndiaAssuranceLTD | 748.9 | 725.05 | 562.2 | YES | -22.46% |
| 5 | ICICIPrudential | 329 | 297.65 | 312.8 | NO | 5.09% |
| 6 | LICIndia | 867.2 | 875.45 | 654.7 | YES | -25.22% |
| 7 | One 97Communications | 1955 | 1564.15 | 1321.9 | NO | -15.49% |
| 8 | Zomato | 115 | 125.85 | 127 | NO | 0.91% |
| 9 | VarrocEngineering LTD | 1032 | 1040.55 | 991.1 | NO | -4.75% |
| 10 | VarunBeverages | 430 | 461.9 | 421.05 | NO | -8.84% |
| 11 | LemonTreesHotelsLTD | 61.6 | 71.6 | 72.15 | NO | 0.77% |
| 12 | MetropolisHealthcare | 960 | 959.55 | 920.6 | NO | -4.06% |
| 13 | GalaxySurfactantsLTD | 1520 | 1698.1 | 1497.15 | YES | -11.83% |
| 14 | Nykaa | 2001 | 2206.7 | 2115.5 | NO | -4.13% |
| 15 | VRLlogistics | 288 | 293.3 | 308.8 | NO | 5.28% |
| 16 | TribhovandasBhimjiZaveriLTD | 115 | 111.2 | 110 | NO | -1.08% |
| 17 | VenusPipes&Tubes | 335 | 351.75 | 326.65 | YES | -7.14% |
| 18 | QuickHealTechnologiesLTD | 394.95 | 254.45 | 221.5 | NO | -12.95% |
| 19 | AvenueSupermartsLTD | 604.4 | 640.75 | 743.55 | NO | 16.04% |
| 20 | K Fintech LTD | 369.00 | 364.00 | 316.45 | NO | -13.06% |
| 21 | AnandRathiLTD | 600.00 | 583.50 | 621.55 | NO | 6.52% |
| 22 | ParasDefenceLTD | 469.00 | 498.75 | 890.75 | YES | 78.60% |
| 23 | StarHealthInsurance | 845.00 | 906.85 | 792.30 | NO | -12.63% |
| 24 | CSBBANK | 275.00 | 300.10 | 207.90 | YES | -30.72% |
| 25 | SterlingandWilsonSolar | 706.00 | 725.35 | 618.20 | NO | -14.77% |
| 26 | PrincePipes | 160.00 | 166.60 | 174.25 | NO | 4.59% |
| 27 | IndiaMart Intermesh | 1180.00 | 1302.55 | 1231.05 | NO | -5.49% |
| 28 | DodlaDairy | 550.00 | 609.10 | 611.45 | NO | 0.39% |
| 29 | RVNLLTD | 19.00 | 19.05 | 22.70 | NO | 19.16% |
| 30 | Chalel Hotels | 294.00 | 290.40 | 281.30 | NO | -3.13% |
| 31 | MazagaonDocksLTD | 214.90 | 134.05 | 143.50 | NO | 7.05% |
| 32 | FinoPaymentsBank | 544.35 | 545.25 | 400.75 | NO | -26.50% |
| 33 | PolycabIndia | 633.00 | 655.00 | 600.35 | NO | -8.34% |
| 34 | AdaniWilmar | 227.00 | 265.20 | 342.80 | NO | 29.26% |
| 35 | HarshaEngineering LTD | 450.00 | 485.90 | 435.20 | NO | -10.43% |
| 36 | TatvaChintanPharma | 2111.85 | 2310.25 | 2085.60 | NO | -9.72% |
| 37 | MacrotechDevelopers | 436.00 | 463.15 | 635.20 | YES | 37.15% |

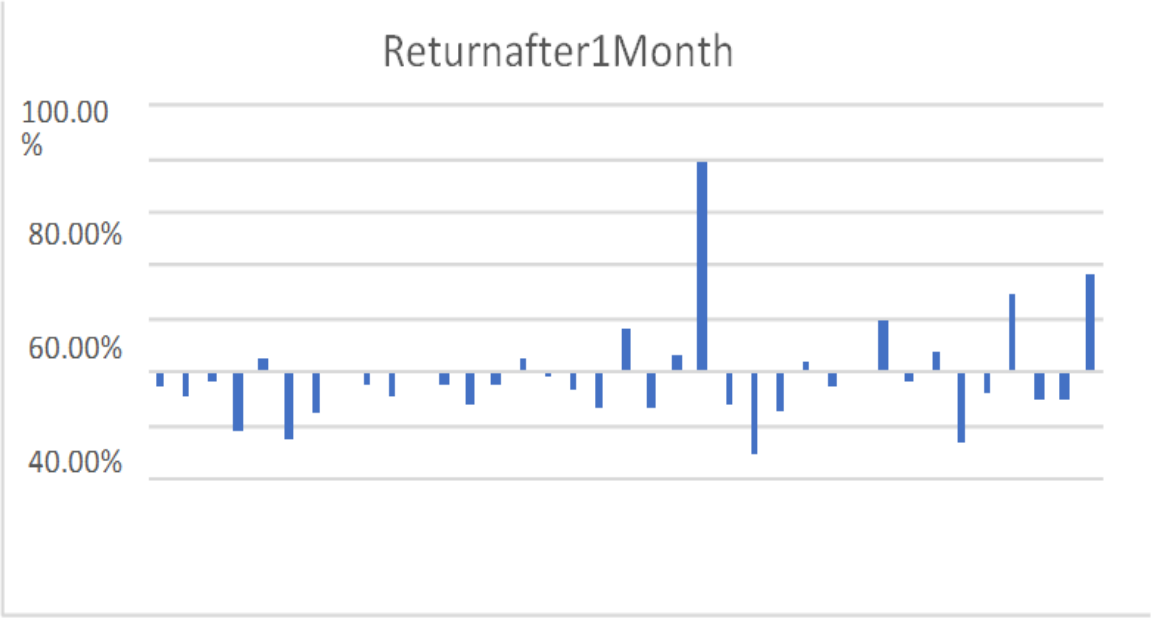


**Figure 4.1.1: From Author's Calculation**

The above graph is the "Returns after one month" from the day of listing of the 37 IPOs selected for our data analysis. We infer that 23 of the 37 IPOs undergo a fall in its price from its listing day close price and 14 of see an them increase in price. The average of the 1 month decrease in price of the stocks is -1.63%.

**Table 4.1.2: Returns after 1 Year**

| Sr No. | Stock Name | Listing Day Open Price | Listing Day Close Price | Closing Price after 1Year of Listing | 1year significance | Return after 1Year |
|---|---|---|---|---|---|---|
| 1 | CoalIndiaLTD | 287.75 | 342.35 | 326.35 | NO | -4.67% |
| 2 | GeneralInsuranceLTD | 850 | 870.4 | 314.2 | NO | -63.90% |
| 3 | Reliance Power | 316.95 | 372.5 | 102.75 | NO | -72.42% |
| 4 | NewIndiaAssuranceLTD | 748.9 | 725.05 | 220.85 | NO | -69.54% |
| 5 | ICICIPrudential | 329 | 297.65 | 389.35 | NO | 30.81% |
| 6 | LIC India | 867.2 | 875.45 | 544.85 | YES | -37.76% |
| 7 | One97Communications | 1955 | 1564.15 | 546.3 | NO | -65.07% |
| 8 | Zomato | 115 | 125.85 | 53.65 | NO | -57.37% |
| 9 | VarrocEngineeringLTD | 1032 | 1040.55 | 470.1 | YES | -54.82% |
| 10 | VarunBeverages | 430 | 461.9 | 500.35 | NO | 8.32% |
| 11 | Lemon TreesHotelsLTD | 61.6 | 71.6 | 78.7 | NO | 9.92% |
| 12 | MetropolisHealthcare | 960 | 959.55 | 1258.95 | NO | 31.20% |
| 13 | GalaxySurfactantsLTD | 1520 | 1698.1 | 1034.25 | YES | -39.09% |
| 14 | Nykaa | 2001 | 2206.7 | 1076.15 | NO | -51.23% |
| 15 | VRLlogistics | 288 | 293.3 | 400.95 | NO | 36.70% |
| 16 | TribhovandasBhimjiZaveriLTD | 115 | 111.2 | 226.2 | NO | 103.42% |
| 17 | VenusPipes&Tubes | 335 | 351.75 | 782.65 | YES | 122.50% |
| 18 | QuickHealTechnologiesLTD | 394.95 | 254.45 | 252.1 | NO | -0.92% |
| 19 | AvenueSupermartsLTD | 604.4 | 640.75 | 1337.85 | YES | 108.79% |
| 20 | KFintech LTD | 369.00 | 364.00 | 285.50 | NO | -21.57% |
| 21 | AnandRathi LTD | 600.00 | 583.50 | 688.25 | NO | 17.95% |
| 22 | ParasDefenceLTD | 469.00 | 498.75 | 602.40 | NO | 20.78% |
| 23 | StarHealthInsurance | 845.00 | 906.85 | 530.20 | NO | -41.53% |

| | | | | | | |
|---|---|---|---|---|---|---|
| 24 | CSBBANK | 275.00 | 300.10 | 224.60 | NO | -25.16% |
| 25 | Sterling andWilsonSolar | 706.00 | 725.35 | 250.15 | NO | -65.51% |
| 26 | PrincePipes | 160.00 | 166.60 | 299.15 | NO | 79.56% |
| 27 | IndiaMartIntermesh | 1180.00 | 1302.55 | 2098.10 | NO | 61.08% |
| 28 | Dodla Dairy | 550.00 | 609.10 | 480.00 | NO | -21.20% |
| 29 | RVNLLTD | 19.00 | 19.05 | 18.60 | NO | -2.36% |
| 30 | ChalelHotels | 294.00 | 290.40 | 340.85 | NO | 17.37% |
| 31 | MazagaonDocksLTD | 214.90 | 134.05 | 248.30 | YES | 85.23% |
| 32 | FinoPaymentsBank | 544.35 | 545.25 | 194.60 | YES | -64.31% |
| 33 | PolycabIndia | 633.00 | 655.00 | 729.00 | NO | 11.30% |
| 34 | AdaniWilmar | 227.00 | 265.20 | 419.35 | NO | 58.13% |
| 35 | HarshaEngineeringLTD | 450.00 | 485.90 | 337.90 | NO | -30.46% |
| 36 | TatvaChintanPharma | 2111.85 | 2310.25 | 2307.55 | NO | -0.12% |
| 37 | MacrotechDevelopers | 436.00 | 463.15 | 1047.25 | YES | 126.11% |


**Figure 4.1.2: From Author's Calculation**

The above graph is the "Returns after one year" from the day of listing of the 37 IPOs selected for our data analysis. We infer that 20 of the 37 IPOs undergo a fall in its price from its listing day close price and 17 of them increase in price. The average of the 1-year increase in price of the 37 stocks is 3.79%.

2 examples from the 37 IPOs have been taken, one that is "Not significant" from the 1-month data and 1-year data and the other that is significant for the 1 month and 1-year data. If the P value of the One tail test is more than 0.05, then the data is "Not significant" and if the P value of the one tail test is less than 0.05 that means the data is "Significant."

The stocks chosen in this case were Coal India Ltd. as the stock with "Not significant" data. On the other hand, LIC India was taken as the stock with "Significant" data according to the One tail test.

**Table 4.1.3: Test on 1 Month Return of Coal India Ltd.**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Not Signficant | | | | | | | |
| TTest: One Sample | | | | | | | |
| SUMMARY | | | Alpha | 0.05 | | | |
| ***Count*** | ***Mean*** | ***StdDev*** | ***StdErr*** | ***t*** | ***df*** | ***Cohend*** | ***Effectr*** |
| 20 | -0.0028 | 0.021945 | 0.004907 | -0.56675 | 19 | 0.126729 | 0.128936 |
| TTEST | | | HypMean | 0 | | | |
| | ***p-value*** | ***t-crit*** | ***lower*** | ***upper*** | ***sig*** | | |
| OneTail | 0.28876 | 1.729133 | | | no | | |
| TwoTail | 0.57752 | 2.093024 | -0.01305 | 0.00749 | no | | |

P Value = 0.28876 which means data interpretation is “Not Significant”

**Table 4.1.4: Test on 1 Year Return of Coal India Ltd.**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Notsignficant | | | | | | | |
| TTest: OneSample | | | | | | | |
| SUMMARY | | | Alpha | 0.05 | | | |
| ***Count*** | ***Mean*** | ***StdDev*** | ***StdErr*** | ***t*** | ***df*** | ***Cohend*** | ***Effectr*** |
| 249 | 0.00% | 0.020787 | 0.001317 | 0.016288 | 248 | 0.001032 | 0.001034 |
| TTEST | | | HypMean | 0 | | | |
| | ***p-value*** | ***t-crit*** | ***lower*** | ***upper*** | ***sig*** | | |
| OneTail | 0.493509 | 1.651021 | | | no | | |
| TwoTail | 0.987018 | 1.969576 | -0.00257 | 0.002616 | no | | |

P Value = 0.493509 which means data interpretation is “Not Significant”

**Table 4.1.5: Test on 1 Month LIC India**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Significant | | | | | | | |
| TTest: OneSample | | | | | | | |
| SUMMARY | | | Alpha | 0.05 | | | |
| ***Count*** | ***Mean*** | ***StdDev*** | ***Std Err*** | ***t*** | ***df*** | ***Cohend*** | ***Effectr*** |
| 23 | -1.24% | 0.01993368 | 0.00415646 | -2.9738505 | 22 | 0.62009069 | 0.53547017 |
| TTEST | | | HypMean | 0 | | | |
| | *p-value* | *t-crit* | *lower* | *upper* | *sig* | | |
| OneTail | 0.00350305 | 1.71714437 | | | yes | | |
| TwoTail | 0.00700611 | 2.07387307 | -0.0209807 | -0.0037407 | yes | | |

P Value = 0.00350305 which means data interpretation is “Significant”

**Table 4.1.6: Test on 1 Year LIC India**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Significant | | | | | | | |
| TTest:OneSample | | | | | | | |
| | | | | | | | |
| SUMMARY | | | Alpha | 0.05 | | | |
| ***Count*** | ***Mean*** | ***StdDev*** | ***Std Err*** | ***t*** | ***df*** | ***Cohend*** | ***Effectr*** |
| 220 | -0.20% | 0.0168572 | 0.00113651 | -1.7696682 | 219 | 0.11931101 | 0.11873713 |
| | | | | | | | |
| TTEST | | | HypMean | 0 | | | |
| | ***p-value*** | ***t-crit*** | ***lower*** | ***upper*** | ***sig*** | | |
| OneTail | 0.03908699 | 1.65184118 | | | yes | | |
| TwoTail | 0.07817399 | 1.97085537 | -0.0042511 | 0.00022865 | no | | |

P Value = 0.03908699 which means data interpretation is “Significant”

**Table 4.1.7: Binomial Test**

| | Level | Count | Total | Proportion | p |
|---|---|---|---|---|---|
| 1-monthsignificance | No | 30 | 37 | 0.81081 | 0.00010 |
| | Yes | 7 | 37 | 0.18919 | 0.99998 |
| 1-yearsignificance | No | 29 | 37 | 0.78378 | 0.00038 |
| | Yes | 8 | 37 | 0.21622 | 0.99990 |
| Note. $H_a$ is proportion>0.5 | | | | | |

From Figure 4.1.7 we infer that after taking daily data for 1-month of the 37 IPOs, the price of 30 of those 37 IPOs were not significantly affected and only 7 were significantly affected.

The P value for "No" is 0.00010 which is less than 0.05 that tells us that the price of an IPO does not significantly change 1 month post its listing, while even looking through daily data of the IPO and hence, our analysis supports H1 hypothesis and not H0 hypothesis.

## 4.2 Objective 2

P/E ratio and PAT (profit after tax) are important financial metrics that are often used to evaluate the valuation of companies, including those seeking to go public through an IPO (initial public offering). The relationship between these two metrics and IPO valuations is complex and depends on a variety of factors, but generally, a higher PE ratio and higher PAT can lead to higher IPO valuations.

The valuation of initial public offerings (IPOs) and the setting of IPO offer prices represent a challenging crossroads between valuation theory and practice. The valuation of any IPO is done taking in consideration different variables like Income, Book Value of equity, Sales, R& D, industry price to sales ratio, insider retention and investment banker prestige Ranking. In our study we do not evaluate all this variables of valuation but analyse only Operating Income, Book Value Per Share, Earning Per Share and Promoters Holdings. (Naik & Mayur, 2017)

PE ratio is a widely used metric that measures the price of a company's stock relative to its earnings. A higher PE ratio typically indicates that investors are willing to pay more for each dollar of earnings, which can reflect higher growth expectations or a stronger market position for the company. Companies with higher PE ratios may therefore be valued more highly in an IPO because investors may see greater potential for future growth and returns.

Similarly, PAT is a measure of a company's profitability and is often used to evaluate its financial health and performance. Companies with higher PAT may be seen as more attractive to investors because they are generating more profits and may be better able to weather economic downturns or market fluctuations. As a result, companies with higher PAT may also be valued more highly in an IPO.

To understand the relation between the P/E ratio or PAT of companies with their performance, this research paper shows how an independent sample t-test can help determine significant relationship between these ratios and stock performance of IPOs in India.

For performing the statistical test, the variables of P/E ratio, PAT, Listing Day Gains/Loss, and 3 months gains/loss are taken because some IPOs are recent so to be able to compare them.

### PAT in relation to Performance

Please refer to Annexure 1 for the IPO data. For PAT comparison, the paper divides the IPOs into two groups by taking a median value of PAT as 15%. Then we performed an independent samples t-test to test where more PAT leads to greater performance. The results of the test are below:

**Table 4.2.1: Independent Samples T- test**

| | | Statistic | df | p |
|---|---|---|---|---|
| Listing Gain/Loss | Student's t | -0.949 | 28.0 | 0.17526 |
| | Mann-Whitney U | 92.0 | | 0.22852 |
| 3-month Gain/Loss | Student's t | 0.930 | 28.0 | 0.81978 |
| | Mann-Whitney U | 90.0 | | 0.80746 |
| Note. $H_a$ μ 0 < μ 1 | | | | |

**Table 4.2.2: Homogeneity of Variances Tests**

| | | F | df | df2 | p |
|---|---|---|---|---|---|
| Listing Gain/Loss | Levene's | 1.72 | 1 | 28 | 0.20024 |
| | Variance ratio | 0.233 | 16 | 12 | 0.00795 |
| 3-month Gain/Loss | Levene's | 2.11 | 1 | 28 | 0.15777 |
| | Variance ratio | 2.807 | 16 | 12 | 0.07642 |
| Note. Additional results provided by *more tests* | | | | | |

**Table 4.2.3: Tests of Normality**

| | | statistic | p |
|---|---|---|---|
| Listing Gain/Loss | Shapiro-Wilk | 0.743 | < .00001 |
| | Kolmogorov-Smirnov | 0.207 | 0.13338 |
| | Anderson-Darling | 2.156 | 0.00001 |
| 3-month Gain/Loss | Shapiro-Wilk | 0.941 | 0.09920 |
| | Kolmogorov-Smirnov | 0.154 | 0.43579 |
| | Anderson-Darling | 0.641 | 0.08556 |
| Note. Additional results provided by *moretests* | | | |

We can see that when performing student's ttest for normal data and Mann Whitney Utest for non-normal data we find out that higher PAT does not lead to higher Performance as at the significance level of 5%, the p-value is more than 0.05. Hence, we can conclude that higher PAT during IPO does not lead to higher performance for the company.

Let's try to understand the reasoning behind such an analysis. IPO pricing and listing performance afterward are largely determined by investor sentiment, hype, and market trend, often overruling conventional financial indicators such as PAT. This is in accordance with evidence presented by Loughran & Ritter (2002), which stated that issuers and investors often disregard fundamentals such as profitability in exchange for perceived market potential. Investors might not entirely believe or appreciate PAT during IPO due to insufficient track record, accounting irregularities, or transparency issues. This uncertainty renders PAT a less stable determinant in investor decision-making (Espenlaub et al., 2024)

**PE in relation to Performance**

Please refer to Annexure 1 for the IPO data. For PE comparison, the paper divides the IPOs into two groups by taking a mean value of PE. Then we performed an independent samplest-test to test where more PE leads to greater performance. The results of the test are below:

**Table 4.2.4: Independent Samples T-test**

| | | Statistic | p |
|---|---|---|---|
| Listing Gain/Loss | Mann-Whitney U | 48.0 | 0.22388 |
| 3-month Gain/Loss | Mann-Whitney U | 53.0 | 0.31340 |
| Note. $H_a$ μ 0 < μ 1 | | | |

**Table 4.2.5: Homogeneity Test**

**Figure 10**

**Assumptions**

**Homogeneity of Variances Tests**

| | | F | df | df2 | p |
|---|---|---|---|---|---|
| Listing Gain/Loss | Levene's | 0.3885 | 1 | 28 | 0.53815 |
| | Variance ratio | 0.286 | 4 | 24 | 0.2322 |
| 3-month Gain/Loss | Levene's | 0.0128 | 1 | 28 | 0.91058 |
| | Variance ratio | 0.994 | 4 | 24 | 0.86023 |

Note. Additional results provided by *moretests*

**Table 4.2.6: Normality Test**

**Tests of Normality**

| | | statistic | p |
|---|---|---|---|
| Listing Gain/Loss | Shapiro-Wilk | 0.71 | < .00001 |
| | Kolmogorov-Smirnov | 0.216 | 0.10341 |
| | Anderson-Darling | 2.479 | < .00001 |
| 3-month Gain/Loss | Shapiro-Wilk | 0.913 | 0.01823 |
| | Kolmogorov-Smirnov | 0.135 | 0.59875 |
| | Anderson-Darling | 0.758 | 0.04329 |

Note. Additional results provided by *moretests*

Since both the data are non-normal, we performed a Mann-Whitney U test to determine significant relationship. In this too, the relation is not significant as p-value is greater than 0.05 for both the performance variables. Hence even greater PE did not result in the higher performance of IPO over the years.

## 4.3 Objective 3

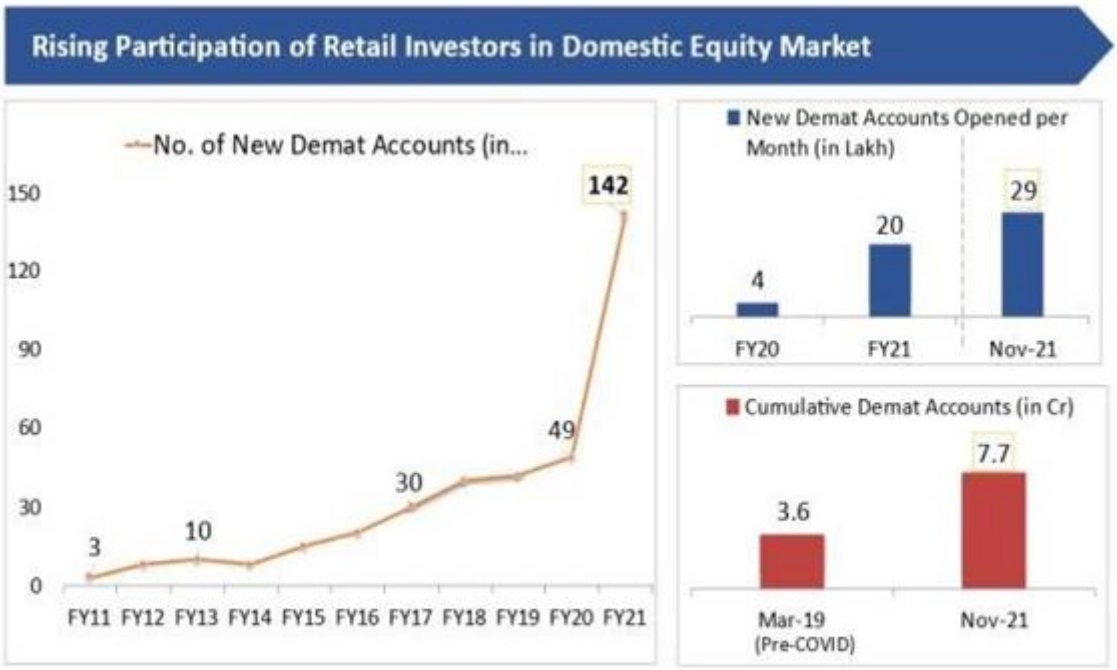


**Figure 4.3.1: Source INVESTADYNYA**

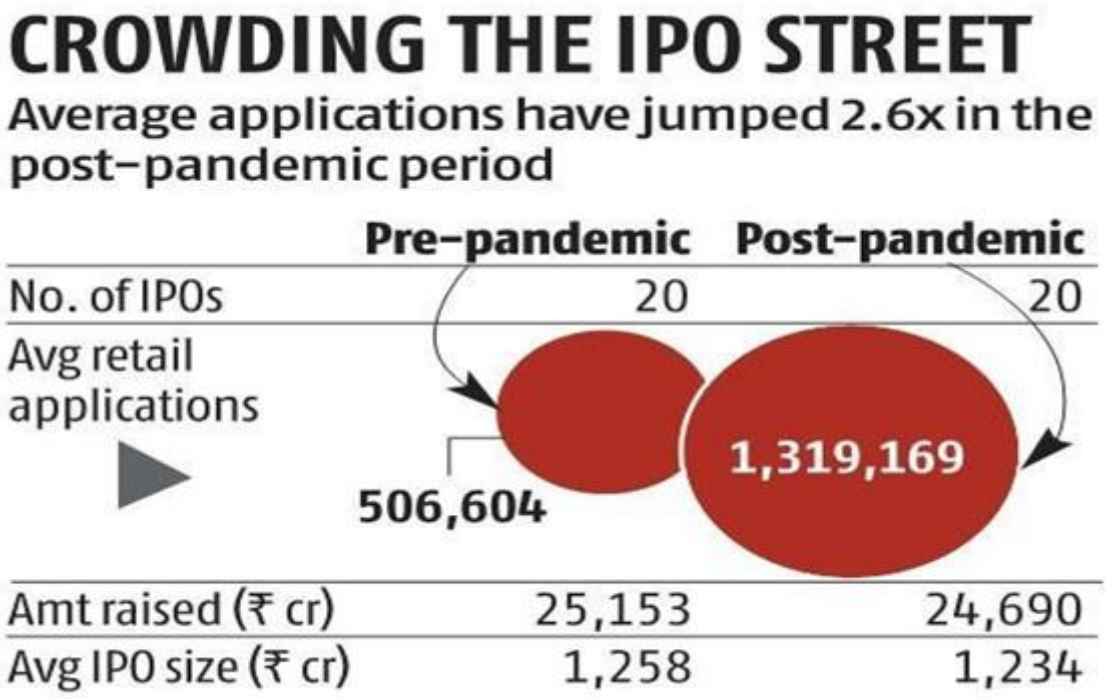


**Figure 4.3.2: Source: Prime Database**

Crowding may have become uncommon in the post-pandemic world, but not on IPO Street. In the post-pandemic world, the average number of retail investors subscribing to initial public offerings has nearly tripled.

Following the epidemic, retail stock market involvement increased dramatically. In order to conduct this research, we have taken the over subscription rates of Retail investors in IPOs of the Finance and Manufacturing sectors.

These both sectors are taken because they have a large sample size available. IPOs of both pre and post covid are taken into consideration in order to compare whether IPOs post covid have got inflated valuations due to an increase in retail participation.

The pre- covid years are taken from 2016-2019 and post covid is taken from 2020-2023. A paired sample t-test is performed to compare P/E ratio, which is our indicator of valuation, of IPOs pre covid and post covid. Assumptions: IPOs with Negative P/Es were not included in our analysis.

Hypothesis:

H0: Increase in RII post covid does not increase P/E valuations,

H1: Increase in RII post covid increases P/E valuations Significance level: 5%

Please refer to Annexure 2 for the finance sector IPOs of both periods, pre-covid and post-covid

**Table 4.3.1**

Descriptives

| | RII Pre | RII Post | P/E Pre | P/E Post |
|---|---|---|---|---|
| N | 15 | 15 | 15 | 15 |
| Missing | 14 | 14 | 14 | 14 |
| Mean | 7.315 | 2.573 | 40.03 | 31.98 |
| Median | 1.32 | 1.68 | 41.7 | 23.5 |
| Standard deviation | 13.35 | 2.333 | 15.27 | 32.83 |
| Minimum | 0.25 | 0.03 | 14 | 1.3 |
| Maximum | 49.09 | 7.76 | 73 | 114.8 |

**Table 4.3.2**

Paired Samples T-Test

| | | | Statistic | df | p |
|---|---|---|---|---|---|
| RII Pre | RII Post | Student's t | 1.3186 | 14 | 0.89577 |
| | | Wilcoxon W | 66 | | 0.64014 |
| P/E Pre | P/E Post | Student's t | 0.8729 | 14 | 0.80127 |
| | | Wilcoxon W | 83 | | 0.90619 |

Note. $H_a$ $\mu_{\text{Measure 1 - Measure 2}} < 0$

**Table 4.3.3**

Normality Test (Shapiro-Wilk)

| | | W | p |
|---|---|---|---|
| RII Pre | RII Post | 0.6614 | 0.0001 |
| P/E Pre | P/E Post | 0.9418 | 0.40535 |

Note. A low p-value suggests a violation of the assumption of normality

The test shows that the p-value for both the tests are more than 0.05. Hence for a significance level of 5%, the P/E post covid is not significantly more than P/E pre covid. Even RII post covid is not significantly more than RII pre covid.

This says that the RII rates have not increased after covid and even the P/E ratios. So, we must accept the null hypothesis that P/E is not significantly increased by the RII rates.

The results show that retail participation in the financial sector is decreasing after covid and the P/E Ratio (Valuation Indicator) also decreases after covid.

The analysis shows that retail participation in the financial sector in India is decreasing after covid. In 2016-2019, the retail participation in IPOs were on an average was 7.315x of their quotas. However, in 2020-2023, the retail participation decreased to 2.573 respectively. This trend suggests that retail investors may have lost confidence in the financial sector after covid.

The P/E ratio, which is a valuation indicator, also decreased after covid. The P/E ratio in the financial sector was 40.03 on average from 2016-2019. However, from 2020-23, the P/E ratio decreased to 31.98 on average. The decreasing P/E ratio suggests that the financial sector's performance has been impacted by covid, leading to a lower valuation of IPOs.

Therefore, the analysis indicates that the retail participation in the financial sector in India is decreasing after covid, despite anticipated increase post covid. This fervor eventually faded as a few prominent IPOs performed poorly, such as One97 Communications (Paytm) and LIC, leading to a slump in retail confidence and participation.

Additionally, normalization of monetary policy, increasing inflation, and macroeconomic uncertainty in 2022–2023 presumably channeled household savings from riskier equity IPOs into safer instruments like mutual funds and fixed deposits.

In parallel, the study's paired sample t-tests show that P/E ratios—used as a proxy for IPO valuations—also did not increase significantly between the pre- and post-COVID periods. This finding contradicts the commonly held perception that post-COVID IPO valuations were inflated due to excess liquidity and speculation. In practice, underwriters and investment bankers might have used more cautious pricing mechanisms following witnessing unprecedented post-listing fluctuations in overhyped IPOs such as Zomato and Paytm. Kim & Ritter (1999) assert that IPO prices tend to be price-adjusted by underwriters in terms of both firm fundamentals and expected investor sentiment, rather than entirely on short-term market euphoria.

In addition, institutional investors (particularly QIBs), who are responsible for a significant portion of book-building and price discovery, became more discerning after COVID. This change most likely introduced valuation discipline to the IPO market. Espenlaub et al. (2024) discovered that underwriter incentives and institutional participation will decrease valuation mistakes and speculative pricing in IPOs.

The results confirm the overall conclusion that retail investor participation by itself does not determine IPO valuations. Valuations are an outcome of a multifaceted interplay between sector sentiment, firm fundamentals, underwriting approach, investor composition, and macroeconomic factors—retail excitement being just one piece of the puzzle. This is consistent with the contention by Massel et al. (2021) that investor attention in IPOs is increasingly guided by projected revenue and growth prospects rather than earnings metrics of the present in the form of P/E or PAT.

In summary, although the COVID era spurred a short-term frenzy of retail IPO demand, this did not lead to a statistically significant or permanent effect on participation rates or valuation multiples, as a reminder that IPO pricing is still rooted in wider market fundamentals and institutional response, not dictated by retail influences. Additionally, the P/E ratio also decreased after covid, suggesting that IPOs in the financial sector in India are being valued lower. Therefore, it can be concluded that the increase in retail participation in IPOs is not affecting IPO valuation in the financial sector before and after covid in India. Rather, covid has impacted the financial sector's performance, leading to lower IPO valuations.

**Results for Stocks in the Manufacturing Sector**

A paired sample t-test is performed to compare P/E ratio, which is our indicator of valuation, of IPOs pre covid and post covid. The hypothesis of the test:

Hypothesis: H0: Increase in RII post covid does not increase P/E valuations H1: Increase in RII post covid increases P/E valuations Significance level: 5%

Please refer to Annexure 3 for the Manufacturing sector IPOs of both periods, pre-covid and post-covid.

**Table 4.3.4**

Descriptives

| | N | Mean | Median | SD | SE |
|---|---|---|---|---|---|
| P/E Pre | 19 | 27.1 | 20.15 | 24.8 | 5.69 |
| P/E Post | 19 | 31.2 | 29.3 | 17 | 3.9 |
| RII Pre | 19 | 11.3 | 3.31 | 18.8 | 4.32 |
| RII Post | 19 | 12.9 | 3.15 | 17.4 | 3.98 |

**Table 4.3.5**

Paired Samples T-Test

| | | | Statistic | df | p |
|---|---|---|---|---|---|
| P/E Pre | P/E Post | Student's t | -0.602 | 18 | 0.2775 |
| | | Wilcoxon W | 65 | | 0.1206 |
| RII Pre | RII Post | Student's t | -0.274 | 18 | 0.3935 |
| | | Wilcoxon W | 77 | | 0.245 |

Note. $H_a$ $\mu_{Measure\ 1\ -\ Measure\ 2} < 0$

**Table 4.3.6**

Tests of Normality

| | | | statistic | p |
|---|---|---|---|---|
| P/E Pre | P/E Post | Shapiro-Wilk | 0.859 | 0.0095 |
| | | Kolmogorov-Smirnov | 0.181 | 0.5088 |
| | | Anderson-Darling | 0.834 | 0.0254 |
| RII Pre | RII Post | Shapiro-Wilk | 0.917 | 0.0995 |
| | | Kolmogorov-Smirnov | 0.188 | 0.4593 |
| | | Anderson-Darling | 0.765 | 0.0384 |

Note. Additional results provided by *moretests*

The test shows that the p-value for both the tests are more than 0.05. Hence for a significance level of 5%, the P/E post covid is not significantly more than P/E pre covid. Even RII post covid is not significantly more than RII pre covid. This says that the RII rates have not increased after covid and even the P/E ratios. So, we must accept the null hypothesis that P/E is not significantly increased by the RII rates.

This shows that the Mean RII for the data has increased from 11.3 to 12.9 and so has the P/E ratios from 27.1 to 31.2. But the values are not significant enough to conclude that the increase in P/E is due to more RII rates.

Therefore, the analysis indicates that the retail participation in the manufacturing sector in India is increasing after covid, which may be due to the sector's high performance during the pandemic. Additionally, the P/E ratio also increased after covid but not significantly, suggesting that IPOs in the financial sector in India are being valued lower. Therefore, it can be concluded that the increase in retail participation in IPOs is not affecting IPO valuation in the manufacturing sector before and after covid in India because of less significant results. Rather, covid has impacted the manufacturing sector's performance, leading to higher IPO valuations.

## 5. CONCLUSIONS, IMPLICATIONS AND LIMITATIONS

### 5.1 Conclusion

Independent sample t-test confirms that the IPO valuation ratio, Higher P/E and PAT do not have a significant impact on IPO valuation when compared to low P/E and lower PAT respectively. There are so many factors influencing it as different sectors, market outlook etc. The paired sample test of financial and manufacturing sector reveals that even though the RII is varying the P/E ratios are varying according to that variation and are not quite different. This test verifies that IPO valuations is not only RII dependent. There is not a remarkable impact of RII oversubscription rates on P/E ratio of IPO companies.

One sample T test informs us that the price of an IPO does not change significantly after 1 month from its listing day and also not significant after 1 year from the listing day, but IPO prices continue to decline and fluctuate with different market scenarios and never have a continuous flow. Just because a stock begins strong doesn't mean it will keep rising, in fact, it can collapse badly and for that reason, IPOs and its pricing are not an exact science but some factors can provide an understanding of more about them.

These findings have implications for regulators and policymakers, as well as issuers and investors. As IPO markets continue to transform, more stress needs to be put on enhancing transparency, financial disclosure quality, and investor education, especially for retail participants. Concurrently, there is scope for IPO pricing strategies to migrate from conventional valuation anchors to fact-based, forward-looking frameworks taking into consideration intangible assets, business model scalability, and market adaptability.

Ahead, subsequent research may build on this base by including additional valuation metrics (e.g., EV/Revenue, PEG ratio), evaluating behavioral and sentiment metrics, and comparing pricing efficiency between listing mechanisms (book-building vs. fixed-price). In addition, as digital infrastructure and AI tools continue to emerge in capital markets, there is increasingly the potential to apply predictive analytics and machine learning for more dynamic and responsive IPO pricing models.

Overall, this research adds depth to our understanding of IPO valuation in India, and it is found that the journey towards pricing efficiency is not linear or algorithmic but dependent on a wider set of financial, behavioral, and institutional factors.

### 5.2 Implications

This research paper accentuates the IPO performance of the firms by applying chosen factors to exemplify the influence of a certain factor on it. This can be presented differently by employing other factors influencing IPO valuations like P/B ratio, liquidity ratios, sentiment of the market, reputation of the firm etc. Valuations sometimes may be deceiving because it relies on human judgment and personal logic and calculations. Therefore, it is necessary to have at least a statistical perspective on the valuation of IPOs before jumping to any conclusion.

The findings of this research carry several important implications for investors, underwriters, and policy makers. Firstly, traditional metrics such as PAT and PE ratio—while useful in mature firms—are less reliable indicators of performance in IPO settings, where speculative behavior, growth narratives, and macroeconomic outlooks often overshadow profitability. This suggests that investors should incorporate broader qualitative and forward-looking metrics (e.g., revenue growth, addressable market, business model strength) into IPO analysis.

Secondly, the results challenge the assumption that retail investor participation has a significant bearing on IPO valuations. While there was a spike in retail enthusiasm immediately post-COVID, this did not translate into statistically significant increases in RII rates or P/E ratios in the years that followed. This highlights the dominant role of institutional investors and underwriters in IPO price setting, and the need for retail investors to approach IPOs with cautious optimism and informed research.

Lastly, the lack of sustained post-listing performance across most IPOs reveals the importance of managing expectations. IPOs should not be seen as guaranteed short-term gain opportunities. The findings support a more long-term, fundamentals-driven approach to investing in newly listed companies. Policymakers and regulators could also consider improving the accessibility and clarity of pre-IPO disclosures, especially in emerging sectors, to help mitigate information asymmetry.

Future research could extend this study by incorporating other performance indicators such as price-to-book ratio, return on equity, or revenue growth, and examining the impact of sector-specific dynamics or macroeconomic policy changes on IPO outcomes.

### 5.3 Limitations

As mentioned and discussed in the previous paragraphs, this research contributes to many important additions in the existing literature and value to various players in the different IPO markets. In its wide coverage and comprehensiveness, our study on the valuation of Indian IPOs over the years has the following limitations:

The study uses an event study methodology to analyze initial day total returns, 30-day total returns, and total returns over the course of one year following the IPO launch. The study duration in question is relatively short, and it's likely that longer study duration would yield more complete information and enhance understanding of various players in the IPO market.

The study also taken into account some of the IPOs that have not yet run through a year and therefore data for such IPOs is not extensive.

Negative P/E IPOs were left out of the study, which biased the findings to some extent. This lack of data could distort the view of how newer, high-growth firms are valued and perform after listing, particularly in light of the growing trend of unprofitable IPOs in developing markets. The research examines the worth of IPOs in India on limited parameters and could have applied numerous more parameters like the industry to which such companies belonged, the pattern of allocation among the different investors, market conditions like bullish and bearish, and so on in order to come up with much more refined results.

Note that the analysis uses data from the Indian finance sector, and the findings cannot be generalizable to other sectors or geographies. Second, the analysis is performed on just two parameters, and there could be other factors affecting IPO valuation as well, such as macroeconomic indicators, industry trends, and company-specific details. Since most companies have negative P/E Ratios, it resulted in the exclusion of some IPOs like Paytm, PB Fintech and Star Health.

**List of Abbreviations**

IPO: Initial Public Offering

SEBI: Securities & Exchange Board of India

BSE: Bombay Stock Exchange

NSE: National Stock Exchange

EPS: Earnings per Share

P/E Ratio: Price-to-Earnings Ratio

BRNL: Bharat Road Network Limited

PAT: Profit After Tax

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**Annexures**

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