

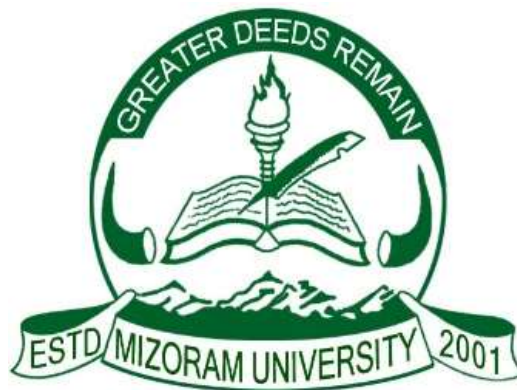
**PRICING PERFORMANCE OF IPOs AND FPOs IN INDIA: AN
EMPIRICAL STUDY**

**A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF DOCTOR OF
PHILOSOPHY**

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**PRICING PERFORMANCE OF IPOs AND FPOs IN INDIA: AN EMPIRICAL
STUDY**

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Submitted
In partial fulfillment of the requirement of the Degree of Doctor of Philosophy
in Commerce of Mizoram University, Aizawl



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CERTIFICATE

This is to certify that the thesis entitled “Pricing Performance of IPOs and FPOs in India: An Empirical Study” submitted by **Ms. Shubhra Kumari** for the award of degree of **Doctor of Philosophy** in **Commerce** of Mizoram University, Aizawl, embodies the record of original investigation carried out by her under my supervision. She has duly registered and the thesis presented is worth of being considered for the award of the Ph.D. degree. The work has not been submitted for any degree to any other University.

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I **SHUBHRA KUMARI**, hereby declare that the subject matter of this thesis is the record of work done by me, that the contents of this thesis did not form basis of the award of any previous degree to me or to do the best of my knowledge to anybody else, and that the thesis has not been submitted by me for any research degree in any other University/Institute.

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List of abbreviations

IPOs	Initial public offerings
FPOs	Follow-on offerings
RHP	Red Herring Prospectus
DRHP	Draft Red Herring Prospectus
TP	Time Period
Avg.	Average
RR	Raw return
ARR	Annualized Raw Return
AMAAR	Annualized Market Adjusted Abnormal Return
MAAR	Market Adjusted Annualized Return
SEBI	Securities and Exchange Board of India
NSE	National Stock Exchange
NIFTY 50	NIFTY50 index
BSE	Bombay Stock Exchange
BSE IPO	Bombay Stock Exchange Initial Public Offering Index
WFE	World Federation of Exchanges
CRISIL	Credit Rating Information Services of India Ltd.
IISL	India Index Services & Products Ltd
WFE	World Federation of Exchanges
RFP	Request for Proposal
VIF	Variance inflation factor

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CHAPTER 1

INTRODUCTION

As a developing nation, India is flourishing in every domain and, to further strengthen the economy, it encourages growth of companies, which in turn encourages a strong capital market. The growth, productivity and welfare of any economy depend on its capital market. The capital market plays a significant role in channelizing and mobilizing the investor's savings in purposeful investments which aligns with the national priorities. It also acts a platform for raising long term funds by the means of instruments like: - debentures and shares, supporting the operation of businesses and government. With the increasing number of companies, the demand for capital is soaring to facilitate their smooth functioning. It is further categorized as primary and secondary market (Tripathy 2011).

1.1 Primary Market and Secondary Market

“The Primary Market is the market that provides a channel for the issuance of new securities by issuers (Government companies or corporate) to raise capital” (SEBI, n.d.). During the year 1991, Indian economy underwent liberalization that resulted in various reforms and facilitated India to turn into a global economy. The effects of liberalization were clearly evident in areas such as foreign direct investment, the liberalization of the tax regime, and the reduction of trade barriers. Chhabra (2011) also explained the positive effects of liberalization of the Indian economy, as the primary market witnessed a tremendous surge. Primary market is also termed as New Issues market (NIM). When a private entity goes public for the first time to raise long-term capital by issuing shares, debentures, or bonds, it approaches the primary market. (Kevin 2009)

Various forms of securities issuance occur in the primary market such as:- “Initial Public Offerings (IPO)”, “Follow-on Public Offerings (FPO)”, “Right Issue”, “Private Placements”, “Qualified Institutional Placements”, “Employees Stock Option Plan (ESOPs)” and “Convertible Preferential Shares”. An IPO, or going public, is the process by which an unlisted company raises long-term funds by

making its shares available to the public through an initial offering. Bringing an IPO or going public helps companies in expanding their reach and visibility. Once the company has gone public and raised capital, but still requires additional capital, it can do so by bringing an FPO. Right issue refers to the process of offering additional shares to the already existing shareholders at a discounted price. Private placement method of acquiring capital refers to the process of directly offering shares to few institutional investors without making a public offer. On contrary the process of offering shares directly to the institutional investors without the need of prospectus is termed as QIP. The difference between the private placement and QIP is that private placements have a broader base of investors compared to the QIP. Employee's Stock Option Plan (ESOPs) is an incentive that the employer offers to its employee as a part of their remuneration package. Preferred shares which can be easily changed into equity shares at the liberty of the investor are known as Convertible Preferred Shares. Every issue described above serves different needs, attracts distinct investors and contributes significantly in making the primary market robust.

On contrary, a market where already listed securities are traded is known as secondary market. Companies have the flexibility to raise funds depending on their requirements through the primary or secondary market. Tripathy (2011) mentioned that the primary or the secondary markets are dependent on each other and cannot function in silos. In order to maintain a consistent flow of securities in secondary market the primary market must keep functioning. Moreover, if the secondary market is functional but lacks transparency and discipline, the development or sustainability of equity and other related investments in the primary market becomes impossible. Therefore, primary and secondary markets are co-dependent and jointly contribute to ensuring the efficiency and growth of capital markets.

1.2 Initial Public Offerings (IPO) and Follow-on Public Offerings (FPO)

If a company chooses to raise capital with the means of fresh issue it is termed as Initial Public offering (IPO) or going public. "When an unlisted company makes either a fresh issue of shares or convertible securities or offers its existing shares or convertible securities for sale or both for the first time to the public, it is called an

IPO” (SEBI 2016). Chauhan (2011) described IPO as a process which helps companies to acquire capital from public and gain global recognition by being listed in the securities market. The IPO process offers investors the opportunity to purchase shares directly from companies at a market-driven price, particularly when the IPO is conducted through the book-building method. The decision of ‘Going public’ is a widely adopted and a well-known process for raising of long term capital with mostly indefinite maturity period. However the decision has many added advantages like expanding of capital base, acting as a pull factor for engagement of better management and reducing their turnover rate and increases the liquidity for equity holder. The pricing process of IPOs further classifies the IPOs in two categories, viz., book-building and fixed price.

“When an already listed company makes either a fresh issue of shares or convertible securities to the public or an offer for sale to the public, it is called a FPO” (SEBI 2016). Follow-on public offerings (FPO) are issue of new shares by an already trading company (Abraham & Harrington 2011). FPO is also known as Seasoned Equity Offerings (SEOs) or Secondary Equity Offerings and in present study these terms will be used interchangeably. When once the companies have already gone public, i.e. brought IPO but requires more capital than it raises through the means of SEO or FPO. SEO is sale of stock of a company after it has already completed its primary issue.

1.3 Pricing Strategy

Chauhan (2011) highlighted that the IPO price is fixed by merchant bank in agreement with the issuing firm after taking into consideration the parameters such as earning per share, return on equity etc. and compared to the matching firms. During the book-building method, share prices are fixed through the market-driven demand of shares on different price levels. IPOs opting for fixed-price issue route have a predetermined issue price, which is clearly stated in the prospectus.

Kevin (2009) stated that, according to SEBI guidelines, book building is defined as: “A process undertaken by which a demand for the securities proposed to be issued by a body corporate is elicited and built up and the price for such securities is assessed

for the determination of the quantum of such securities to be issued by means of a notice, circular, advertisement, document or information memoranda or offer document”. Book building is a method for determining the price of shares. It is evident that book building method prevents the leakage of value and proves to be more efficient when compared to fixed price. A price range is set by the issuer, and investors then bid to purchase shares at the price they believe reflects the fair value in the “Book-building method” of price discovery. Then final issue price is determined by the forces of demand and supply in the issue market. The offering price range, minimum price, or price bracket must be announced at least two working days before the issue opens, and minimum of one day in advance for an FPO. If a publicly listed company decides to raise capital by issuing a subsequent fresh issue to public or offering shares for sale to public, it is known as ‘Further Public Offer (FPO)’ or ‘Seasoned Equity offerings (SEO)’, also termed as ‘Follow on offer’.

Although, requirement of capital is not just a matter of one time rather it’s a recurring process. Hence, to acquire capital a listed company can opt for FPO, whereas an unlisted company can issue shares through an IPO.

1.4 Prerequisites of Issuing an IPO or FPO

As stated by SEBI (2016), to bring an IPO the entity must satisfy the following prerequisites:-

Through profitability route (Entry Norm I)

The company must satisfy the following requirements:-

- a) A minimum of ₹3 crores in net tangible assets is required during all of the last three full years, with a maximum of 50% of those assets in monetary form. This 50% restriction on monetary assets is not applicable when the IPO offering is made exclusively through an offer for sale.
- b) A minimum average operating profit before tax of ₹15 crores is required in three out of the five preceding years.
- c) A minimum net worth of ₹1 crore is required for each of the last three full years.

- d) If a change in the name of the company has occurred in the previous year, a minimum of 50% of the company's revenue for the previous year should come from activities related to its new name
- e) The total value of the planned issue, along with any earlier issues within the same financial year, should not exceed five times the pre-issue net worth as shown in the audited balance sheet of the previous financial year.

Through QIB route (Norm II)

The issue must be launched using the "Book-building" method, with a minimum of 75% of the issue being compulsorily allotted to the "Qualified Institutional Buyers (QIBs)". In case this requirement isn't achieved the issuer must return the subscription money.

A publicly traded company conducting a public offering (Follow-on Public Offer, or FPO) is required to fulfill these requirements:-

- a) If the company has undergone a name change during the previous year, a minimum of 50% of its revenue from that year must be derived from activities connected with the new name
- b) The total size of the offered issue, along any earlier issues conducted within the same financial year, shouldn't surpass five times the pre-issue net worth as disclosed in the previous year's audited balance sheet of the company.

Other mandatory provisions besides the entry norms:-

Minimum Contribution by Promoters and Lock-In Period – when a company brings IPO the promoter must contribute at least 20% after-issue capital that must remain locked-in for at least three years. In the case of a public offering by a listed issuer (i.e., Follow-on Public Offer or FPO), the promoters must contribute at least 20% of either the post-issue capital or the offer size.

IPO grading: An IPO grade is a rating assigned by a SEBI-registered Credit Rating Agency to the initial public offering (IPO) of equity shares or other convertible

securities (Gurukul, 2018). The assigned grade helps in evaluation of IPOs against the listed securities. Companies launching an IPO are supposed to disclose their "IPO Grades" as part of the mandatory regulations.

1.5 Process of Going Public

Chauhan (2011) in his study highlighted the process of going public. To go public a company needs to first find an investment bank also known as merchant bank. Tripathy (2011) mentioned that merchant bankers are not necessarily merchants or banks; rather, they are financial entities that offer services such as bill acceptance, corporate funding, management of portfolio, and other banking-related activities. The investment bank acts as a lead manager in the public and right issues of a new company. Investment banks appoint a registrar and appoint syndicate members. Investment banks also perform the role of consultant, advisor, or underwriters during the public issue of a new company. Underwriters administer the issuing process of issuers and warrants that if the securities being issued are not fully subscribed then they would subscribe for the same. Underwriters don't purchase or sell shares rather they act as supporters.

Further Chauhan(2011) pointed that the second step is preparation of Draft Red Herring Prospectus (DRHP) and get it approved by SEBI. Preparation of DRHP and its filing with SEBI is done by the lead manager. DRHP is a detailed prospectus of the issuing company that contains all the relevant information necessary for the investors. When the DRHP gets approved from SEBI it becomes Red Herring Prospectus (RHP). Issuing company is supposed to bring IPO within a year since the date of approval and IPO and it must remain open for a minimum of three working days

The third step is advertising that is administered by the promoters. The last step is fixation of a price band by the promoters along with the investment bank. The maximum difference that a price band can have is 20% but there is no such minimum limit. Price band is a range allowing the investors to fix the final price by the process of bidding. Prospective investors place their bids with appointed syndicate members.

Syndicate members further electronically forward the placed bids of investors to the stock exchanges and the bidding status gets updated on the respective website. The syndicate members must update the latest information regarding bids on the stock-exchanges. Based on the revised bids available on the stock exchange website, lead managers set the final issue price and prepare the RHP, which includes the final issue price, gets clearance from registrar and thereafter the company finally gets registered on the stock exchanges working in India. The Stock Exchange, Mumbai (formally Bombay Stock Exchange (BSE)) and National Stock Exchanges (NSE) are the two most popular securities markets in India, both ranks among the top stock exchanges of the world. BSE is the earliest established securities exchange in Asia and 11th oldest in the world, which was earlier in 1875 known as “The Native Share and Stockbrokers Association” (Das, 2013). Based on market capitalization, BSE ranked 10th, while NSE ranked 11th in the world on 30th November 2018. NSE came into existence in 1992 and was recognized by SEBI in April 1993 and became operative in 1994. “The National Stock Exchange of India Ltd. (NSE) is the leading stock exchange in India and the second largest in the world by nos. of trades in equity shares from January to June 2018, according to World Federation of Exchanges (WFE) report” (NSE, 2018). The study would focus on the performance of IPOs and FPOs listed on NSE and it would highlight the underpricing or mispricing behavior of IPOs and FPOs.

Das (2014) and Ljungqvist (2007) highlighted various theories behind the phenomena of underpricing of IPOs. The underpricing phenomenon is typically and purely seen as the short-run phenomena usually last for a few days after the listing or at best for first few months. The major models which were highlighted by Ljungqvist (2007) are listed as below:-.

1. Asymmetric information model
 - a) “Winner’s Curse” hypothesis
 - b) “Information Revelation theories”
 - c) “Principal-Agent models”
 - d) “Under-pricing as a signal of firm’s quality”
2. “Institutional explanations”

- a) “Legal liability”
 - b) “Price stabilization”
- 3. Ownership and control
 - a) Under-pricing can be seen as a strategy to retain control
 - b) Under-pricing as a strategy to minimize agency costs
- 4. Behavioral explanations
 - a) “Informational cascades”
 - b) “Investor sentiment”

Asymmetric information model describes a concept in which one side possesses superior information compared to the other. In context of an IPO, the issuing company possesses more information regarding its financial strength, long-term growth potential or risks than the potential investors. This imbalance of important information can influence the issuing process of IPOs and its offer price. Asymmetric information model covers the following theories:-

- a) Winner’s curse hypothesis— One of the most well-known hypotheses, the winner's curse theory, was first proposed by Rock in 1986 and applied Akerlof's (1970) lemons problems. The winner’s curse draws attention to the challenges faced by IPOs when the informed investors know the actual value of the share and bid for only the fair- priced IPOs. This would result in ignorant investors overpaying for the less worthy shares, which would further result in a negative average return. For continued investment from the uninformed investors, slight underpricing is necessary. The naïve investors bid indiscriminately for the IPOs, whereas the informed investors bid for the profitable IPOs. This information asymmetry results in uninformed investors in obtaining all the shares they bid for in losing IPOs while facing fierce competition to secure bids in profitable IPOs (Ljungqvist, 2007; Das, 2014; Kuriakose & Athira, 2018). Keloharju (1993) also confirmed the existence of the winner’s curse in his study on the initial public offerings in Finland. He highlighted that post the adjustment of the allocation bias, the unadjusted average return is higher than the adjusted average return. This suggests that investors often overestimate their returns before considering the

influence of allocation bias, reinforcing the winner's curse phenomenon where successful bidders face lower-than-expected returns. Lin, Kao, & Chen, (2010) acknowledged the existence of the winner's curse in Taiwan's IPO market even when the withdrawal option is available to the uninformed investors however he also emphasised that the uninformed investors can exercise their option of withdrawal to avoid loss. When the investors can withdraw, the oversubscription rate is influenced by the IPO's initial return and the return of the market just before the filing of the IPO. Naïve investors withdraw from the IPOs that have a high withdrawal rate or allocation rate which safeguards them against the overpriced IPOs. As commonly observed the IPO returns are mostly positive however the allocation weighted returns are negative and uninformed investors can exercise their withdrawal option to avoid losses. Chhabra & Kiran, (2022) observed the prevalence of winner's curse phenomenon in Indian market and concluded that the availability of information affects the price determination and the pricing performance of the IPOs. However, Keasey, (1992) argued that the real test of winner's curse model is only possible if it can be observed to what extent is an IPO intentionally underpriced. He mentions that the uninformed investor might get influenced by the informed investors and reduce their application amount. This influence complicates the understanding of how much underpricing occurs and its implications for the winner's curse phenomenon.

- b) Information Revelation theories- The information revelation theories can help in overcoming the challenges of asymmetric information to some extent. Various countries have switched from fixed price method to book building method of price discovery. To a certain extent, this method can help underwriters to rightly adjust the offer price as per the information revealed by the informed investors. If the investors choose to reveal the information truthfully they are rewarded by the underwriters through a larger allocation. Conversely, if investors choose to conceal the sensitive information by bidding carefully then they face a risk of being excluded from the share allotment process. This helps underwriters in assessing the fair value of the IPO as if the investors bid aggressively for an IPO it leads to revelation of positive information whereas if the bid cautiously it shows negative information henceforth the offer price is adjusted accordingly by

the underwriters which encourages a more transparent valuation of IPOs. However allocation of mandatory shares to retail investors can affect this process (Ljungqvist, 2007; Das, 2014).

- c) Principal-Agent models– Investment banks play an important part in helping companies gather and manage key information to set a fair and reasonable price when going public. Sometimes the investment banks put their interest over the interest of the issuing firms, leading to practices like rent-seeking behavior and spinning. At times, investors offer side payments to underwriters to obtain underpriced shares, a practice known as rent-seeking behavior. Spinning, on the other hand, involves offering undervalued shares to company executives in the hope of securing future investment banking deals. To overcome these challenges and agency arrangement problems between the IPO firm and the managements investment banks the underwriters commission must be aligned according to the value of the firm which will also help in tackling the underpricing phenomena (Baron, 1982; Ljungqvist, 2007; Das, 2014).
- d) Under-pricing as an indicator of firm's potential– Investors treat underpricing as a signal to distinguish between high-quality and low-quality firms. Reputable firms deliberately leave some money on the table which allows investors to gain from the rise of share prices later. However, the low-quality firms may struggle to gain later which reduces their tendency to imitate the underpricing behavior of the high-quality firms (Welch, 1989; Ljungqvist, 2007; Das, 2014).

Institutional explanation- lawsuits adversely affects the image of the firms by reducing investor confidence therefore to minimize the possibility of future lawsuits sometimes the firms deliberately underprice their shares. The underpricing or price manipulation is lawful in various countries and it also reduces the tax obligation of the companies therefore various IPOs undervalue their shares to attract investors.

Institutional explanation covers the following theories:-

- a) Legal liability- There is strict rule to safeguard the investor against the misrepresentation of information or conciliation of material facts in the IPO prospectus. Settlement of a legal dispute is not just a financial liability; its resolution is time-consuming and devastating to the defendant's reputation. Several studies have discovered that the higher offer price attracts a higher

possibility of future lawsuits; therefore, the underpricing phenomenon acts as an insurance against such risks. Henceforth, underpricing of an IPO is comparatively less costly in comparison to the settlement of legal disputes (Ibbotson, 1975; Ljungqvist, 2007; Das, 2014).

- b) Price stabilization- The price stabilization theory contradicts the general narration that underwriters purposely undervalue the IPOs. As the price stabilization theory explains that when underwriters assess the risk of IPO's price falling below the offer price then in order to stabilize the price they step in. The involvement of underwriters serves as a mechanism to stabilize prices and generate the illusion of positive return although the real return isn't so high. On contrary, if the underwriters do not interfere then the return of the IPO may be approximately zero on the listing day. Another factor that impacts the offer price of an IPO is that underwriters' fees are tied to the IPO's return. As a result, underwriters may sometimes deliberately overvalue the IPO to maximize their earnings. In case if the price of the IPO starts to steep below the expectation then underwriters interfere to maintain the price of the IPO. This also protects the retail and naïve investors from the risks associated with the winner's curse. (Rund, 1993; Ljungqvist, 2007; Das, 2014).

Ownership and control- When a company transitions from private to public through an IPO, it leads to dilution of the ownership and control as shares are issued to the outsiders. This dilution of ownership and control may result in increased agency problems if the management aims for personal gain instead of focusing on the shareholder's wealth maximization. This may lead to disputes between shareholders with decision-making power and those without if ownership and control are not clearly divided. Ljungqvist (2007) highlights that Jensen and Meckling (1976) and Brennan and Franks (1997) offers contrasting theories of role of underpricing in this context. Ownership and control covers the following theories:-

- a) Under-pricing as a means to retain control- Brennan and Franks (1997) highlights that underpricing helps the companies in strategically managing

the allotment of shares to the outsiders by protecting their personal interests. The managers allot smaller portion of shares to the outside investors to avoid scrutiny and conceal their tendency to prioritize personal profit maximization over maximizing the shareholder value. Underpriced shares attract more oversubscription which gives the power to the managers to allot the shares in a controlled manner. Allocation of small portion of shares to the outside shareholders prevents their excess involvement and also reduces the chances of unexpected takeovers by outsiders (Ljungqvist, 2007; Das, 2014).

- b) Under-pricing as a means to reduce agency costs – Stoughton and Zechner (1998) suggest that the underpricing can lead to reduction in agency cost by encouraging monitoring, promoting better alignment of interests between managers and shareholders. As underpriced IPO will promote outside investors to bid for large quantity of shares and it will encourage their involvement in managerial decisions of the company. This will also reduce the personal profit maximization behavior of the managers and contribute towards the wealth maximization of the company (Ljungqvist, 2007; Das, 2014).

Behavioral explanation- when explanations like information asymmetry, institutional explanations, ownership, and control do not seem to be a significant reason behind the underpricing, researchers point towards a behavioral explanation. Since the IPOs are new issues so due to lack of availability of information the assessment of its correct value becomes challenging. Behavioral explanation focuses mainly on the following theories:-

- a) Cascades – The cascades refer to a situation where an individual gets persuaded by the actions of others and follows the actions of others assuming that they possess better knowledge about the problem. In the IPO market, the behavior of early investors often influences later ones. If the initial investors gain, it influences other investors to invest by ignoring their personal information. However, if the initial investors suffer loss, it discourages other

investors even though they may have some positive information. This may lead to an informational cascade, where early investors may demand significant underpricing. In case of book-building method the informational cascade is less as the underwriters don't disclose demand information. If investors communicate freely, the chances of an informational cascade reduces. However, it may lead to unfavorable information being circulated, which may reduce the chances of success of an IPO. (Welch 1992; Ljungqvist, 2007; Das, 2014)

- b) Investor Sentiment- Investor sentiment signifies the behavioral explanation that IPO underpricing occurs because of irrational optimism of some investors about the future prospects of a company. When the IPOs launch the price of the IPO is heavily influenced by the sentiments of the investors. To maximize their proceeds the issuer delays the inventory until the fair value of the shares is revealed. This results in decreased long run return. However the imposed regulations prevents the issuer from holding back the shares therefore the issuer sells the shares to the institutional investor which then resells the shares to the sentimental investors at a regulated price (Ljungqvist, 2007; Das, 2014).

In this study, the pricing performance would be observed across different runs and a comparison would be made with the “BSE IPO index” and “NIFTY 50”. “NIFTY 50” is a popularly used measure of the stock market in India. Punithavathy (2011) stated that NSE-50 is an index of 50 actively traded stocks from about 25 sectors of India. NSE-100 got replaced by NIFTY-50 after the stabilization of the automatic trading system. NIFTY-50 got introduced on April 22, 1996 keeping in mind that it would act as a reason for launching index based derivatives, and will be used by fund managers as a means of assessing portfolio performance vis.-a-vis. market return and track market trends with greater precision. According to Asia Index Private Limited (2018), the index was developed jointly by “India Index Services & Products Ltd. (IISL)” and the

“Credit Rating Information Services of India Ltd. (CRISIL)”. The “BSE IPO Index” monitors the performance of stocks that have been listed via Initial Public Offerings (IPOs) on the Bombay Stock Exchange (BSE) for approximately one year from their listing date and is considered a prominent market index. The index is composed of minimum 10 companies each with a market capitalization of 1 billion, adjusted for available shares, on the first day of listing

1.6 Significance and Scope of the Study

India, being a developing country with increasing capital requirements, faces the risk that investing in unsuitable ventures could result in huge loss of capital. Savings of investors can be mobilized by investing in profitable sectors through the means of IPO. This study will be helpful for understanding the pricing performance of IPOs and FPOs of Indian stock market. It will give insight to investors and other users about the behavior, trends and performance of Indian IPOs as well as FPOs. Present study would help potential investors who are usually oblivious about the right instance of entering the security market as the study analyses the IPO performance across different time periods. While numerous studies have been conducted on IPOs, there is limited research on the pricing performance of FPOs. The study's findings may help emerging companies make informed decisions about going public. Additionally, this study would enrich the existing pool of vast literatures which would help the academicians, researchers, financial analysts, companies and our country at large.

The scope of this research would be very wide as we would cover all the IPOs and FPOs listed on the National Stock Exchange since 1999 pertaining to the availability of data. We have chosen to study IPOs and FPOs listed on the NSE, as it is a prominent Indian stock exchange and, according to the World Federation of Exchanges (WFE) report, ranked second globally in terms of equity share trades from January to June 2018. The study will cover two decades which would cover all phases of market, i.e. bullish and bearish period (also known as hot and cold period) and sideways or stagnant period. The stock market can be classified into categories depending on the number of IPOs launched in the year. In bullish scenario most of the companies choose to go public as compared to the bearish period. Chauhan

(2011) posited that one of the reasons pertaining to this widely observed behavior could be because of ease of pricing and higher probability of success in bullish period. In contrast the prevalence of risk of under subscription relating to the failure of issues and difficulties associates with the pricing of issues during bearish period could explain the low frequency of IPOs in bearish period. In stagnation or sideways period, the market lacks clear direction, which leads to only selective IPO launches typically backed by strong fundamentals. The study covers all IPOs and FPOs listed on NSE during 1999-2025 as shown in Table 1.1 below.

Table 1.1: No. of IPOs and FPOs listed on NSE during the study period

Year	No. of IPOs	No. of FPOs
2025	5	0
2024	74	1
2023	47	1
2022	32	0
2021	54	0
2020	13	1
2019	14	0
2018	22	0
2017	36	0
2016	23	0
2015	20	0
2014	05	1
2013	03	1
2012	09	0
2011	31	2
2010	61	2
2009	17	0
2008	33	0
2007	87	2
2006	61	8

2005	34	8
2004	13	2
2003	04	0
2002	02	0
2001	01	0
2000	10	0
1999	01	0
Total	712	29

Source: Compiled from the information available on NSE website

The IPOs mentioned in the Table 1.1, are those for which data was available on the NSE website. There were 55 IPOs during the period of 1999-2018 that failed/got delisted or withdrawn. 26 of these IPOs were not assigned any grades by the grading agencies and also none of these IPOs were assigned grade 5 by any of the grading agencies. 15 IPOs out of these failed IPOs were assigned Grade 1 i.e. poor or Grade 2 i.e. below average. The dependence or level of influence of the selected variables – like GDP, Inflation prices, annual gold rates of India, annual return percentage of NIFTY 50 index- on the no. of failed IPOs that were filed on NSE during the study period was assessed using the stepwise multivariate regression. The regression test revealed significant relationship between the volumes of failed/ withdrawn/delisted IPOs in a year in India with total IPOs filed on NSE yearly, annual inflation rate, and annual return of NIFTY 50 index. On contrary, the historical gold rate and GDP of India didn't prove to be significant predictive factors of the number of failed IPOs (Kumari & Singh, 2021).

Model-A

$$y = -3.098 + 0.095x_1 + 0.593x_2 - 0.026x_3$$

SE (0.013) (0.120) (0.010)

T (7.389) (4.943) (-2.678)

Sig. of t (s) (s) (s)

(Where y = Total number of IPOs delisted in a year; x1 = Total number of IPO; x2 = Inflation rate p.a.; x3 = NIFTY 50; S = Significant)

Dependent Variable: Failed NSE IPOs per year

Independent Variables selected for the study were Historical gold rates of India (24 karats per 10 grams), annual percentage returns of NIFTY 50 Index, the yearly Inflation rate of India, GDP of India in Billion \$, Total no of IPOs. Total number of IPO, Inflation rate p.a., and NIFTY 50 index return were significant variables which were denoted by x1, x2 and x3 respectively in the Model A. While the Historical gold rates of India, GDP of India in Billion \$ were not significant and thus ignored in the stepwise regression Model A.

Table 1.2: Analysis of Variance (ANOVA)

Source of Variances	Degrees of Freedom (DF)	Sum of Square	Mean Square	F	Significance of F
Regression	3	211.659	70.533	35.176	0.000 (s)
Residual	16	32.091	2.006		

Table 1.3: Model summary

Model	R	R square	Adj. R square	Std. error of the estimate	Change Statistics					
					R square	F Change	df1	df2	Sig. F change	Durbin Watson
A	0.932	0.868	0.844	1.416	-0.21	2.903	1	15	0.109	2.009

Multiple Correlation (r) 0.932

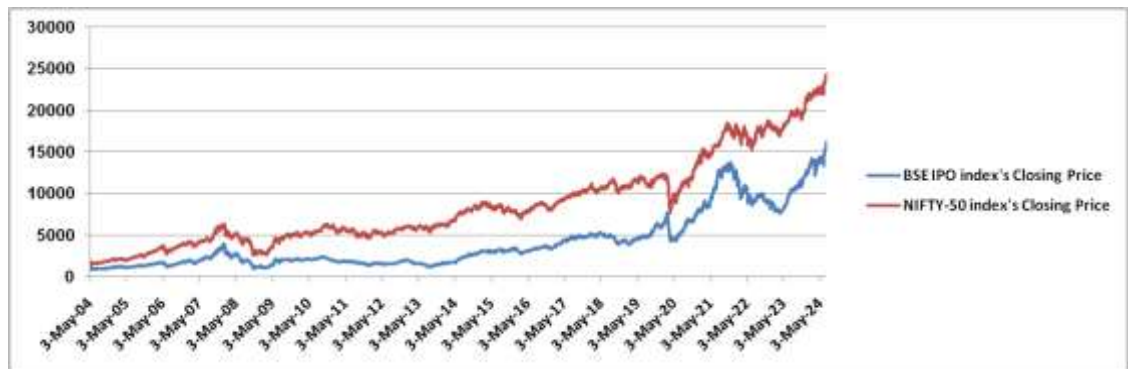
R Square 0.868

As evident from Table 1.3 the R-value of model A is 0.932% and coefficient of determination $[R^2] = 0.868$ which highlights that 86.8% of variance in the number of failed IPOs can be explained with the help of these three macroeconomic factors i.e. total number of IPOs, Inflation Rate, and annual return percentage of NIFTY 50 Index (Kumari & Singh, 2021).

1.7 Trend of NIFTY 50 and BSE IPO index

This study compares the return of IPOs and FPOs listed on the NSE, covering the period 1999–2019 with two benchmark indexes NIFTY 50 and BSE IPO indexes. The BSE IPO Index was introduced on August 24, 2009, with its initial value set on May 3, 2004, and a base value of Rs.1000. To assess the trend of the selected benchmark indexes, the first value date of May 3, 2004, was treated as the baseline.

Fig 1.1: Trend of NIFTY 50 and BSE IPO index



Source: Self-plotted using excel

Fig 1.1 showed the higher closing price of the NIFTY-50 index compared to the BSE IPO index throughout the study period. Both indexes exhibit an increasing trend, reflecting the strong performance of the companies represented within them. By mid-2024, the NIFTY-50 index reached an approximate peak closing value of ₹24,433.2, whereas the BSE IPO index stood at ₹16,078. On the baseline date, May 3, 2004, the closing value of the NIFTY-50 index was ₹1,766.7, while the BSE IPO index was set at its base value of ₹1,000.

The structure of the remainder of this thesis is outlined as follows:

Chapter 2- Review of literature

Chapter 3- Research methodology

Chapter 4- Pricing performance of IPOs during Listing day, Very short run, Short, Medium run.

Chapter 5- Performance of IPOs during long run and very long run period in India

Chapter 6- Comparative performance of IPOs across different periods

Chapter 7- Factors affecting the pricing performance of IPOs in India

Chapter 8- Pricing performance of FPOs

Chapter 9- Findings and Conclusion

References

- Akerlof, G. A. (1970). The market for “lemons”: Quality uncertainty and the market mechanism. *Quarterly Journal of Economics*, 84(3), 488–500. <https://doi.org/10.2307/1879431>
- Baron, D. P. (1982). A model of the demand for investment banking advising and distribution services for new issues. *Journal of Finance*, 37(4), 955–976.
- Brennan, M. J., & Franks, J. (1997). Underpricing, ownership, and control in initial public offerings of equity securities in the U.K. *Journal of Financial Economics*, 45(3), 391–413.
- Chauhan, A. K. (2011). The analysis of the initial and post-issue performance of initial public offerings (*Unpublished doctoral thesis*). Kumaun University, Nainital
- Chhabra, K. (2011). Pricing performance of IPOs in India (*Unpublished doctoral thesis*). Punjabi University Patiala, Commerce. Patiala: Shodhganga.
- Chhabra, S., & Kiran, R. (2022). Impact of information on winners' curse and long-run performance of initial public offerings. *International Journal of Finance & Economics*, 27(1), 975–992. <https://doi.org/10.1002/ijfe.2186>
- Das, S. (2013). Analysing the trend of market prices of initial public offerings (IPOs): A study based on some selected (*Unpublished doctoral thesis*). The University of Burdwan, Burdwan.
- Das, G. (2014). Performance of initial public offerings (IPOs) in the National Stock Exchange: A study of some selected companies in India (*Unpublished doctoral thesis*). Department of Commerce, Calcutta University, Calcutta.
- Gurukul, C. (2018). ASPECTS OF PRIMARY MARKET (NEW ISSUE MARKET). <https://commercegurukulca.blogspot.com/2018/01/4-aspects-of-primary-market-new-issue.html>

- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs, and ownership structure. *Journal of Financial Economics*, 3(4), 305–360. [https://doi.org/10.1016/0304-405X\(76\)90026-X](https://doi.org/10.1016/0304-405X(76)90026-X)
- Keasey, K., & Short, H. (1992). The Winner's Curse Model of Underpricing: A Critical Assessment. *Accounting and Business Research*, 23(89), 74–78. <https://doi.org/10.1080/00014788.1992.9729862>
- Keloharju, M. (1993). The winner's curse, legal liability, and the long-run price performance of initial public offerings in Finland. *Journal of Financial Economics*, 34(3), 251–277.
- Kevin, S. (2009). Security analysis and portfolio management (7th ed.). *Thiruvananthapuram: Asoke K. Ghosh, PHI Learning Private Limited.*
- Kuriakose, S. (Dr.), & Athira, V. S. (2018). Validity of winner's curse hypothesis: Evidence from initial public offerings in the Indian insurance industry. *Research Review International Journal of Multidisciplinary*, Special Issue, 42. Presented at the 2nd International Conference on Commerce and Management in Changing Times (ICCMCT 2018). Retrieved from www.rjournals.com.
- Lin, D. K., Kao, L., & Chen, A. (2010). Winner's curse in initial public offering subscriptions with investors' withdrawal options. *Asia-Pacific Journal of Financial Studies*, 39(1), 3–27. <https://doi.org/10.1111/j.2041-6156.2009.00001.x>
- Ljungqvist, A. (2007). IPO underpricing. In *Handbook of corporate finance* (pp. 375–422). [https://doi.org/10.1016/S1873-1503\(06\)01007-5](https://doi.org/10.1016/S1873-1503(06)01007-5)
- NSE. (2018).NSE. Retrieved Feb 28, 2019, from https://www.nseindia.com/global/content/about_us/about_us.htm
- Punithavathy, P. (2011). *Security analysis and portfolio management*. s.l.: Vikaas Publishing House Pvt. Ltd.
- Rock, K. 1986. Why new issues are underpriced. *Journal of Financial Economics*, 15, 187–212.

SEBI. (2016). Sub section- I Issues by Indian companies in India. *SEBI*. https://www.sebi.gov.in/sebi_data/commondocs/subsection1_p.pdf [Accessed 13 March 2019].

SEBI, (n.d.). Beginner's Guide to Capital Market - Primary Markets. <https://investor.sebi.gov.in/pdf/reference-material/primarymarkets.pdf> [Accessed 24 Oct 2024]

Stoughton, N.M., Zechner, J., 1998. IPO mechanisms, monitoring and ownership structure. *Journal of Financial Economics*, 49, 45–78.

Tripathy, N. P. (2011). *Financial services* (5th ed.). New Delhi: PHI Learning Private Limited.

Welch, I. (1989). Seasoned offerings, imitation costs, and the underpricing of initial public offerings. *Journal of Finance*, 44(2), 421–449. <https://doi.org/10.1111/j.1540-6261.1989.tb05064.x>

Welch, I. (1992). Sequential sales, learning, and cascades. *Journal of Finance*, 47(2), 695–732. <https://doi.org/10.2307/2329120>

CHAPTER 2

LITERATURE REVIEW

Initial Public Offerings (IPOs) and Seasoned Equity offerings (SEOs) of almost all of the top stock exchanges of the world have been widely researched to highlight the reasons of mispricing of IPOs and SEOs during short, medium and long term periods. Relevant works of literatures related to the topic have been studied and compiled below. This section covers the literatures on following: Process of IPO, IPO performance during the Short run period, performance of IPOs during long-run and FPOs/SEOs, Probable reasons for the under-pricing phenomenon, Volume and return relation and Factors affecting the pricing performance of IPOs.

2.1 Process of IPO

Schultheis et al.(2016) concluded that when any company requires capital it chooses to go public that is issue IPO. This helps the companies to get cash at low cost and enhances the market value of Companies. After a company goes public there are a set of rules a company needs to follow law so applicable, regulator's and other rules are complex in nature and are subject to change. Lot of experience, planning and preparation is involved in execution of public offering of securities. For an IPO with a firm commitment listed on the Nasdaq or NYSE, the underwriting discount is normally set at 7%. Additionally, both the NYSE and Nasdaq mandate that a listed company establish an audit committee with at least three directors, each of whom must have a certain level of financial literacy. After the imposition of restrictions by NYSE and FINRA rules now most IPO underwriters acquire lock up period longer or potentially longer than 180 days. Espinasse (2014) and Chauhan (2011) explained rocess of going public is very complex some IPOs become successful and some fail to perform. Companies need to choose their investment bank with due care. The 'beauty parade' is a highly useful method for selecting a lead bank for a foreign IPO. There are two ways of conducting a beauty parade:- two-stage or a single stage process. In two stageprocess, banks submit the return answers to aRequest for Proposal (RFP) based on which they are shortlisted and Syndicate of lead banks is created. In a single-stage process, banks are invited to verbally pitch to the company,

and selections are made based on the expected size of the IPO. Even for large IPOs, no more than 6 or 7 lead banks should be appointed (Espinasse 2014).

2.2 IPO performance during short run period

Ganesamoorthy & Shankar (2014) analysed the listing day performance of Indian IPOs launched during 2001-2010. Price impact of IPOs on the initial trading day with respect to the volume of return was observed and the existence of price impact with respect to the nature of return on the first day was observed. First day return of a total 219 companies that offered IPO upon dividing it in two respective groups:- companies earning positive return (110) and companies with negative return (109) were observed. The researchers observed the return of IPOs for a period of 75 days. On the first day, the IPOs yielded a positive return, but by the second day, the return turned negative. Additionally, the return on 15th, 39th and 52nd day were also negative. Ganesamoorthy & Shankar (2014) concluded that returns for 22 days out of the 75 days were favourable and for 53 days were negative. They also found that the companies which yielded positive initial day return outperformed the companies which had negative initial day return.

Gopalaswamy et al. (2008) examined the returns of 50 Indian IPOs listed on NSE during 1999-2004 to determine if the entry routes of IPOs (i.e. fixed price or book-building method) have any effect on their returns. However, the findings of the study showed that during the short-term analysis the performance of IPOs did not differ significantly between the two groups i.e. IPOs launched using the “Fixed price” or “Book-building” method.

Singh & Kumar (2012) studied the short as well as long-term returns of 116 Indian IPOs launched during 2006-2007 and stated that under-pricing stood at 18% during short run. Kumar (2017) analysed the listing day pricing performance of 314 Indian IPOs which were listed during the period of 2003-2017 and revealed that average under-pricing stood at 84.52% among the IPOs. Pandya (2016) analysed 183 Indian IPOs listed during 2004-2013, and highlighted that the IPOs yielded positive average listing day return of 15.69%. The study also stated that investing in IPOs may be profitable during the short and medium run.

Ellikkal et al. (2022) evaluated the IPOs that got listed on the NSE and BSE during 2021 and stated that many of the IPOs were underpriced and yielded profits on the first day and during the short run. M & Vijaykarthigeyan (2023) found that 72% of mainboard IPOs listed between April 1, 2020, and March 31, 2022, yielded positive returns on their listing day, indicating that most were underpriced. This pattern aligns with earlier findings by Loughran & Ritter (1995) and Mørkøre et al. (2019), who observed that IPOs often see strong initial gains. These early returns are typically driven by investor excitement and the limited availability of shares in the market, which pushes prices up shortly after listing.

Stevenson (2006) observed 757 IPOs launched in the UK markets between 1981 and 1998, and revealed that short-term under-pricing was noticeably higher in privatized firms compared to private sector companies—especially among utility firms. The research also supports the idea that governments often underpriced privatisation issues to reassure investors about potential future intervention. Kenourgios et al. (2007) investigated 169 IPOs listed on the Athens Stock Exchange (ASE) between 1997 and 2002, and found that the average under-pricing on the listing day was 52.7%. This figure gradually declined to 44.78% by the end of the fifth trading day, and further to 41.84% one month after listing. Rossovski et al. (2025) investigated 2111 US IPOs launched during 2000-2020 and revealed that the 1543 IPOs yielded positive listing day return, 119 IPOs listed neither profit nor loss and 449 IPOs yielded a negative return on the initial day.

Tripathy (2011) stated that capital markets help investors in mobilizing and channelizing their savings towards productive use consistent with national priorities. Geddes (2003) stated that IPOs create opportunities for investors to obtain stake in high-quality companies at a comparatively lower prices, which may not be feasible in secondary market. Investors decide to maximize the share price performance after the flotation. It is widely observed that it was a trend to give an immediate positive return to investors. Diverse long-run performance was seen in markets of Australia, Brazil, Japan and Korea by the researchers. Pilot fishing is a type of free marketing of IPOs and is commonly used in fixed-price IPOs, particularly when lead banks and bankers are not certain of price/valuation of the company.

2.3 Performance of IPOs and SEOs/FPOs during long-run period

Ritter (1991) deduced that a set of matched firms of similar size and industry performed better than the selected IPO firms over the long-run. He further elaborated that on investing in IPOs at the end listing day and holding the same for duration of three years would yield only 83 cents relative to each dollar from investing in matching firms. Lee, et al. (1995) also claimed that Australian IPOs underperformed in comparison to the Australian market when observed for three years duration. They also reported that a curvilinear relationship can be established between initial and subsequent return although the relationship doesn't seem to have much economic significance. Further, they also reported that Long-run return was not associated to under-pricing in a manner that overreaction or fads explanation suggest.

Loughran & Ritter (1995) studied US companies going public and SEOs (Seasoned Equity Offerings) during 1970-1990 and revealed that both were poor long-run investment compared to the matched firms. To earn the same yield from IPOs or SEOs as may be earned by investing in matched firms, investors may have to invest 44% more in it. The researchers also concluded that if the size of the firm and the market-to-book ratio are the same, then investing in firms that are not issuing an IPO would yield better returns than investing in firms that are bringing an IPO. Reason behind the persistent poor performance of IPOs or SEOs might be the because of betting of investors on long shots and giving more weightage to hope than to experience.

Carpentier et.al. (2009) analysed the performance of 958 SME SEOs (seasoned equity offerings or Follow on public offerings) floated on the TSX venture exchange (TSXV) and revealed the poor yield of the SEOs post the issue. The investor who held the shares for three years incurred a loss, indicating that long-term investment in SME SEOs was not profitable. Moskowitz and Vissing-Jorgensen (2002) also reported in their study the unfavorable yield of the SEOs in relation to the high risk associated with the investment.

Deb (2017) studied the FPOs launched during 2003 to 2015 and found the underperformance of FPOs. Abraham & Harrington (2011) observed that firms

opting for SEOs are fundamentally strong, with rising net incomes, conservative financial strategies, and favored using internal funds rather than debt, particularly to fund innovative projects with uncertain returns. This reflects cautious expansion and resilience, especially evident during economic downturns like 2007–2009

Gompers & Lerner (2003) found that IPOs underperform when BHR (Buy-hold abnormal return) strategy was adopted while it overperformed when CAR (cumulative abnormal return) method is adopted. IPOs overperformed when calendar time analysis was chosen. Hence, he concluded that IPO yields were influenced by the method adopted. Ang & Boyer (2009) studied the IPO returns by distinguishing them in two categories new industries and already established industries. They asserted that, over the ten years study period, the IPOs of the new industry yield better returns than the IPOs of established industries. IPOs in new industries are less likely to become bankrupt, merge with other or get delisted in comparison to IPOs of established industries. Boubakri, et al. (2005) concluded that big IPOs have less probability of being delisted and under-pricing further reduces the risk of it being acquired by any other or the risk of its failure. They posited that the risk of failure of IPOs is high in hot issue period while the extent of under-pricing is positively related with its survival period. Zakuli, et al. (2006) claimed that Malaysian IPOs give better returns in long-run when compared to IPOs of other developed nations, and that IPO yields vary according to the strategies employed. Their study also showed that IPO performance varies with the listing year, issue size, and initial return.

Das, et al (2016) conducted a study on 47 IPOs launched during 1999-2007 and found no evidence of abnormal returns over the long-term. The researchers also calculated wealth relative to evaluate the long-term return of IPOs and highlighted that compared to the international reports Indian IPOs delivered reasonably strong long-term returns. Gopalaswamy et al. (2008) studied the long-term yield of 50 IPOs that were floated on the NSE between 1999-2004. During this period, the IPOs were issued using either the fixed price method or the book-building method. In their study, IPOs issued through the book-building method delivered lower returns in the second and third-years after listing compared to those issued using the fixed price

method Singh & Kumar (2012) assessed the short and long-term yield of 116 Indian IPOs launched during 2006-2007 and found that, in the long-term, under-pricing was around 11.5%. Hawaldar et al. (2018) evaluated the long-run returns of 464 Indian IPOs launched during 2001-2011, and reported that during long-run, fixed priced IPOs yielded positive and statistically significant returns, while the book-building issues yielded negative and statistically significant returns.

2.4 Probable reasons for the under-pricing phenomenon

All nations experience some degree of short-term under-pricing, which has been explained by a variety of theories. Prevalence of under-pricing has been documented by numerous authors worldwide however the degree of under-pricing varies based on various factors (Madhusoodanan & Thiripalraju, 1997). Das (2014) and Ljungqvist (2007) highlighted various theories behind the phenomena of under-pricing of IPOs. One of the most well-known hypotheses, the “Winner's curse theory”, was first proposed by Rock in 1986 and applied Akerlof's (1970) lemons problems. This information asymmetry results in uninformed investors in obtaining all the shares they bid for in losing IPOs while facing fierce competition to secure bids in profitable IPOs (Ljungqvist, 2007; Das, 2014; Kuriakose & Athira, 2018). Tian (2012) stated that some of the basic issues brought on by asymmetric information may arise because initial public offerings include the selling of securities in closely held companies where some of the current owners may possess non-public knowledge. A third issue is that management decisions affects the firm's underlying value, which may result in adverse selection issues when companies have discretion over when and if to go public. The market must also address the challenge posed by this moral hazard.

Keloharju (1993) also confirmed the existence of the winner's curse in his study on the IPOs in Finland. He highlighted that post the adjustment of the allocation bias, the unadjusted average return is higher than the adjusted average return. Lin, Kao, & Chen (2010) acknowledged the existence of the “Winner's curse” in Taiwan's IPO market even when the withdrawal option is available to the uninformed investors however he also emphasised that the uninformed investors can exercise their option

of withdrawal to avoid loss. Chhabra & Kiran (2022) observed the prevalence of winner's curse phenomenon in Indian market and concluded that the availability of information affects the price determination and the pricing performance of the IPOs. However, Keasey (1992) noted that the real test of winner's curse model is only possible if it can be observed to what extent is an IPO intentionally underpriced.

The information revelation theories can help in overcoming the challenges of asymmetric information to some extent. As book-building method of price discovery can help underwriters to rightly regulate the issue price as per the information revealed by the informed investors. Underwriters can assess the correct valuation of the IPO using the book-building method as if the investors bid aggressively for an IPO it leads to revelation of positive information whereas if the bid cautiously it shows negative information henceforth the offer price is adjusted accordingly by the underwriters which encourages a more transparent valuation of IPOs. (Subrahmanyam, A. & Titman, S., 1999; Ljungqvist, 2007; Das, 2014). Investment banks play a significant role in managing the information important for a fair price fixation of an IPO. Sometimes the investment banks put their interest over the interest of the issuing firms, leading to practices like rent-seeking behaviour and spinning. To overcome these challenges and agency arrangement problems between the issuing company and the investment banks the underwriters commission should be aligned with the firm's value which will also help in tackling the under-pricing phenomena (Baron, 1982; Ljungqvist, 2007; Das, 2014).

The high-quality firms deliberately leave some of the potential profits, which allow investors to gain from the rise of share prices later. However, low-quality firms might struggle to gain in the long-run, making them less likely to imitate the under-pricing behaviour of high-quality firms (Welch, 1989; Ljungqvist, 2007; Das, 2014). Additionally, lawsuits adversely affect the image of the firms by reducing investor confidence therefore to minimize the possibility of future lawsuits sometimes the firms deliberately under-price their shares. Under-pricing or price manipulation is lawful in several countries, which also reduce the tax obligations of firms. Therefore, many IPOs undervalue their shares to attract investors (Ibbotson, 1975; Ljungqvist,

2007; Das, 2014). When a company transitions from private to public through an IPO, it leads to dilution of the ownership and control as shares are issued to the outsiders. Ljungqvist (2007) highlights that Jensen and Meckling (1976) and Brennan and Franks (1997) offers contrasting theories of role of under-pricing in this context. When explanations like information asymmetry, institutional explanations, ownership, and control do not seem to be a significant reason behind the under-pricing, researchers point towards a behavioural explanation like informational cascade and investor sentiment (Welch 1992; Ljungqvist, 2007; Das, 2014). Payne et al. (2023) studied all US IPOs that were floated during 2009-2014 and highlighted the significance of signaling theory and disparity of information on the process and IPO proceedings. Yang and Yuan (2021) analysed 4457 US IPOs during 1980-2018 and reported the negative association of the trademark with the under-pricing of IPOs, indicating that the firms with less information availability have higher under-pricing. Fisch et al. (2022) examined 1,510 European IPOs launched between 2002 and 2015 and found that firms with broader trademarks were less likely to experience under-pricing. Sahoo and Raj (2022) examined the impact of selected qualitative factors i.e. strong market presence, good brand image, adapting and employment of advance IT systems on the performance of 82 Indian IPOs that floated during 2014-2020, and found strong market presence and brand image significantly influenced the under-pricing of IPOs.

Chowdhary & Nanda (1996) pointed out that IPO under-pricing is positively associated to the degree of uncertainty about the actual value of the shares. Also, the degree of under-pricing and is positively associated with the degree of uncertainty associated about the firm's worth. Higher after market volatility resulted in higher level of under-pricing. Field & Karpoff (2002) concluded that when IPO managers opt for takeover defences when firms bring IPO. There is a directly proportional relation between takeover defence and compensation of the manager while it is indirectly proportional to the shareholding of the managers. This probably implies that there are higher chances of deploying takeover defence in the case when managers hold small no shares and earn huge compensation. It brings out that some amount of conflict exists between managerial and non managerial shareholders even at the time when firm goes public. Griffith, et al. (1999) pointed that going public is the beginning of a

long-term relationship with public and institutional investors with public and institutional investors with IPO a company can accelerate its growth, become a part of new market and attract valuable employees. IPO should not be regarded as a short-term financial transaction as it tends to have far reaching impact. Generally, the IPO period lasts from 90 days to 120 days but the planning process for going public begins one or two years before and continues for a long-term. Success of an IPO is highly dependent on the trust that CEO can build among employees and market that he will exercise the formulated strategic plans. Mulchandani et al. (2022) observed 540 IPOs listed on BSE or NSE during 2005-2019 and the results of this study supported the hypothesis i.e. overconfidence of investors drive higher initial return followed by declining returns during the long-run.

Raghupathy & Thillairajan (2015) explained that the effect of long-term buy-and-hold returns on venture capitalist backed IPOs and matched groups disappeared after the initial two years. Consistency in CPM, ROA, EV/EBIDTA margin and P/BV which were the major value determining factors of firm showed the dominance of fundamental factors over the qualitative influencers, like VC (Venture Capitalist) backing. Results also show that probable IPO firms fundamentals than on reputation of a VC backer. Bossin & Sentis (2014) studied companies having analyst coverage and companies not having analyst coverage. After controlling for other factors that affect IPO yield, it was observed that investors and other participants of the market give importance to the analyst coverage if the IPOs are backed by venture capital, having large syndicate as its underwriter and when it is not introduced by the means of book-building process. The long-term yield of companies not having analyst coverage was found more severe than of those having analyst coverage when observed for one-year period. However when observed for a period of 3 to 5 year period the firms with analyst coverage performed better.

Oman (2005) concluded that in one-year horizon private issues yield positive returns but when observed for a period of 3 to 5 years it produces negative return. The returns in the beginning year is affected by Ex ante uncertainty, PE ratio (price Earning) and the rate of oversubscription. long-run return of 3 to 5 years is also affected by rate of oversubscription, P/E ratio and Ex ante uncertainty. It was also

evident in this research as observed by other researchers also, investors tend to be overoptimistic in the beginning of the issues but gradually become pessimistic. Ahmed et al. (2024) analysed 710 IPOs issued during 2013–2014, available on the World Federation of Exchanges database, and deduced that the offer size of the IPO was positively associated with under-pricing, highlighting the existence of the ex-ante uncertainty hypothesis. Additionally, Ahmed et al (2024). also indicated that there was no association between board size and IPO under-pricing; however, the level of board independence had a small influence on the degree of under-pricing. Furthermore, the certification hypothesis (i.e., firms employing prestigious underwriters are less underpriced) did not hold true. Instead, the study revealed that underwriters deliberately underpriced the issues to benefit their buy-side clients. Boehmer & Fische (2006) explained the relationship between the investors and underwriters and also how underwriters can benefit investors beyond first day returns and price stabilisations. Underwriter discretion can help issuers as well as the clients. Kenourgios et al. (2007) analysed 169 IPOs that were floated on the Athens Stock Exchange (ASE) during 1997-2002 and confirmed the hypothesis that underwriter's reputation is inversely associated with the level of IPO under-pricing.

Kohli (2009) analysed the performance of Indian IPOs in relation to their future performance and risk, finding that the P/E ratio of both IPO issuers and non-issuers declined, though the decline was more drastic for IPO issuers. He explained that despite this, the future returns of IPOs were not associated with the elevated price of new equity. Additionally, the study suggested that investors tended to be overoptimistic about the growth prospects of IPOs, often overlooking their low profitability. This overoptimism led to the financing of low-profitability firms. Moreover, in India, the price of IPOs is shaped by regulators through the book-building process, which may also contribute to this overvaluation.

Liu and Chiang (2022) analysed 2212 IPOs listed on the Shanghai and Shenzhen stock exchanges during 2000 to 2017 and found that in environments where formal institutions are weak, cultural values can play a key role in reducing issues like information asymmetry, rent-seeking behaviour, and agency costs. As a result, investors perceive lower risks when companies are more influenced by such cultural

norms. This increased trust leads them to believe that the usual problems associated with IPOs are less severe, ultimately lowering their risk assessment—and therefore, reducing IPO under-pricing. Legierse (2023) analysed 294 IPOs listed on Amsterdam stock exchange and found that, contrary to the expectation the offering method and the magnitude of the issue did not influence the under-pricing of the IPOs. Rather the age of the firm and the prior stock market conditions showed a significant influence on the under-pricing of the IPOs. The IPOs offering the preferred shares were less underpriced compared to the IPOs which offered common shares.

Bruton, et al. (2010) found evident that dense ownership positively affects the IPOs' performance. Ellikkal et al. (2022) emphasized that different types of private equity investors have varying impacts on performance, and that the legal system of a country regulates this impact. Dense ownership and existence of private equity investors both serve as important tools of corporate governance. The ownership pattern affected the price premium in France however the relation cannot be established in UK. The age of the venture capitalist firm, board non-alignment, and IPO price showed an inverse association in France, while they were positively associated in the UK. Kini (1994) observed the change in operating performance of firms as they change their ownership from private to public. A degradation is found in the operating performance after IPO. The operating performance of IPOs and the retention of shares by the founding entrepreneurs are positively associated; however, no association was found between operating performance and the degree of under-pricing.

2.5 Volume and Return Relation

Gupta, et al. (2014) claimed that the relationship between volume and return are useful as they can bring forward dependencies which can help in making profitable trading strategy and can have conclusions for market efficiency. Researchers, studied the association of stock returns and their trading volume and to assess the causality effects. 50 stocks of Nifty, were analysed for this purpose. The results indicate that there is asymmetric relation between returns and volume and the best proxy of the volume is the turnover or the value of shares traded. Overall, the results indicate that in 66% of the companies, returns are causing volume and in 24% of the companies,

volumes are causing returns. Results reveal that simple returns cause different proxies of volume.

2.6 Variables/factors influencing the pricing performance of IPOs

Loughran & Ritter (2004) studied the IPOs listed during 1990-2003 and analysed few factors that probably drive the under-pricing of the IPOs. He also mentioned that if one were to explain under-pricing using different variables, one might obtain different answers. Fadila & Zilal Hamzah (2015) also analysed the potential impact of various factors, including BIRate (interest rate of Bank Indonesia), inflation, exchange rate, ROA (Return on Assets), DER (Debt-to-Equity Ratio), underwriter reputé, age and size of enterprises, and percentage of shares, on the level of under-pricing. The results of their study highlighted that all independent variable in their study had a substantial impact on the extent of under-pricing at the same time. Selvamathi et al. (2019) found a positive association between the BHRR (buy and hold raw return) and factors like, lead time and grade of the IPOs in the long-run period. The degree of correlation between the BHRR and the grade of the IPOs was stronger compared to the degree of correlation between the lead time and the BHRR return during the long-run. He also observed a strong correlation between the issue size and the one-year BHRR. One crucial element affecting the IPO return is the lead period or listing delay. Therefore, the IPO issuing businesses must refrain from extending the listing date and ensure that the listing process happens swiftly. Investors should consider the IPO's size when making investments, as it is a significant long-term predictor of IPO returns. When issue size is present, the IPO grade also affects IPO returns. Therefore, investors should consider the IPO grading when evaluating issue size, as the grading reflects the fundamental and historical performance of the company going public.

Westin & Wiklund (2016) in his literature assumed raw return as the dependent variable, while the firm's age, family ownership, market capitalization, leverage, share structure, and first-day turnover were assumed as independent variables. The study explained that under-pricing was negatively correlated with the IPO size, whereas the first return was favorably correlated with turnover. Additionally, the

under-pricing was negatively impacted by leverage. Svoboda & Heise, (n.d.) also examined six independent variables (industry, list, firm age, market value, pre-secured shares, IPO year) and the level of under-pricing, which is regarded as the dependent variable. The paper acknowledged the prevalence of IPO under-pricing in Swedish markets and two of the six factors examined to assess the concept of IPO under-pricing were determined to be relevant. Tian, (2012) in general, research indicates that initial public offerings (IPOs) are priced right in the long-run, but underpriced in the short-term. The researchers in their study aim to demonstrate the relationship between offer size, business age, systematic risk, reputation of the underwriter, P/E ratio, debt ratio, ROA, and degree of under-pricing of IPOs floated on the London Stock Exchange. Issue size, systemic risk, and debt ratio were determined to have a substantial impact on the IPO's under-pricing, according to the author. As per Tian (2012), a large volume of issue size usually contributes to a lower degree of under-pricing. The "systematic risk and debt ratio" contribute to a higher level of under-pricing, thereby demonstrating the positive association between IPOs and the "systematic risk & debt ratio". Loughran et al. (2004) documented that the cross-sectional relationship between first-day returns and firm age is driven by the higher risk associated with younger companies, for which investors require compensation. One interpretation of the negative correlation between sales and first-day returns indicates a relationship between IPO risk and under-pricing. Yazdani, (2015) studied the effect of IPO size and industry, market volatility, and underwriter performance on the under-pricing of IPOs in Malaysia. Wong et al., (2017) also highlighted the positive relation between the IPO size, market volatility, underwriter status, and the IPO price reciprocal and under-pricing in Malaysia. Rahman & Yung, (1999) in their paper reported the correlation between the initial under-pricing and the ex-ante uncertainty proxy variables, offer size, and SD (standard deviation) of twenty-day aftermarket returns, as substantial and positive. This indicates that for a given degree of ex-ante uncertainty, the under-pricing is greater. Nonetheless, there is a notable inverse relationship between under-pricing and the lead underwriter's prestige, meaning that IPOs supported by prestigious underwriters are less likely to be underpriced. Ghosh (2005), Singh and Singh (2008) and Sehgal & Sinha (2013) also highlighted the effect of listing delay on the return of the IPOs and concluded

that the IPOs having higher lead time showed higher under-pricing. Kiran & Phil (2011) explained that the factors such as Subscription level, Issue size, Listing lead-time and Age influenced the initial returns of the listing day of the company. Kadolkar et al. (2023), who studied 262 Indian IPOs launched during 2016-2019, also found that oversubscription, price band, and issue size influenced the raw return of the IPOs. Kumar (2017) analysed the association of eight selected variables with the level of under-pricing and reported that only two of the eight test variables i.e. net worth to asset ratio and return on net worth, showed a statistically significant relation with the under-pricing of IPOs. Butler (2014) evaluated 5,573 IPOs against forty-eight variables and found the following variables to have a significant influence on IPO under-pricing: “Natural log-Firm Sales, Offer Price Revision, Natural log of News Stories, Total Liabilities to Assets Ratio, Investment Bank Market Share, Average Under-pricing in the Previous 30 Days, Average Offer Price Revision in the Previous 30 Days, Prior 30-Day CRSP EW Index, Ln of One Plus the Ratio of Secondary Shares Retained to Shares Offered, Offer Revision from Original Filing Date (when negative), Ln of Industry Market Value to Sales Ratio, Ln of the Offer Price to Sales Ratio, Prior 30-Day Industry Return, Prior 30-Day Standard Deviation of Industry Return, and Prior 30-Day NASDAQ Return.”

Ahmed et al. analysed 710 IPOs launched in seven evolving markets during 2013-2017 and found that the level of under-pricing varied across different markets i.e. Egypt (15.5%), Turkey (16.8%), China (56%), Malaysia (43%) and India (40.5%). Ahmed et al. applied OLS and quartile regression to assess the effect of selected factors (16 variables) on the degree of under-pricing of IPOs, and the results showed that the variables explained around 26% of variability of which the firm size, Offer price, Offer size, reputation of underwriters, board independence, and institutional factors such as control of corruption, governing rules and law, legal rights, enforcement of contract, and protection of private property were significant predictors of level of under-pricing of IPOs.

Das et al. (2016) studied the existence of under pricing in the long-run using a sample of 47 selected IPOs listed during 1999-2009. The researchers analysed six carefully selected variables (i.e. bonus, BMV ratio, splits, age of the IPO firms, post

launch corporate decisions) and performed a regression test to assess their effect on the under-pricing of the selected IPOs during the long-run. The regression test results significantly explained 23.2% of difference in the long-run performance of the IPOs. Gupta et.al (2023) analysed 384 Indian IPOs launched during 2012-2018, and reported that level of pre-market under-pricing is greatly influenced by factors like rate of subscription, cost of issue, reputation of the lead managers and the uncertain economic policy. Additionally, Gupta et.al (2023) also reported that the reputation of the lead manager impacts the post listing and the long-run IPO performance. Huson&Meng (2025) studied the post IPO performance of 6,052 IPOs launched during 1983-2020, and indicated that efficient use of funds positively affects the post IPO performance.

Fedorova et al. (2023) examined ten sentiment variables to understand their influence on IPO performance that were extracted from the prospectuses of US IPOs launched between 2018 and 2021. The researchers found that four of the sentiment indicators i.e. prospectus summary sentiment and the business section sentiment, significantly influenced the first day raw and market adjusted return at 1% level, while the risk factor sentiment and the financial information sentiment were significantly related to the raw as well as the market adjusted return at 5% significance level..

Despite extensive global research on IPO under-pricing and the factors influencing it in various contexts, a research gap still exists in understanding the determinants of pricing performance in Indian IPOs. This study aims to bridge the existing research gap by examining how the selected factors like oversubscription rate, issue size of the IPO, issue price, lead time, age of issuing company, and lot size of the IPO affect the level of under-pricing for IPOs listed on the NSE.

2.7 Research gap

A review of several international and national studies revealed that most have documented the phenomenon of under-pricing or mispricing in both IPOs and FPOs. This study analysed the pricing performance of IPOs and FPOs (widely known as SEOs) in Indian context. Since the liberalization of the Indian economy, the market has undergone significant changes, such as the abolishment of the Capital Issues

(Control) Act, 1947. Before the abolishment of Capital Issues Control Act, free pricing of issue was not possible; however, now issues can be freely priced. It is expected that after liberalization of equity norms equity will be fairly priced but researchers have found otherwise. After the liberalization of the Indian economy there has been a vast change in technological, legal and political environment of India that has affected the equity culture of India. Stock market appears as a good investment option as they show high promising returns compared to other traditional investment methods as fixed deposit, government schemes, bonds and gold etc. The investment in equity is becoming a growing trend and therefore the savings of investors should be mobilized into profitable sectors through IPOs. This study would be helpful in understanding the pricing performance of IPOs and FPOs of Indian stock market. The study aimed at giving insight to investors and other users about the behaviour, trends and performance of Indian IPOs as well as FPOs. Usually researchers have studied short-run performance of IPOs in India; this study analysed the IPO performance across different time frames i.e. listing day, during the very-short, short, medium, long, as well as in the very-long term. The scope of this research was wide, as it covered all the IPOs and FPOs listed on the National Stock Exchange. The study covered two decades, i.e., 1999-2018, that would cover both bullish and bearish periods, and no such studies were conducted earlier in India. Also, IPO performance across different time frames was compared with the NIFTY 50 and IPO Index. The mispricing of FPOs or SEOs was also not been researched much. Henceforth, this research was an empirical study of pricing performance of IPOs and FPOs in India.

2.8 Research objectives

This study aims to analyze the pricing performance of Indian IPOs and FPOs listed on the National Stock Exchange (NSE). The sub-objectives of the study are as follows:-

1. To review the procedure of bringing an IPO and FPO in India.
2. To examine the pricing performance of IPOs in very-short, short, medium, long- and very long run.
3. To analyse the pricing performance of FPOs in very-short, short, medium, long and very long run.
4. To study the trends of BSE IPO Index and NSE Nifty-50 index.

5. To study the pricing performance of IPOs based on Issue Price.

References

Abraham, R. & Harrington, C., 2011. Seasoned Equity Offerings: Characteristics of Firms. *International Journal of Business, Humanities and Technology*, Vol. 1 No. 3(November), pp. 26-33.

Ahmed, A. A., Fathy, B. A. G., & Samak, N. A.-A. (2024). The determinants of IPO initial returns in emerging markets: A quantile regression. *International Journal of Emerging Markets*, 19(1), 211–230. <https://doi.org/10.1108/IJOEM-01-2021-0112>

Akerlof, G. A. (1970). The market for “lemons”: Quality uncertainty and the market mechanism. *Quarterly Journal of Economics*, 84(3), 488–500. <https://doi.org/10.2307/1879431>

Ang, J. & Boyer, C., 2009. Performance Differences between IPOs in New Industry and IPOs in Established Industries. *Managerial Finance*, Vol. 35, pp. 606-623.

Baron, D. P. (1982). A model of the demand for investment banking advising and distribution services for new issues. *Journal of Finance*, 37(4), 955–976.

Brennan, M. J., & Franks, J. (1997). Under-pricing, ownership, and control in initial public offerings of equity securities, *U.K. Journal of Financial Economics*, 45(3), 391–413.

Boehmer, B. B. & Fishe, R., 2006. Do institutions receive favorable allocations in IPOs with better long-run returns? *Journal of Financial and quantitative analysis*, Vol. 41(04), pp. 809-828.

Bossin, R. & Sentis, P., 2014. Long-run performance of IPOs and the role of financial analysts: some French evidence. *The European Journal of Finance*, Vol. 20(2), pp. 125-149.

- Boubakri, N., Kooli, M. & L'Her, F. J., 2005. Is there any life after going public? Evidence from Canadian Market. *The Journal of Private Equity*, Vol. 8(3), pp. 30-40.
- Bruton, G. D., Filatotchev, I. & Chanine, S., 2010. Governance, Ownership structure and Performance of IPO Firm: The Impact of Different Types of Private Equity Investors and Institutional Environments. *Strategic Management Journal*, Vol. 31(5), pp. 491-509.
- Butler, A. W., Keefe, M. O., & Kieschnick, R. (2014). *Robust determinants of IPO under-pricing and their implications for IPO research*. *Journal of Corporate Finance*, 27, 367–383. doi:10.1016/j.jcorpfin.2014.06.002
- Carpentier, C., L'Her, J.-F., & Suret, J.-M. (2012). Seasoned equity offerings by small and medium-sized enterprises. *Small Business Economics*, 38, 449–465. <https://doi.org/10.1007/s11187-010-9271-x>
- Chauhan, A. K., 2011. *The Analysis of the Initial and Post Issue Performance of Initial Public Offerings*, Nainital: unpublished PhD thesis submitted in Kumaun University, Nainital.
- Chhabra, S., & Kiran, R. (2022). Impact of information on winners' curse and long-run performance of initial public offerings. *International Journal of Finance & Economics*, 27(1), 975–992. <https://doi.org/10.1002/ijfe.2186>
- Chowdhary, B. & Nanda, V., 1996. Stabilization, Syndication and Pricing of IPOs. *The Journal of Financial and Quantitative Analysis*, Vol. 31(1), pp. 1125-1142.
- Das, G., Saha, M., & Kundu, A. (2016). Analyzing long-run performance of select initial public offerings using monthly returns: Evidence from India. *Vision: The Journal of Business Perspective*, 20(3), 237–248. <https://doi.org/10.1177/0972262916652809>

Deb, S.G (2017) Long-run Performance of Seasoned Equity Offerings: New Evidence from India. *Economic and Political Weekly*, Vol. 52, No. 12 (March 25, 2017), pp. 141-148.

Das, G., 2014. Performance of Initial Public Offerings (IPOs) in National Stock Exchange: A Study of Some Selected Companies in India, *Calcutta: unpublished PhD Thesis submitted in Department of Commerce, Calcutta*.

Das, S., 2013. Analysing the trend of market prices of initial public offerings (ipos): a study based on some selected, Burdwan: *unpublished PhD thesis submitted in The university of Burdwan*.

Espinasse, P., 2014. IPO Banks Pitch, Selection and Mandate. *Springer New York: Palgrave Macmillan*

Ellickal, A., et al. "IPOs in Indian Stock Market: Analyzing Pricing and Performance of IPO Listed in 2021." *Shanlax International Journal of Management*, vol. 10, no. 2, 2022, pp. 1–8

Fadila, A., & Zilal Hamzah, M. (2015). Determinants Factor Analysis Of Underpricing On Initial Public Offering At Indonesia Stock Exchange Pardomuan Sihombing. *Business and Entrepreneurial Review* (Vol. 15, Issue 1)..

Fedorova, E., Chertsov, P., & Kuzmina, A. (2023). COVID-19: The impact of the pandemic fear on IPO under-pricing. *Journal of Financial Reporting and Accounting*, 21(4), 820–846. <https://doi.org/10.1108/JFRA-05-2022-0201>

Field, L. & Karpoff, J., 2002. Takeover Defences of IPO Firms. *The Journal of Finance*, Vol. 57(5), pp. 1857- 1889.

Fisch, C., Meoli, M., Vismara, S., & Block, J. H. (2022). The effect of trademark breadth on IPO valuation and post-IPO performance: An empirical investigation of 1510 European IPOs. *Journal of Business Venturing*, 37, 106237. <https://doi.org/10.1016/j.jbusvent.2021.106237>

Ganesamoorthy, L. & Shankar, H., 2014. Initial Public Offerings IPOs in India- Nature of Return and Performance. *The Indian Journal of Commerce*, Vol. 67(2), pp. 14-25.

Ghosh, S. (2005). Under-pricing of initial public offerings: The Indian experience. *Emerging Markets Finance and Trade*, 41(6), 45-57.

Gompers, P. A. & Lerner, J., 2003. The Really Long-run Performance of Initial Public Offerings: The Pre Nasdaq evidence. *The Journal of Finance*, Vol. 58(4), pp. 1355-1392.

Gopalaswamy, A. K., Chaturvedi, K., & Sriram, N. (2008). Long-run post-issue performance of fixed price and bookbuilt IPOs: An empirical study on Indian markets. *Journal of Advances in Management Research*, 5(2), 64–76

Griffith, P. H., Milan, T. L. & Blowers, S. C., 1999. *The Earnest and Young LLP Guide to the IPO Value Journey*. 3rd ed. New York: John Wiley and Sons, Inc. .

Geddes, R., 2003. IPOs and equity offerings. First ed. New York: Worth-Heineman

Gupta, P., Lakhani, M. & Singh, K., 2014. Dynamics of Trading Volume and Stock Return: An Empirical study Based on CNX Nifty of National Stock Exchange. *The Indian Journal of Commerce*, Vol. 67(4), pp. 94- 103.

Gupta, V., Singh, S., & Yadav, S. S. (2023). Disaggregated IPO returns, economic uncertainty and the long-run performance of SME IPOs. *International Journal of Emerging Markets*, 18(10), 3847–3867. <https://doi.org/10.1108/IJOEM-09-2020-1098>

Hawaladar, I. T., Kumar, K. R. N., & Mallikarjunappa, T. (2018). Pricing and performance of IPOs: Evidence from Indian stock market. *Cogent Economics & Finance*, 6(1), 1420350. <https://doi.org/10.1080/23322039.2017.1420350>

Huson, M. R., & Meng, C. (2025). IPO proceeds deployment and firm performance. *Journal of Financial Research*, 1, 1–26. <https://doi.org/10.1111/jfir.12458>

Ibbotson, R. G., & Jaffe, J. F. (1975). “HOT ISSUE” MARKETS. *The Journal of Finance*, 30(4), 1027–1042. doi:10.1111/j.1540-6261.1975.tb01019.x

- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behaviour, agency costs, and ownership structure. *Journal of Financial Economics*, 3(4), 305–360. [https://doi.org/10.1016/0304-405X\(76\)90026-X](https://doi.org/10.1016/0304-405X(76)90026-X)
- Kadolkar, A. M., Marulkar, K. V., & Shivaji University, Kolhapur. (2023). Exploring the relationship between Price band and Oversubscription with level of Under-pricing: A study of selected IPO. *Journal of Emerging Technologies and Innovative Research*, 10(11). <https://www.jetir.org>
- Keasey, K., & Short, H. (1992). The Winner's Curse Model of Under-pricing: A Critical Assessment. *Accounting and Business Research*, 23(89), 74–78. <https://doi.org/10.1080/00014788.1992.9729862>
- Kenourgios, D. F., Papathanasiou, S., & Melas, E. R. (2007). Initial performance of Greek IPOs, underwriter's reputation and oversubscription. *Managerial Finance*, 33(5), 332–343.
- Kevin, S., 2009. *Security analysis and portfolio management*. Seventh ed. Thiruvanthapuram: Asoke K. Ghosh, PHI learning private limited.
- Kini, O., 1994. The Post-Issue Operating Performance of IPO Firms. *The Journal of Finance*, Vol. 49, 49(5), pp. 1699-1726.
- Kohli, V., 2009. Do stock Markets Allocate Resources Efficiently? An Examination of Initial Public Offerings. *Economic and Political Weekly*, Vol. 44, pp. 63-72.
- Kiran, R., & Chopram Phil, R. I. (2011). Price Performance of IPOs in Indian Stock Market. *Euro Economica*, 30 (4), 73-97.
- Kumar, C. V. C. (2017). Factors influencing under-pricing of manufacturing sector IPOs: An Indian perspective. *Academicia: An International Multidisciplinary Research Journal*, 7(8), 77–88. <https://doi.org/10.5958/2249-7137.2017.00073.8>
- Kuriakose, S. (Dr.), & Athira, V. S. (2018). Validity of winner's curse hypothesis: Evidence from initial public offerings in the Indian insurance industry. *Research*

Review International Journal of Multidisciplinary, Special Issue, 42. Presented at the 2nd International Conference on Commerce and Management in Changing Times (ICCMCT 2018). Retrieved from www.rrjournals.com.

Lee, P. J., Taylor, S. L. & Walter, S. T., 1995. Australian Ipo pricing in the short and long-run. *The Journal of Banking and Finance*, Vol. 20, pp. 1189-1210.

Lin, D. K., Kao, L., & Chen, A. (2010). Winner's curse in initial public offering subscriptions with investors' withdrawal options. *Asia-Pacific Journal of Financial Studies*, 39(1), 3–27. <https://doi.org/10.1111/j.2041-6156.2009.00001.x>

Legierse, W. (2023). Offering method and pricing of IPOs: An analysis of stock IPOs in the Netherlands, 1918–1939. *De Economist*, 171, 207–238. <https://doi.org/10.1007/s10645-023-09422-2>

Liu, H., & Chiang, Y.-M. (2022). Confucianism and IPO under-pricing. *Pacific-Basin Finance Journal*, 71, 101701, 1–25. <https://doi.org/10.1016/j.pacfin.2021.101701>

Loughran, T. & Ritter, J., 1995. The New Issues Puzzle. *The Journal of Finance*, Vol. 50(1), pp. 23-51. NSE, 2018. NSE. [Online] Available at: https://www.nseindia.com/global/content/about_us/about_us.htm [Accessed 28 Feb 2019].

Loughran, T., Ritter, J., Chen, C., Deangelo, H., Dunbar, C., Houge, T., Lerner, J., Senbet, L., Seward, J., Barry, C., Field, L., Gompers, P., Ljungqvist, A., Smart, S., Woo, L.-A., & Zutter, C. (2004). Why Has IPO Under-pricing Changed Over Time? *Financial Management • Autumn*. <http://bear.cba.ufl.edu/ritter/rank.htm>.

Mazumder, S., & Saha, P. (2021). COVID-19: Fear of pandemic and short-term IPO performance. *Finance research letters*, 43 (Nov).

Mørkøre, M. N., Skaiaa, S. K., & Xiouros, C. (2019, June 30). Market Efficiency and Technological Developments in the Norwegian Stock Market. Norway. Master thesis. <http://hdl.handle.net/11250/2623463>

- Moskowitz, T. J. and A. Vissing-Jorgensen (2002). The Returns to Entrepreneurial Investment: A Private Equity Premium Puzzle? *American Economic Review* 92(4), pp. 745-778. Available from: https://www.researchgate.net/publication/226829630_Seasoned_equity_offerings_by_small_and_medium-sized_enterprises [accessed Dec 13 2024].
- Mulchandani, P., Pandey, R., Debata, B., & Renganathan, J. (2022). Investor attention and IPO returns: Evidence from Indian markets. *Journal of Economic and Administrative Sciences*. <https://doi.org/10.1108/JEAS-03-2022-0075>
- Oman, M., 2005. Under-pricing and long-run performance of share issue privatisation in Egyptian stock market. *Journal of Financial Research*, Vol. 28(2), pp. 215-234.
- Pandya, F. H. (2016). After market pricing performance of Initial Public Offerings (IPOs). *Jindal Journal of Business Research*, 5(1), 1–16. <https://doi.org/10.1177/2278682116670077>
- Payne, G. T., Trudell, L. T., Moore, C. B., Petrenko, O. V., & Hayes, N. T. (2023). Ambiguous signals and information asymmetry in the initial public offering process: Examining ownership concentration, process time, and underpricing. *Group & Organization Management*, 48(5), 1467–1502. <https://doi.org/10.1177/10596011221090036>
- Raghupathy, B. M. & Thillairajan, A., 2015. Financial Value Creation: A Comparative Study of VC-Backed IPOs and Non-VC-Backed IPOs in India. *The Journal of Private Equity*, Vol. 18(3), pp. 55-71.
- Rahman, H., & Yung, K. (1999). Insurance IPOs — A Test of the Underpricing Theories. In *Source: Journal of Insurance Issues* (Vol. 22, Issue 1). <https://about.jstor.org/terms>
- Ritter, J., 1991. The Long-run Performance of Initial Public offerings. *The Journal of Finance*, Vol. 46(1), pp. 3- 27.
- Rock, K. 1986. Why new issues are underpriced. *Journal of Financial Economics*, 15, 187–212.

- Rossovski, J., Lucey, B., & Helbing, P. (2025). Determinants of IPO overpricing. *British Journal of Management*, 36(2), 383–399. <https://doi.org/10.1111/1467-8551.12858>
- Schultheis, J. P., Day, R. G., Lewis, R. J. & Connor, R. G., 2016. *The Initial Public Offering: A guide book for executives and boards of directors*. Eighth ed. New York: Bowne and Co., Inc.
- Sehgal, S., & Sinha, B. K. (2013). Valuation of IPOs in India-An empirical study. *Business and Economic Research*, 3(2), 183.
- Selvamathi, R., Dr, & Ananth, A. A. (2019). Article IPOS Factors Determining the pricing of IPOS by Buy and hold Raw Return in the Long-run. *Journal of Development Economics and Management Research Studies (JDMS)* 01(01), 1-12, <http://www.cdes.org.in/http://www.cdes.org.in/journal/>
- Sahoo, S., & Raj, R. (2022). Disclosed qualitative factors and under-pricing: An empirical evidence from Indian IPO market. *Pacific Accounting Review*, 34(5), 687–707. <https://doi.org/10.1108/PAR-06-2021-0098>
- Singh, S., & Singh, B. (2008). Oversubscription and IPO under-pricing: evidence from India. *The ICFAI Journal of Applied Finance*, 14(12), 65-73
- Singh, P., & Kumar, B. (2012). Short run and long-run dynamics of initial public offerings: Evidence from India. *Jindal Journal of Business Research*, 1(1), 87–113. <https://doi.org/10.1177/227868211200100107>
- Stevenson, S. (2006). The abnormal performance of UK utility privatisations. *Studies in Economics and Finance*, 23(3), 164–184. <https://doi.org/10.1108/10867370610711020>
- Subrahmanyam, A. & Titman, S., 1999. The Going - Public Decision and the Development of Financial Markets. *The Journal of Finance*, Vol. 54(3), pp. 1045-1082.

- Svoboda, A., & Heise, R. (2023). *What factors affect the under-pricing of Swedish IPOs? A quantitative study of returns on Swedish stock exchange markets*. Linnaeus University
- Tripathy, N. P., 2011. *Financial Services*. Fifth Ed. New Delhi: PHI Learning Private Limited.
- Welch, I. (1989). Seasoned offerings, imitation costs, and the under-pricing of initial public offerings. *Journal of Finance*, 44(2), 421–449. <https://doi.org/10.1111/j.1540-6261.1989.tb05064.x>
- Westin, E., & Wiklund, S. (2016). *IPO Under-pricing and Ownership Structure Comparison of Family Firms and Non-Family Firms*. Department of Business Studies Uppsala University
- Welch, I. (1992). Sequential sales, learning, and cascades. *Journal of Finance*, 47(2), 695–732. <https://doi.org/10.2307/2329120>
- Wong, E. S., WB, R. W., & Ting, L. S. (2017). Initial public offering (IPO) under-pricing in Malaysian settings. *Journal of Economic & Financial Studies*, 5(02), 14. <https://doi.org/10.18533/jefs.v5i02.276>
- Yang, B., & Yuan, T. (2021). Trademark and IPO under-pricing. *Financial Management*, 50(1), 1–26. <https://doi.org/10.1111/fima.12311>
- Yazdani, L. (2015). An Assessment of the Performance of Initial Public Offerings (IPOs) in Malaysia. In *Research Journal of Finance and Accounting* www.iiste.org ISSN (Vol. 6, Issue 3). Online. www.iiste.org
- Zakuli, N. A., Campbell, A. & Goodacre, A., 2006. The long-run share price performance of Malaysian initial public offerings. *Journal of Business, Finance and Accounting*, Vol. 34(1-2), pp. 78-110

CHAPTER 3

RESEARCH METHODOLOGY

Present study included all IPOs and FPOs that were offered and listed on the National Stock Exchange of India (NSE) over the past two decades, i.e. 1999 to 2019. Since this research spanned a relatively long period, it covers all phases of the stock market, including bullish, bearish and stagnation phases.

3.1 Data collection

Data was extracted from secondary sources such as official website of National Stock Exchange (NSE), official website of Bombay stock exchange (BSE) government websites, online databases, books, periodicals, newspapers, research reports, conference papers, internet sources, and journals.

Table 3.1 Sources of data

Data	Source
IPO and FPO	NSE official website
Data on various IPO characteristics, such as the issue date, listing date, issue size, issue price, and others, was collected	IPO prospectus obtained from NSE official website and Chittorgarh website
BSE IPO index data	BSE official website
NSE NIFTY 50 index data	NSE official website

3.2 Sample for the study

The study sample includes all IPOs and FPOs floated on the NSE platform during 1999 to 2019, subjected to the availability of required data. Additionally, to assess the performance of Indian IPOs in the post-COVID-19 period, IPOs issued during 2020 to 2025 were also analyzed to examine their market performance. The scope of this research was broad as it covered all IPOs and FPOs listed on the NSE during the study period. The study spanned over two decades, encompassing bullish, stagnation

and bearish market phases. Since only a limited number of studies in India have analyzed such a long time frame, this research provided a significant opportunity to explore IPO and FPO performance over an extended period. The study included a total of 712 IPOs and 26 FPOs launched during the study period. The study included a total of 487 IPOs issued during 1999-2019, 225 IPOs launched between 2020-2025 and 26 FPOs launched during the period from 1999 to 2019.

3.3 Analytical Tools and Techniques

3.3.1 Performance Evaluation of IPOs

This study analyzed the pricing performance of IPOs during the listing day, very-short, short, medium, long, and very-long run. Fama (1991) and Sinaga et al. (2022) highlighted the usefulness of the event study method in their respective literature. The event study method has been widely employed to assess the pricing performance of IPOs (Sinaga et al., 2022; Nhamo et al., 2020; Mørkøre et al., 2019; Fama, 1991). Accordingly, this paper adopts the event study methodology to analyze the pricing performance of IPOs within a rigorous and established framework.

This study was categorized into the following sub-periods:

- Listing day return: This covered the period between the issue closing date of the respective IPO and its listing date.
- Very short run period: This covered one week since the listing of the IPO
- Short-run period: This covered one month since the listing of the IPO
- Medium-run period: This covered six months since the listing of the IPO
- Long-run period: This covered one year since the listing of the IPO
- Very long run: This covered three years since the listing of the IPO

Based on the above-mentioned time frames, raw return /absolute return of IPO on the day of listing, in the very-short, short, medium, long as well as in the very long run was calculated separately using the below stated formula:

$$\text{a) Raw return (or Absolute return) (RR) = (p_t - p_{t-1})/p_{t-1}$$

Where, p_t = price in time t (present price)

p_{t-1} = allotment price

Raw return (RR) of the IPOs show the absolute return yielded by the IPOs. Using the same formula the raw return of the market indexes is also calculated where P_1 denotes closing price of the respective index on the first trading day of the IPOs and P_0 signifies the closing price of the respective index on the offer closing day of the IPOs. The raw return of the market index is found for the same days on which the selected IPOs were listed on the NSE. Raw return of the selected indexes and the chosen IPOs were calculated using the above mentioned formula during the different time periods specified above (Vong & Trigueiros, 2010; Rahman & Che-Yahya, 2019; Hawaldar et al., 2018). Secondly, the relative/abnormal market return is calculated to assess the performance of IPOs in relation to the selected market indexes i.e. NIFTY 50 and IPO Index with the help of the following formula: -

b) Market- adjusted abnormal returns (MAAR) (or Relative return) =

$$\{(p_t - p_{t-1})/p_{t-1}\} - \{(P_t - P_{t-1})/P_{t-1}\}$$

Since the listing period of every IPO differed therefore the raw returns and the market adjusted returns were adjusted with the lead-time. The lag between the offer closing date and the listing date of the IPOs was referred to as the lead time (Gosh, 2005; Chhabra, 2011, Kiran & Phil (2011), Rajamadagu & M.S, 2022, Kilarahatti and Basha 2022).

The Raw and the market-adjusted returns calculated using the formulas (a) and (b) were annualised using the following formulas (c) and (d):-

$$\text{c) Annualized raw returns (ARR)} = RR \times \frac{365}{\text{Lead time of the respective IPO}}$$

$$\text{d) Annualized Market Adjusted Abnormal return (ARR)} = MAAR \times \frac{365}{\text{Lead time of the IPO}}$$

To analyze the average performance of IPOs across different periods the Average Raw Return , Average Market Adjusted Abnormal Return, Average Annualized Raw Return, Average Annualized Market Adjusted Abnormal Return were calculated using the below mentioned formulas:-

$$e) \text{ Average } RR_t = \frac{1}{N} \sum_{i=1}^N RR_{it}$$

Where N referred to the no of IPOs and RR is the raw return of the IPOs. t refers to the time period. Using the formula (e) average raw return of the IPOs was calculated for the listing day, very-short, short, medium, long and the very long run.

$$f) \text{ Average } MAAR_t = \frac{1}{N} \sum_{i=1}^N MAAR_{it}$$

To analyze the pricing performance of IPOs in comparison to the benchmark indices, the average market-adjusted return was calculated using Formula (f). Similarly, the average annualized returns of the IPOs were calculated using the formulas (g) and (h)

$$(g) \text{ Average Annualized } RR_t = \frac{1}{N} \sum_{i=1}^N ARR_{it}$$

$$(h) \text{ Average Annualized } MAAR_t = \frac{1}{N} \sum_{i=1}^N AMAAR_{it}$$

In formula (g) ARR referred to the Annualized raw return, t referred to the time period, N referred to the number of IPOs. In formula (h) the AMAAR referred to the annualized market adjusted returns calculated using the NIFTY-50 and the BSE IPO index returns.

The relative performance of the IPOs during the long run and the very long run was assessed using the “Wealth relative index”. The “Wealth relative” is a widely used measure to assess the wealth generation of IPOs during the long run. A Wealth Relative Index value greater than 1 indicates that the returns generated by the IPO exceeded those of the benchmark index. Conversely, a value less than 1 suggests that the IPO underperformed relative to the benchmark index (Ritter 1991; Levis 1993; Chen & Kim, 2000; Chan, 2004; Sahoo 2010; Kiran & Phil, 2011; Chhabra, 2011; Kumar (2015); Ramesh (2015); Bantwa, 2022; Rajamadagu & M.S, 2022). The wealth relative for assessing the long and the very long run performance of the IPOs was calculated using the following formula;-

$$(i) \text{ Wealth relative } (WR_{it}) = (1 + \frac{1}{N} \sum_{i=t}^N RR_{it}) \div (1 + \frac{1}{N} \sum_{i=t}^N RR_{mt})$$

In the formula (i) the RR_{it} represented the raw return of the IPOs where as the RR_{mt} denoted the raw return of the market indexes selected for the study i.e. NIFTY-50 and the BSE IPO index. N referred to the total no. of IPOs during the specific period i.e. long run or the very long run.

Using the above mentioned formulas, the study analyzed the pricing performance of IPO by classifying the IPOs based on the selected factors like industry, lead-time, issue price, issue size, lot size, oversubscription, listing close price, age, and face value of the IPOs.

3.3.2 Hypotheses for assessing the performance of IPOs launched during 1999-2019

An important objective of this study was to assess whether the raw returns of the IPOs and the benchmark indices (calculated using Formula ‘a’) were significantly different across the various periods. Additionally, the IPO returns across different runs were tested to determine if there were significant differences in returns across these periods. The "Shapiro-Wilk test" and the "Kolmogorov-Smirnov test" were used to assess whether the data follows a normal distribution. The significance value for all the variables was below 0.05, due to which the assumption that the data followed a normal distribution stands rejected. The hypotheses testing were performed in two sets using the Wilcoxon signed-rank test. **Set 1** tested the differences in performance across various timeframes (runs) for 435 IPOs and compared these returns with the Nifty 50 index. **Set 2** focused on 416 IPOs and evaluated their performance against the BSE IPO index. The number of IPOs in both Sets differed, as in Set 2 some IPOs were omitted that were listed before the availability of the BSE IPO index.

The following hypotheses were tested in set 1:-

a) Listing day

H_{01} : There does not exist any deviation between the median of the Listing day's RR (Close Price) and the Listing day's RR (open price)

H₀₂: The listing day's raw return values (calculated based on the listing day's opening price) and the NSE NIFTY 50 values (calculated based on the opening price of NIFTY 50) were not significantly different

H₀₃: The NIFTY 50 return computed on listing days does not differ significantly from the raw return on the listing day calculated on the closing price.

b) Very short run

H₀₄: the raw return of the listing day is not significantly different from the raw return or the very short run (both calculated on the closing values)

H₀₅: the median of the Nifty 50 return during the one-week period and the raw return of the IPOs during the same period is not significantly different

c) Short run (all values based on closing price)

H₀₆: the raw return of the very short run is not significantly different from the raw return of the short run (one month)

H₀₇: the short run raw return is not significantly different from the NIFTY 50 return of that period

d) Medium run

H₀₈: the raw return of the short run is not significantly different from the raw return of the medium run.

H₀₉: The raw return of the medium run is not significantly different from the NIFTY 50 return of that period

e) Long run

H₀₁₀: the raw return of the medium run is not significantly different from the raw return of the long run.

H₀₁₁: The raw return of the long run is not significantly different from the NIFTY 50 return of that period

f) Very long run

H₀₁₂: the raw return of the very long run is not significantly different from the raw return of the long run

H₀₁₃: the raw return of the very long run is not significantly different from the NIFTY 50 return of that period.

The following hypotheses were tested in set 2:-

a) Listing Day

H₀₁₄: The raw return on the listing day (close price) and the BSE IPO index return of that period do not have any significant difference

b) Very short run

H₀₁₅: The raw return of the very short run and the BSE IPO index return of that period do not have any significant difference

c) Short run

H₀₁₆: The raw return of the short run and the BSE IPO index return of that period do not have any significant difference

d) Medium run

H₀₁₇: The raw return of the medium run and the BSE IPO index return of that period do not have any significant difference

e) Long run

H₀₁₈: The raw return of the long run and the BSE IPO index return of that period do not have any significant difference

f) Very long run

H₀₁₉: The raw return of the very long run and the BSE IPO index return of that period do not have any significant difference

3.3.3 *Hypotheses for assessing the performance of IPOs launched during 2020-2025*

For which we tested the following hypothesis:-

a) Listing day

H₀₂₀: There does not exist any deviation between the median of the Listing day's RR (calculated based on the listing day's close Price) and the Listing day's RR (open price)

H₀₂₁: The listing day's raw return values (calculated based on the listing day's opening price) and the NSE NIFTY 50 values (calculated based on the opening price of NIFTY 50) were not significantly different

H₀₂₂: The raw return on the listing day (calculated based on the opening price of IPOs on the listing day) and the BSE IPO index return (open price of BSE IPO index on the listing day) of that period do not have any significant difference

H₀₂₃: The NIFTY 50 return computed on listing day's closing price does not differ significantly from the raw return on the listing day calculated on the closing price.

H₀₂₄: The raw return on the listing day (calculated based on the listing day's close price) and the BSE IPO index return (calculated based on the closing price of BSE IPO index on the listing days) of that period do not have any significant difference

g) Very short run

H₀₂₅: the median of the Nifty 50 return (closing price) during the one-week period and the raw return of the IPOs (closing price) during the same period is not significantly different

H₀₂₆: The raw return of the very short run (closing price) and the BSE IPO (closing price) index return of that period do not have any significant difference

H₀₂₇: the raw return of the listing day is not significantly different from the raw return or the very short run (both calculated on the closing values)

h) Short run (all values based on closing price)

H₀₂₈: the short run raw return is not significantly different from the NIFTY 50 return of that period

H₀₂₉: The raw return of the short run and the BSE IPO index return of that period do not have any significant difference

H₀₃₀: the raw return of the very short run is not significantly different from the raw return of the short run (one month)

3.3.4 Factors affecting the pricing performance of IPOs launched during 1999-2019

One of the objectives of the study was to highlight the impact of the selected variables on the pricing performance of the IPOs. The factors selected for this purpose are, viz. Oversubscription rate Issue price, Face value, Lead-time, Age (since incorporation), Issue size, Lot size, NIFTY 50 index's return, BSE IPO index's return. These factors were also analyzed in various literatures and their significance varied across different study (Khurshed, et al. (2008); Sehgal & Sinha, 2013; Manu & Saini, 2020; Bantwa, 2022).

Oversubscription rate: The oversubscription rate of the IPOs referred to the excess demand for shares, expressed as the number of times the total number of shares applied for exceeded the total number of shares offered.

Issue price: Issue price referred to the price at which an IPO is issued.

Face value: Face value refers to the nominal value of the shares at which it is recorded in the company's books of accounts.

Lead-time- Listing delay, or lead time, refers to the gap between the end date of the issue and the date the IPO is listed. The lead-time is different for each issue and is influenced by different circumstances.

Age- Age referred to the number of years from the incorporation of the companies to the date of listing of its IPO.

Issue Size: The issue size of an IPO refers to the total monetary value of shares offered to the public during the initial public offering. It is determined by multiplying the total shares offered by the issuance price.

Lot Size: Lot size refers to minimum no. of IPO shares that investor has to apply for when bidding for an IPO. The issuing company sets the lot size of its IPO based on the share price, investor demand and regulatory guidelines.

NIFTY-50 index return: NIFTY-50 index return referred to the return of the NIFTY-50 index calculated using the closing price of the index.

BSE IPO index return: BSE IPO index return referred to the return of the BSE IPO index calculated using the closing price of the index.

The effect of these variables on the raw return of the IPOs as well as the MAAR of the IPOs was assessed in this section across different time periods.

The "Shapiro-Wilk test" and the "Kolmogorov-Smirnov test" were used to assess whether the data follows a normal distribution. The significance value for all the variables was below 0.05, due to which the assumption that the data followed a normal distribution stands rejected. The data for this study was actual returns of the IPOs, which have high volatility and often deviate from normality. Furthermore, the relationship between the variables was examined to check for multicollinearity using the "Variance Inflation Factor (VIF)"; however, the VIF values were below 2, which assured the nonexistence of multicollinearity between the factors. Since the returns of the IPOs are sometimes extremely high and at times negative, the presence of outliers is common.

Robust regression is a method intended to handle data that does not satisfy the assumption of being normally distributed by underweighting the outliers to minimize the influence of outliers on the estimation of regression coefficients (Hahn, 2024; Fox & Weisberg, 2019; John Hopkins, n.d.). Henceforth, a robust regression method was chosen for analysis.

3.4 Tools used for the analysis of FPOs

This study analyzed the pricing performance of FPOs during the very short run, short run, medium run, long run, and very long run. To analyze the return of FPOs, the FPO period was subdivided in:-

- Very Short run, a period of one week from the offer closing date.
- Short run, a period of one month from the offer closing date.
- Medium run, a period of 6 months from the offer closing date.
- Long run, a period of one year from the offer closing date.
- Very long run, a period of three days from the offer closing date.

The Raw Return (RR), NIFTY-50, BSE IPO Index returns, and Market Adjusted Abnormal Return (MAAR) were calculated using the following formulas:-

$$\text{a) Raw return /Absolute return (RR)} = (p_t - p_{t-1}) / p_{t-1}$$

Where, p_t = price in time t (present price)

p_{t-1} = allotment price

To evaluate the market performance of these FPOs, their returns were adjusted against two selected benchmark indices: the NIFTY-50 and the BSE IPO Index. The market adjusted returns of the IPOs were calculated using the following formula:-

$$\text{b) Market- adjusted abnormal returns (MAAR)/ Relative return} =$$

$$\{(p_t - p_{t-1}) / p_{t-1}\} - \{(P_t - P_{t-1}) / P_{t-1}\}$$

The significance of the returns compared to these benchmarks, as well as the variation in returns across different timeframes, was assessed using the Wilcoxon signed-rank test. For the purpose of this analysis 14 null hypotheses were formulated listed as follows:-

H₁: Nifty 50 returns and the Raw Return of FPOs do not vary significantly during the very short run.

H₂: BSE IPO index return and the Raw Return of FPOs do not vary significantly during the Very Short Run.

H₃: Raw Return of FPOs during the short run and the Raw Return of FPOs during the Very Short Run do not vary significantly.

H₄: Nifty 50 returns and the Raw Return of FPOs do not vary significantly during the Short Run

H₅: BSE IPO index return and the Raw Return of FPOs do not vary significantly during the Short run.

H₆: Raw Return of FPOs during the Medium Run and the Raw Return of FPOs during the short run do not vary significantly.

H₇: Nifty50 Return and the Raw Return of FPOs do not vary significantly during the Medium Run.

H₈: BSE IPO index return and the raw return of FPOs do not vary significantly during the Medium run.

H₉: Raw return of FPOs during the long run and the raw return of FPOs during the Medium Run do not vary significantly.

H₁₀: Nifty 50 returns and the raw return of FPOs do not vary significantly during the long run

H₁₁: BSE IPO index return and the Raw Return of FPOs do not vary significantly during the long run

H₁₂: Raw Return of FPOs during the very long run and the raw return of long run do not vary significantly.

H₁₃: Nifty 50 returns and the raw return of FPOs do not vary significantly during the Very Long Run

H₁₄: BSE IPO index return and the raw return of FPOs do not vary significantly during the very long run

If the null hypothesis was rejected, the alternative hypothesis was accepted, indicating that there was a significant difference between the variables being tested.

3.5 Limitations of the study

The study had the following limitations:-

This study was only restricted to the IPO and FPOs listed on the National stock exchange (NSE) and did not cover the other issues like rights issue, debt issue, and preference shares.

This study only analyzed the IPOs and FPOs which were listed on the NSE platform and did not analyze the IPOs and FPOs listed on other stock exchanges.

The study is also limited to the pricing performance of the IPOs and FPOs of India and did not compare the performance of the IPOs or FPOs/SEOs across different countries.

References

- Bantwa, A. R. (2022). Price Performance of Initial Public Offerings (IPOs) With Special Focus on Underpricing: A Comparative Study of securities Listed on Indian (BSE) And Chinese (SSEC) Stock Exchanges (Unpublished Doctoral Thesis). *Gujarat Technological University, Ahmadabad*.
- Chan, K., Wang, J., & Wei, K. J. (2004). Underpricing and long-term performance of IPOs in China. *Journal of Corporate Finance*, 10(3), 409-430.
- Chen, G., Firth, M., & Kim, J. B. (2000). The post-issue market performance of initial public offerings in China's new stock markets. *Review of Quantitative Finance and Accounting*, 14(4), 319-339.
- Chhabra, K. (2011). *Pricing performance of IPOs in India (Unpublished doctoral thesis). Punjabi University Patiala, Commerce. Patiala: Shodhganga*.
- Fama, E. F. (1991). Efficient Capital Markets: II. *The Journal of Finance* , XLVI (5), 1575-1617.
- Fox, J., & Weisberg, S. (2013). *Robust Regression*. 1–16. Studocu. <https://www.studocu.com/en-ca/document/york-university/regression-analysis/lesson-9-extra-notes-regression/111163127>
- Hahn, T. (2024). *Estimating IPO Underpricing*. 33
- John Hopkins Bloomberg (n.d.). School Robust and Resistant Regression (pp. 150–155).
- Kilarahatti, S., & V, J. B. (2022). An in-depth analysis of Trend, Pattern and Progress of IPOs: An Evidence from India. *International Journal of Creative Research Thoughts (IJCRT)*, 10(1), 405–407. <https://www.ijcrt.org>
- Kiran, R., & Chopram Phil, R. I. (2011). Price Performance of IPOS in Indian Stock Market. *Euro Economica* , 30 (4), 73-97.

Khurshed, Arif., Pande, Alok., Singh, AjaiK (2006). Subscription patterns, offer prices and the underpricing of IPOs: Evidence from India. Working Paper Series, University of Manchester.

Kumar, K. S. (2015). Short run and long run performance of Indian initial public offerings (IPOs) during 2007-2012. *International Journal of Research and Development-A Management Review*, 4(3), 34-41.

Levis, M. (1993). The long-run performance of initial public offerings: The UK experience 1980-1988. *Financial Management*, 28-41.

Manu, K. S., & Saini, C. (2020). *Valuation Analysis of Initial Public Offer (IPO): The Case of India. Paradigm*, 24(1), 7–21. doi:10.1177/0971890720914100

Mørkøre, M. N., Skaiaa, S. K., & Xiouros, C. (2019, June 30). Market Efficiency and Technological Developments in the Norwegian Stock Market. Norwegian School of Economics. Retrieved from <https://biopen.bi.no/bi-xmlui/handle/11250/2623463>

Nhamo, G., Dube, K., & Chikodzi, D. (2020). COVID-19 and the Stock Market: Impacts on Tourism-Related Companies. *Counting the Cost of COVID-19 on the Global Tourism Industry*, https://doi.org/10.1007/978-3-030-56231-1_13, 297-318.

Ramesh, B., & Dhume, P. S. S. (2015). Performance analysis of initial public offering in Indian context, *Splint International Journal of Professionals*, 2(9), 47-64.

Sahoo, S., & Rajib, P. (2010). After market pricing performance of initial public offerings (IPOs): Indian IPO market 2002–2006. *Vikalpa*, 35(4), 27-44.

Sehgal, S., & Sinha, B. K. (2013). Valuation of IPOs in India-An empirical study. *Business and Economic Research*, 3(2), 183.

Sinaga, J., Wu, T., & Chen, Y. w. (2022). Impact of government interventions on the stock market during COVID-19: a case study in Indonesia. *SN Business & Economics*, <https://doi.org/10.1007/s43546-022-00312-4> (2), 136.

CHAPTER 4

PRICING PERFORMANCE OF IPOs DURING LISTING DAY, VERY SHORT RUN, SHORT RUN AND MEDIUM RUN

Chapter 4 analyses the IPOs performance on the day of listing, very-short, short, and medium term periods. Listing day refers to the day on which IPOs were listed on the NSE platform, while the very short run refers to the one-week period following the listing day. The Short run is denoted by a period of one month following the listing day of IPOs and medium run refers to a period of six months from the listing day. This chapter classifies IPO returns on the day of listing, as well as in the very short, short, and medium runs, based on the following factors:- Industry sector, lead-time, issue price, issue size, lot size, oversubscription, listing close price, age, and face value. To assess the performance of IPOs this section employs the following metrics:-

- Average raw return (RR) – Average raw return shows the average yield of the IPOs.
- Market Adjusted Abnormal Return (MAAR) - measures the excess return earned by the IPOs in comparison to the selected relative indexes i.e. NSE NIFTY 50 and BSE IPO
- Average Annualized Raw Return (ARR) - shows the annualized raw return, which makes it more comparable.
- Average Annualized Market Adjusted Abnormal Return (AMAAR) - shows the annualized figure of the market-adjusted relative return of the IPOs.

4.1 Classification of performance of IPOs based on the selected factors

The IPO performances during the Listing day, very short run, short run, and medium run based on selected factors are explained in sections 4.1.1, 4.1.2, 4.1.3, and 4.1.4 respectively.

4.1.1 Listing day

This section analyses the factor-based performances for the IPOs during listing day with respect to the different factors selected for the study.

4.1.1.2 Classification of IPOs based on the Type of Industry

This section analyzes the pricing performance of IPOs on the listing day, categorized by the sector they belong to. Table 4.1 shows the classification of 460 IPOs in Case 1 and 441 IPOs in Case 2. The number of IPOs in both cases differed, as in Case 2 some IPOs were omitted that were listed before the availability of the BSE IPO index. Additionally, in Case 2, returns of the IPO were only calculated using the closing price, as the opening price of the BSE IPO index was unavailable before 2007, and this study included IPOs launched before 2007 as well.

Table 4.1 Classification of IPOs based on the type of Industry

Industry	Case 1									Case 2		
	N ₁	Average								N ₂	Average	
		RR (Listing day open price of IPOs)	RR (Listing day close price of IPOs)	MAARs (NIFTY 50 open price)	MAARs (NIFTY 50 close price)	ARR (Listing day open price)	ARR (Listing day Close price)	AMAARs (NIFTY 50 open price)	AMAARs (NIFTY 50 Close price)		MAARs (BSE IPO close price)	AMAARs (BSE IPO index close price)
All	460	17.28	19.54	15.38	18.00	363.96	418.39	353.13	409.60	441	18.24	410.37
Agri.& agri. products	13	28.54	34.91	24.08	31.00	636.42	687.08	557.96	620.68	12	25.13	525.55
Automotive and Components industry	12	8.00	7.61	2.20	2.26	215.86	260.61	176.83	233.56	11	2.22	208.13
Chemical	10	5.20	16.86	1.42	13.29	117.25	275.34	174.28	340.51	10	5.82	221.68
Diversified	11	24.65	21.61	22.31	19.31	614.71	589.12	588.85	565.30	11	20.60	594.21
Electrical & Electronics	18	18.87	25.72	19.00	25.80	465.35	638.52	459.72	630.43	18	24.91	615.77
FMCG	21	37.27	41.13	34.82	38.20	574.47	684.22	564.76	664.52	21	39.50	654.37
Hotels, Restaurant and Resorts	9	19.85	24.88	18.50	24.13	439.09	560.84	396.65	536.36	9	22.75	513.47
Miscellaneous	10	9.57	34.20	10.68	36.07	91.81	491.75	137.35	552.81	10	34.63	500.99

Oil, Gas and Fuel	8	28.30	33.68	27.09	31.84	637.35	726.54	612.8365	691.0493	6	19.28317	515.72
Travel & Transport and logistics	18	23.72	23.22	24.96	23.93	460.91	506.83	490.3647	525.3265	18	16.72	465.37
Banking finance	14	27.45	29.56	27.24	28.94	882.64	926.32	869.33	900.84	14	29.75	924.22
Non banking finance	36	18.84	21.91	19.13	22.17	514.50	574.69	523.09	585.46	36	23.37	617.21
Rating & Stock broking	8	11.76	28.13	9.09	25.01	180.01	655.00	123.77	601.91	8	24.12	568.51
Civil Construction	39	18.47	17.02	16.89	15.75	365.49	316.65	356.25	312.93	38	13.37	285.41
Construction & Engineering	16	22.83	36.19	21.77	34.78	415.47	732.57	406.96	718.47	16	37.00	772.56
Residential & Commercial Construction	18	11.23	12.41	10.58	12.15	231.69	290.78	223.75	288.70	18	11.56	279.69
Power	12	19.20	22.92	19.33	23.20	286.42	354.77	284.90	355.90	11	9.35	199.41
Entertainment	18	10.94	11.87	4.78	6.00	250.97	274.98	134.85	164.35	14	17.21	437.54
Printing Media and Broadcasting	16	21.93	17.46	22.04	17.65	388.78	296.75	391.27	301.25	14	15.63	307.86
Garments	19	4.31	-0.51	4.97	-0.02	75.92	-18.70	92.08	-5.99	19	1.87	34.36

and Accessories												
Textile and Textile products	20	2.72	3.43	-1.03	0.34	83.36	94.89	41.82	64.07	19	2.13	84.82
Healthcare & Hospital	12	16.15	8.88	15.38	8.32	436.77	269.32	409.04	246.68	12	13.22	351.72
Pharma	14	18.72	25.81	19.48	26.95	419.33	602.20	432.90	623.96	12	10.79	236.34
Metals and Metal products	15	17.06	27.89	12.99	24.32	329.57	582.27	253.71	518.27	15	24.97	531.80
Non metallic products	21	16.91	8.82	18.84	11.19	336.99	228.62	366.38	266.95	21	15.32	346.36
Software and Hardware	16	8.39	12.59	-9.48	-4.38	192.88	215.27	191.09	224.44	14	21.62	277.10
IT service	21	21.41	16.48	21.19	16.12	392.87	274.46	386.53	265.83	19	16.92	337.60
Internet and Telecom technology	15	14.39	19.88	12.62	18.87	361.17	461.20	338.92	453.78	15	19.75	471.03

Source: Researcher's Calculation

Table 4.1, shows the listing day performance of IPOs spread across 28 sectors. In the case 1 and 2, the construction sector recorded the highest no of IPOs launched during 1999-2019. This was followed by the non-banking sector, IT services, Non-metallic products, and the FMCG sector, which had more no. of IPOs than the other sectors.

Case 1

In Case 1 after analyzing the pricing performance of 460 IPOs it is found that the IPOs of FMCG sector yielded the maximum market adjusted return, which was followed by the ‘Miscellaneous sector’, ‘Construction and Engineering’, ‘Oil, Gas and Fuel’, ‘Agri. and Agri. products’ sectors respectively. Based on the avg. ARR values the banking sector generated highest values, and was followed by ‘Oil, Gas and Fuel’, ‘Rating and stock broking’, ‘Agri. and Agri. products’ descending order respectively. Based on Avg. AMAAR (closing) values ‘Banking and finance’, ‘Oil, fuel & gas’, ‘Construction and Engineering’, FMCG, ‘Electrical and electronics’, Pharmaceutical, ‘Agri. and Agri. products’ showed strong market performance. The performance of these sectors in terms of absolute return of the IPOs and in terms of market index (NIFTY 50) was profit generating, implying strong wealth generation for the investors. ‘Garments and accessories’ and ‘Textile and textile products’ were the lowest performing sectors and generated negative MAAR values indicating their poor performance in comparison to the bench mark index.

Case 2

In Case 2, similar pattern of IPO frequency distribution was observed across the 28 sectors as was observed in Case 1. The FMCG sector yielded the maximum market adjusted return, which was followed by the miscellaneous sector, ‘Construction and Engineering’, ‘Oil, Gas and Fuel’, ‘Agri. and Agri. products’ sectors respectively. The FMCG sector recorded the highest Avg. MAAR value, which was followed by ‘Construction and Engineering’ sector, ‘Miscellaneous’, ‘Banking and Finance’, ‘Non-Banking’ sector in descending order. The Avg. AMAAR value was highest for the ‘Banking and Finance’, followed by ‘Construction and Engineering’, ‘FMCG’, ‘Non-Banking’, ‘Electrical and Electronics’, ‘Metals and Metallic products’, ‘Oil, Gas and Fuel’, ‘Agri. and Agri. products’, ‘Miscellaneous Sectors’ in descending

order. These sectors were the top performing sectors and showed strong performance in comparison to the BSE IPO index. 'Garments and Accessories' and 'Textile and textile products' were the lowest performing sectors which generated low Avg. MAAR values.

In Cases 1 & 2, 'Banking and Finance' showed strongest market performance which was followed by 'Construction and Engineering', 'FMCG', 'Oil, fuel & gas', 'Electrical and Electronics', 'Agri. and Agri. products' sector. These sectors showed higher returns in comparison to both the benchmark indexes. Ritter (1991) analyzed the pricing performance of 1,526 U.S. IPOs and highlighted the 'Oil, Gas and Fuel' industry as having the strongest market performance compared to other industries. Chhabra (2011) studied the performance of 225 IPOs on listing day and revealed that only the diversified sector showed poor performance, while all other sectors showed positive performance. The 'Software and Hardware' sector recorded the highest wealth index indicating maximum wealth generation for the investors. Pandey (2010) highlights that all sectors showed positive and high returns on the first trading day. Gupta (2016) studied 134 Indian IPOs launched between 2008 -2014 and reported that the 'Food sector' recorded the highest raw return, while the 'Gems sector' recorded the minimum raw return. However, the market-adjusted performance of 'Non-Metallic' sectors showed the highest value, which was followed by 'Steel, Chemical, and Other sectors'. He also mentioned that the Avg. ARR & Avg. AMAAR values were higher across 'Non-Metallic', 'Banking', and 'Steel' sectors. Kilarahatti and Basha (2022) studied 137 Indian IPOs issued during 2016-2021 and reported that excluding the aviation industry all other sectors such as 'Railways', 'Chemical', 'FMCG', 'Service', etc recorded positive and high avg. market-adjusted returns, indicating their strong market performance during the period. Shah (2019) reported the profitable performance of 'Investment', 'Steel', 'Agriculture', 'Transport', 'Miscellaneous', 'Paper', 'Transport', 'Construction', 'Chemical', 'Beverages', 'Banking', and 'Mining' sectors, while poor yield in 'Engineering', 'Manufacturing', 'Pharmaceutical', 'Power', 'Jewelry', 'Infrastructure', Communication, Synthesis, Real estate sectors on the initial day.

4.1.1.3 Classification of IPOs based on the lot size of IPOs

This section assesses the performance of IPOs based on the lot size of the IPOs. Table 4.2 presents the yield of IPOs relative to the benchmark indexes i.e. NSE NIFTY 50 index and the BSE IPO index. Case 1 of Table 4.2 shows the listing day performance of 450 IPOs compared to the NSE NIFTY index, while Case 2 shows the listing day pricing performance of 437 IPOs compared to the BSE IPO index. The number of IPOs in both cases differed, as in Case 2 some IPOs were omitted that were listed before the availability of the BSE IPO index.

Table 4.2. Classification of IPOs based on the Lot size

Lot size	Case 1										Case 2	
		Average									Average	
	N ₁	RR (Listing day open price of IPOs)	RR (Listing day close price of IPOs)	MAARs (NIFTY 50 open price)	MAARs (NIFTY 50 close price)	ARR (Listing day open price)	ARR (Listing day Close price)	AMAARs (NIFTY 50 open price)	AMAARs (NIFTY 50 Close price)	N ₂	MAARs (BSE IPO close price)	AMAARs (BSE IPO index close price)
All	450	17.67	20.33	16.41	19.23	374.88	433.85	362.48	424.75	437	18.16	409.73
0-25	122	19.31	21.39	18.48	20.66	407.05	450.71	402.41	448.66	120	19.68	436.97
25-50	114	18.40	21.67	16.03	19.30	417.01	492.96	372.54	448.51	114	19.92	460.78
50-100	161	14.97	20.13	13.92	19.44	306.90	425.68	310.68	437.39	151	17.82	404.90
>100	53	20.50	15.63	19.97	15.05	416.73	292.67	406.22	280.23	52	11.79	248.92

Source: Researcher's Calculation

Case 1

In Case 1, the pricing performance of the 450 IPOs was compared to the NIFTY 50 index. It was found that 50-100 lot size recorded the highest number of IPOs, followed by the 0-25 lot size category, and the >100 category recorded the lowest frequency of IPOs.

The >100 lot size category delivered the highest raw return, followed by the 0-25 lot size category, based on the opening prices of IPOs on their listing day. However, when the raw return was calculated using the listing day's closing price, the yield of the >100 category showed a sharp decline of 4.87%. In contrast, all other categories showed an increase in the percentage of raw return at the end of the listing day.

A similar pattern was observed in the Avg. MAAR (Market Adjusted Abnormal Returns) calculated based on the opening prices of IPOs on the listing day. The >100 lot size category showed the highest Avg. MAAR value, followed by other categories, all of which demonstrated positive and high Avg. MAAR values when calculated using opening prices on the listing day. However, by the end of the listing day, the Avg. MAAR value for the >100 category declined, while for other categories, it showed a sharp increase. The 0-25 category recorded the highest Avg. MAAR and Avg. AMAAR values when calculated using the listing day's closing price.

Case 2

In Case 2, the highest number of IPOs fell in the lot size of 50-100 shares category, followed by the 0-25 lot size category, while the >100 lot size category recorded the lowest frequency of IPOs. on the closing price of the listing day, the 25-50 shares category showed the highest Avg. MAAR and Avg. AMAAR values, followed by the 0-25 category, while the >100 category recorded the lowest Avg. MAAR and Avg. AMAAR values.

In both Cases (1 and 2), the 25-50 category consistently demonstrated the strongest performance, followed by the 0-25 category, while the greater than 100 lot size category showed poor performance in both the cases.

4.1.1.4 Classification of IPOs based on the Issue size of IPOs

The IPOs were classified based on their issue size to evaluate the influence of issue size on the yield of the IPOs. Table 4.3 presents the yield of IPOs relative to the NSE NIFTY 50 index in Case 1 and to the BSE IPO index in Case 2. The study covered IPOs launched during 1999-2019. The number of IPOs in both cases 1 and 2 varies because of the unavailability of the BSE IPO index before the year 2004.

Table 4.3- Categorization of IPOs based on changes in issue size.

Offer/Issue size (cr.)	Case 1									Case 2		
		Average									Average	
	N ₁	RR (Listing day open price of IPOs)	RR (Listing day close price of IPOs)	MAARs (NIFTY 50 open price)	MAARs (NIFTY 50 close price)	ARR (Listing day open price)	ARR (Listing day Close price)	AMAARs (NIFTY 50 open price)	AMAARs (NIFTY 50 Close price)	N ₂	MAARs (BSE IPO close price)	AMAARs (BSE IPO index close price)
All	455	17.03	19.64	15.20	17.96	369.09	426.93	356.48	417.67	437	18.16	409.72
1-100	153	18.87	23.67	16.92	21.98	327.39	427.83	320.15	425.52	146	21.52	413.57
100-400	132	17.82	21.09	15.96	19.25	330.83	398.95	300.21	368.19	126	16.36	315.06
400-1000	99	15.79	15.80	15.76	15.78	458.03	458.05	457.04	457.58	95	17.17	493.57
>1000	71	13.35	13.63	9.30	9.95	406.08	433.64	399.21	437.12	70	15.42	442.52

Source: Researcher's Calculation

Case 1

In Case 1 of Table 4.3, the 1-100 category recorded the highest no of IPOs, followed by the 100-400 category. The 1-100 category also recorded the highest avg. raw return and avg. market adjusted return based on both the opening and the closing value of the listing day. However the avg. annualized raw and avg. market adjusted abnormal return was highest for the 400-1000 Cr. issue size category, followed by the >1000 issue size category.

Case 2

In Case 2 of Table 4.3, the 1-100 issue size category recorded the highest number of IPOs, followed by the 100-200 category. The 1-100 category also recorded the highest avg. market adjusted return, indicating higher return than the BSE IPO index on that day. However, in terms of avg. annualized market adjusted return the 400-1000 Cr. category recorded the highest return, followed by the >1000 and the 0-100 category.

In both the Cases 1 and 2, the 1-100 category showed the highest immediate gains, while the 400-1000 category showed the highest annualized returns on the listing day. The large issue size category also showed strong Avg. AMAAR values however, it did not dominate the market in either immediate gains or annualized returns. Kiran (2011) also studied the performance of IPOs based on the issue size and revealed that the mid-sized IPOs performed better than the big sized and the small sized IPOs stating that the 120-180 lakhs shares as the ideal size. Narendrasinh (2018), which found that IPOs (Initial Public Offerings) with an offer size ranging between Rs.101 to Rs.125 Crore had the highest initial raw return and market-adjusted return, while 51 to 75 and more than 125 crores offer size categories underperformed in the medium run. Kilarahatti and Basha (2022) analyzed Indian IPOs launched between 2016 to 2021 and revealed that the percentage and no. of underpriced issues decreases with the increase in issue size until 1250 million and thereafter it increases with the increasing offer size. Sehgalet al. (2013), Sehgalet al. (2008) and Mannuet al. (2020) found a weak negative relation between the issue size and the return of the IPOs. Pandey (2021) also concluded that the IPOs with smaller

issue size is more underpriced and shows poor returns. On the contrary, Bantwa (2022) found issue size to have a significant and positive relation with underpricing. Chhabra (2011) found no consistent pattern between IPO issue size and initial returns, but observed that IPOs under 1000 lakhs had the highest raw and market-adjusted returns, suggesting increased investor confidence in smaller-sized issues.

4.1.1.5 Classification of IPOs based on the face value of IPOs

The IPOs were classified according to their face value in this section. The performance of IPOs was compared to the two benchmark indexes. In Case 1, the yield of 456 IPOs was evaluated against the NSE NIFTY 50 index, while in Case 2, the yield of IPOs was evaluated against the BSE IPO index. The number of IPOs in both the cases differed as some of the IPOs, which were launched before 2004 were omitted in Case 2 due to the unavailability of the BSE IPO index before 2004.

Table 4.4 Classification of IPOs based on the face value

	Case 1									Case 2		
		Average									Average	
Face value (Rs..)	N ₁	RR (Listing day open price of IPOs)	RR (Listing day close price of IPOs)	MAARs (NIFTY 50 open price)	MAARs (NIFTY 50 close price)	ARR (Listing day open price)	ARR (Listing day Close price)	AMAARs (NIFTY 50 open price)	AMAARs (NIFTY 50 Close price)	N ₂	MAARs (BSE IPO close price)	AMAARs (BSE IPO index close price)
All	459	17.61	20.02	15.77	18.34	375.55	430.40	362.77	420.99	438	18.19	410.27
1-9	148	22.48	27.22	17.55	22.50	429.15	537.32	397.33	510.18	133	22.63	470.29
>9	311	15.29	16.59	14.95	16.39	350.04	379.52	347.12	379.31	305	16.25	384.09

Source: Researcher's Calculation

Case 1

The >Rs. 9 face value category recorded higher frequency of IPOs in comparison to the Rs. 1-9 category. However, Rs. 1-9Rs. category showed the highervalues across all the performance metrics, indicating the its strong performance in comparison to the >Rs. 9 face value category and the benchmark index (NIFTY 50) in Case 1. The Rs. 1-9 category also outperformed the performance of the overall 459 IPOs.

Case 2

The >Rs. 9Rs. face value category recorded higher no of IPOs in comparison to the Rs. 1-9 face value category. However, the IPOs in Rs. 1-9Rs. face value category showed higher return as compared to the overall 438 IPOs. Additionally, the Rs. 1-9 category also outperformed the >Rs. 9 category by showing higher Avg. MAAR and Avg. AMAAR values.

In both the Cases 1 and 2, the Rs. 1-9 category outperformed the overall IPOs and the >Rs. 9 category.

4.1.1.6 Classification of IPOs based on the oversubscription rate of IPOs

The Classification of IPOs based on the oversubscription rate illustrates its effect on the pricing performance of IPOs on the day of listing. Table 4.5, shows the yield of IPOs in relation to the NSE NIFTY 50 index in Case 1, while the performance of IPOs in relation to the BSE IPO index in Case 2. Since the study spans the period from 1999 to 2019, some IPOs listed before 2004 were excluded in Case 2 due to the unavailability of the BSE IPO index before 2004.

Table 4.5 Classification of IPOs based on oversubscription rate

Oversubscription (Times)	Case 1									Case 2		
		Average									Average	
	N ₁	RR (Listing day open price of IPOs)	RR (Listing day close price of IPOs)	MAARs (NIFTY 50 open price)	MAARs (NIFTY 50 close price)	ARR (Listing day open price)	ARR (Listing day Close price)	AMAARs (NIFTY 50 open price)	AMAARs (NIFTY 50 Close price)	N ₂	MAARs (BSE IPO close price)	AMAARs (BSE IPO index close price)
All	427	16.79	19.11	16.08	18.56	374.65	427.60	368.15	424.53	422	17.63	411.41
0-2	107	-0.27	-1.02	-0.69	-1.23	-22.72	-19.67	-19.78	-10.94	107	-0.92	-7.31
2-5	90	8.69	5.74	8.96	6.22	177.15	120.74	191.19	139.10	86	7.52	174.38
5-20	94	13.02	17.25	11.53	15.93	281.27	365.32	263.37	350.52	93	14.14	298.51
20-50	70	30.03	36.32	28.37	34.55	615.58	744.47	585.93	712.89	65	29.42	650.05
>50	66	46.85	54.39	46.48	54.25	1165.68	1323.75	1156.63	1319.32	66	54.22	1323.18

Source: Researcher's Calculation.

Case 1

In Case 1, compared to the NSE NIFTY 50 index, the overall 427 IPOs demonstrated higher immediate and annualized average returns on the listing day, as reflected by the positive MAAR and annualized MAAR values. The 0-2 times oversubscribed IPO category showed the poorest performance reflected by the negative returns across all the performance metrics. The highest oversubscription category i.e. >50 times recorded the highest value across all performance metrics. The highly oversubscribed IPOs showed better performance in comparison to the IPOs of less oversubscribed category.

Case 2

In Case 2, the 422 IPOs performed relatively better than the benchmark index on the listing day. Although the 0-2 times oversubscription category recorded the highest number of IPOs, it showed negative MAAR and AMAAR values. The highly oversubscribed category showed stronger performance in comparison to the BSE IPO index.

In both Cases (1 and 2), the highly oversubscribed IPOs showed strongest performance while the least oversubscribed IPOs yielded poorest returns. Chhabra (2011) highlighted the existence of monotonic relation between the oversubscription ratio and the yield of the IPOs. IPOs falling in the higher oversubscription category recorded higher return while the IPOs falling in the lower oversubscription category showed relatively lower return. Chauhan (2011) found that IPOs in both the lowest and highest subscription categories performed better than the IPOs of the mid-range subscription category. The study further revealed that the highest subscription category yielded the highest raw and market-adjusted returns, although the return on application money was the lowest in this category.

4.1.1.7 Classification of IPOs based on the lead-time of IPOs

This section analyzes the performance of IPOs based on their lead-time. Lead time refers to the number of days between the issue's end date and the listing date. Table 4.6 classifies IPO performance according to lead time and compares it to the NSE

NIFTY 50 in Case 1 and the BSE IPO index in Case 2. The difference in the number of IPOs is due to the omission of certain IPOs in Case 2, as the BSE IPO index was unavailable during the launch of those IPOs.

Table 4.6 Classification of IPOs based on lead-time

Lead time in days	Case 1									Case 2		
		Average (avg.)									Average (avg.)	
	N ₁	RR (Listing day open price of IPOs)	RR (Listing day close price of IPOs)	MAARs (NIFTY 50 open price)	MAARs (NIFTY 50 close price)	ARR (Listing day open price)	ARR (Listing day Close price)	AMAARs (NIFTY 50 open price)	AMAARs (NIFTY 50 Close price)	N ₂	MAARs (BSE IPO close price)	AMAARs (BSE IPO index close price)
All	460	17.57	19.98	15.74	18.30	374.85	429.43	362.01	419.98	439	18.31	412.03
0-15	156	11.84	13.62	11.64	13.62	408.69	466.71	403.66	468.07	155	13.68	469.27
15-20	153	17.95	18.94	16.99	18.03	355.22	381.15	338.18	364.22	144	16.99	343.27
21-50	142	23.65	28.66	22.60	27.85	382.03	467.25	365.49	454.55	133	26.04	451.72
>50	9	14.71	10.91	-42.84	-46.78	8.423	7.95	-9.86	-10.79	7	7.65	-3.85

Source: Researcher's Calculation

Case 1

In Case 1 of Table 4.6, the 460 IPOs showed positive avg. ARR, avg. MAAR and avg. AMAAR values during the opening and closing of the listing day, indicating strong performance in comparison to the NSE NIFTY 50 index. The 21-50 days category recorded the highest opening and closing raw and market adjusted return values on the listing day. However, the 0-15 days category showed strong avg. annualized raw returns and avg. market-adjusted returns

Case 2

In Case 2, the IPOs outperformed the BSE IPO index in all lead-time categories except the >50 days category. The 0-15 category showed the highest Avg. MAAR and Avg. AMAAR values showing the maximum wealth generation in comparison to the BSE IPO index. The 21-50 category showed the second highest Avg. MAAR and Avg. AMAAR values. On contrary the >50 category showed the least Avg. MAAR and Avg. AMAAR value, indicating the poorest market performance.

In both the Cases 1 and 2, the 0-15 and the 21-50 days categories showed strong market performance. The IPOs having short and medium lead-time categories performed well on the listing day however, the IPO with larger lead time showed negative returns on the listing day. On analyzing 251 Indian IPOs, Chhabra (2011) found that IPOs falling in the category of 30-60 days yielded highest return which was followed by the IPOs falling in the >120 days category. Bantwa (2022) also assessed the performance of 411 IPOs launched from 2007 to 2016 and highlighted that IPOs having a listing delay of 6-10 days showed the highest rate of return on the listing day, while IPOs having lead time greater than 15 days showed negative return and IPOs having lead time between 26-30 days showed the worst performance. Kiran & Chopram Phil, (2011), reported strong performance of IPOs having lead time of less than or equal to 15 days as compared to the IPOs falling in the lead time range of 15-30 days

4.1.1.8 Classification of IPOs based on the Issue price of IPOs

The yield of IPOs was analyzed by grouping them into five categories. To evaluate the market performance, the IPOs were further analyzed in two separate cases, Case 1 presented in Table 4.7, compares the performance of IPOs to the NSE NIFTY 50 index, while Case 2 compares the IPOs to the BSE IPO index. The difference in the number of IPOs is due to the exclusion of IPOs issued before 2004 in Case 2, as the BSE IPO index was unavailable at the time of their launch.

Table 4.7 Classification of IPOs based on issue price

Issue price Rs.	Case 1									Case 2		
	N ₁	Average								N ₂	Average	
		RR (Listing day open price of IPOs)	RR (Listing day close price of IPOs)	MAARs (NIFTY 50 open price)	MAARs (NIFTY 50 close price)	ARR (Listing day open price)	ARR (Listing day Close price)	AMAARs (NIFTY 50 open price)	AMAARs (NIFTY 50 Close price)		MAARs (BSE IPO close price)	AMAARs (BSE IPO index close price)
All	460	17.57	19.98	15.74	18.30	374.84	429.43	362.01	419.98	440	18.26	410.87
10-50	39	27.15	24.63	26.11	23.59	543.66	447.27	520.08	423.61	35	17.39	350.59
50-100	75	16.48	13.55	15.42	12.94	263.38	217.37	266.39	228.62	70	13.04	218.58
100-150	79	14.21	20.34	13.49	19.96	285.48	417.04	295.09	432.95	75	21.42	464.32
150-200	62	18.53	23.74	15.50	20.61	373.76	496.87	316.68	437.71	60	17.39	356.30
200-300	62	15.95	20.00	13.50	17.53	375.59	484.84	344.78	455.21	61	18.02	476.55
300-500	71	20.16	24.13	15.66	20.02	507.24	569.93	496.67	565.66	69	25.43	581.14
500-800	43	14.61	13.70	14.95	13.94	277.26	280.94	291.79	296.51	41	10.63	264.24
>800	29	16.18	20.41	15.38	19.48	500.81	601.29	487.09	587.94	29	19.67	586.54

Source: Researcher's Calculation

Case 1

The Rs. 100-150 category recorded the highest number of IPOs, while the >Rs. 800 category recorded the lowest number of IPOs. The Rs. 10-50 category, showed highest raw and market adjusted return values both at the start and the close of the listing day. At the opening of the listing day, the Rs. 10-50 category also showed the highest Avg. AMAAR value, followed by the >Rs. 800 category showed the second highest Avg. AMAAR value. However, by the close of the listing day, for the Rs. 10-50 category Avg. AMAAR value declined by 96.47%, while the Avg. AMAAR value of >Rs. 800 category showed a growth of 100.85%. All the issue price categories showed positive annualized raw and market adjusted returns, indicating the strong performance in comparison to the NSE NIFTY 50 index.

Case 2

Similar to the case 1, all the issue price categories outperformed the benchmark index i.e. BSE IPO index. The Rs. 300-500 category, recorded the highest Avg. MAAR value, followed by the Rs100-150 and >Rs. 800 categories respectively. The >Rs. 800 category showed the strongest annualized market performance, followed by the Rs. 300-500 category.

In both the Cases 1 and 2, the Rs.50-100 and the Rs.500-800 categories showed the poorest performance across all the performance metrics, while the >Rs.800 showed the strongest performance in terms of avg. annualized market-adjusted gains. Chhabra (2011) found that the issues falling in the price range of Rs. 10 outperformed the performance of other categories. Narendrasinh (2018) found that IPOs with an issue price below Rs.30 delivered better returns than those priced between Rs.30 and Rs.120. Additionally, IPOs priced above Rs.120 also performed well, suggesting that both low-priced and high-priced IPOs tended to outperform those in the mid-price range. This indicates that IPOs with issue prices either below Rs.30 or above Rs.120 yielded higher returns compared to those within the Rs.30-Rs.120 range.

4.1.1.9 Classification of IPOs based on the Listing open price

The IPOs were categorized based on their opening price on the listing day. In Case 1 of Table 4.8, 460 IPOs were analyzed against the NSE NIFTY 50 index, while in Case 2, 440 IPOs were and compared to the BSE IPO index. In Case 2, the IPOs which were launched before 2004 were omitted as the BSE IPO index was only available after 2004.

Table 4.8 Classification of IPOs based on Listing open price

Listing open price (Rs.)	Case 1									Case 2		
		Average									Average	
	N ₁	RR (Listing day open price of IPOs)	RR (Listing day close price of IPOs)	MAARs (NIFTY 50 open price)	MAARs (NIFTY 50 close price)	ARR (Listing day open price)	ARR (Listing day Close price)	AMAARs (NIFTY 50 open price)	AMAARs (NIFTY 50 Close price)	N ₂	MAARs (BSE IPO close price)	AMAARs (BSE IPO index close price)
All	460	17.57	19.98	15.74	18.30	374.84	429.43	362.01	419.99	440	18.31	412.04
10-100	110	13.32	11.36	9.80	8.10	298.03	248.47	293.78	248.68	101	10.25	238.15
100-200	117	11.34	13.57	11.17	13.46	199.48	259.54	202.39	264.27	110	12.57	252.90
200-300	71	21.68	26.01	16.82	21.36	416.75	532.89	353.31	475.35	70	22.99	504.08
300-400	42	19.13	26.12	17.80	25.29	384.42	509.31	364.50	497.39	41	20.88	388.45
400-600	48	24.01	30.41	23.48	29.99	526.08	636.36	514.29	628.27	46	29.80	626.21
600-900	43	21.43	24.28	21.77	24.62	556.79	642.11	572.39	659.50	43	24.19	663.26
>900	29	30.13	31.24	29.41	30.18	737.18	774.48	718.38	750.55	28	26.55	731.17

Source: Researcher's Calculation

Case 1

In Case 1 of Table 4.8, the Avg. RR, Avg. MAAR, Avg. ARR and Avg. AMAAR at both the beginning and the end of the listing day were positive, indicating the strong overall performance of these 460 IPO compared to the NSE NIFTY 50 index. The >Rs.900 listing open price category IPOs showed the highest values across all the performance metrics, outperforming both all the other categories and the benchmark index. It was observed that the Avg. AMAAR values were generally higher at the close of the listing day compared to the start, except for the Rs.10-100 category.

Case 2

In Case 2, the overall IPOs outperformed the BSE IPO benchmark index. The >Rs.900 category showed the highest Avg. MAAR and Avg. AMAAR values, indicating their strong performance against the BSE IPO index. It was observed that the higher listing open price categories showed higher Avg. MAAR and Avg. AMAAR values compared to the lower and mid priced listing price category.

In both the Cases 1 and 2, the >Rs.900 category showed the highest values across all the performance metrics while the Rs.0-100 category recorded poorest performance in both the cases 1 and 2.

4.1.1.10 Classification of IPOs based on the Listing closing price of IPOs

Table 4.9 analyses the listing day performance of 460 IPOs against the NSE NIFTY 50 index in Case 1 and 439 IPOs against the BSE IPO index in Case 2. IPOs listed before 2004 were omitted in Case 2 as the BSE IPO index was unavailable before 2004.

Table 4.9 Classification of IPOs based on Issue price

Listing close price (Rs.)	Case 1									Case 2		
		Average									Average	
	N ₁	RR (Listing day open price of IPOs)	RR (Listing day close price of IPOs)	MAARs (NIFTY 50 open price)	MAARs (NIFTY 50 close price)	ARR (Listing day open price)	ARR (Listing day Close price)	AMAARs (NIFTY 50 open price)	AMAARs (NIFTY 50 Close price)	N ₂	MAARs (BSE IPO close price)	AMAARs (BSE IPO index close price)
All	460	17.57	19.97	15.740	18.30	374.84	429.43	362.09	419.99	439	18.31	412.04
10-100	111	12.57	1.26	9.59	-1.37	284.64	52.72	289.39	63.58	103	1.02	52.56
100- 200	117	12.44	16.63	10.74	14.94	218.42	313.38	192.75	287.50	109	13.68	263.67
200- 400	105	19.59	24.19	17.42	22.22	387.58	489.72	367.10	474.56	104	22.81	494.21
>400	127	24.97	34.89	24.38	34.41	578.57	788.81	570.10	783.45	123	32.05	750.64

Source: Researcher's Calculation

Case 1

The overall performance of the 460 IPOs showed strong performance of these IPOs against the NSE NIFTY 50 index in Case 1. The >Rs. 400 category showed the highest values across all the performance metrics, indicating the strongest performance against the other categories. On contrary the Rs. 10-100 category showed the poorest performance and recorded negative Avg. MAAR value, indicating the poor performance in comparison to the NSE NIFTY 50 index.

Case 2

In Case 2 of Table 4.9, the overall IPOs 439 IPOs outperformed the BSE IPO index. The >400 category recorded the highest Avg. MAAR and Avg. AMAAR values while the Rs. 10-100 category showed the lowest values. The Avg. MAAR and the Avg. AMAAR values were positive across all the listing close price categories, showing better performance of IPOs than the BSE IPO index.

In both the Cases 1 and 2, the >Rs. 400 category showed the strongest performance while the 0-100 category showed the poorest performance.

4.1.1.11 Classification of IPOs based on the Age of companies bringing an IPO

This section showed the performance of IPOs based on the issuing firm's age. Table 4.10 presents the return of 456 IPOs relative to the NSE NIFTY 50 index in Case 1 and 443 IPOs in comparison to the BSE IPO index in Case 2. In Case 2, IPOs launched before 2004 were excluded to ensure comparability, as the BSE IPO index data was unavailable before 2004.

Table 4.10 Classification of IPOs based on Age

Age (Years)	Case 1									Case 2		
	Average										Average	
	N ₁	RR (Listing day open price of IPOs)	RR (Listing day close price of IPOs)	MAARs (NIFTY 50 open price)	MAARs (NIFTY 50 close price)	ARR (Listing day open price)	ARR (Listing day Close price)	AMAARs (NIFTY 50 open price)	AMAARs (NIFTY 50 Close price)	N ₂	MAARs (BSE IPO close price)	AMAARs (BSE IPO index close price)
All	456	17.22	19.52	15.41	17.86	369.06	421.97	356.78	413.08	443	18.43	404.21
0-10	128	18.74	19.61	18.09	19.24	373.40	380.72	361.90	374.24	124	17.36	364.88
10-15	121	13.77	17.08	9.92	13.29	292.98	353.92	282.84	344.31	117	17.05	355.98
15-20	87	16.88	16.84	16.18	16.26	392.35	414.37	381.44	406.94	85	16.57	411.78
20-40	87	23.71	28.57	21.95	27.02	496.74	613.29	476.74	599.49	84	25.43	542.83
40- 101	33	7.796	11.29	5.86	9.35	233.16	347.09	226.81	340.62	33	14.47	350.66

Source: Researcher's Calculation

Case 1

The 456 IPOs in Case 1 outperformed the NSE NIFTY 50 index both at the beginning and at the end of the listing day. The 0-10 years category showed the highest frequency of IPOs, followed by the 10-15, 15-20, 20-40 and the 40-101 categories, respectively. The 40-101 recorded the lowest no of IPOs and showed the poorest return values across all the performance metrics. On contrary, the 20-40 year category showed the highest avg. RRs, MAARs, ARRsand the AMAARsboth at the beginning and at the end of the listing day.

Case 2

The 443 IPOs in Case 2, outperformed the BSE IPO index at the end of the listing day, indicating that these IPOs generated higher return as compared to the broader market index. The 0-10 years age category showed the highest frequency of IPOs, followed by the 10-15 years category, then the 15-20 years, 20-40 years, and finally, the 40-101 years category, which recorded the least number of IPOs. Notably, the 40-101 years age category, showed the lowest returns across all metrics, both at the beginning and the end of the listing day. The poor performance of the older companies in their IPOs may be due to excess information availability, which can lead to decreased investor interest. On contrary, the 20-40 years category, showed highest immediate and annualized returns both at the beginning and at the end of the listing day.

In both the Cases 1 and 2, the IPOs of younger and the mid aged companies (0-40 years) showed relatively stronger performance compared to the much older firms (40-101 years). Narendrasinh (2018) stated that mid-aged companies, falling in the age bracket of 21 to 50 years, showed better market performance compared to both new and older companies. Chhabra (2011) also found the mid aged IPOs performing better than the newer and older IPOs. Chauhan (2011) found a positive relationship between a company's age and its return. The IPOs in the age bracket of more than 40 recorded the highest return, whereas the IPOs in the age bracket of up to 5 recorded the lowest raw and market-adjusted return.

4.1.2 Very short run

In present study, very short run refers to one week from getting listed on the NSE platform. This section 4.1.2 analyses the performance of IPOs during the very short run based on factors like industry, lead-time, issue price, issue size, lot size, oversubscription, listing close price, age and face value.

4.1.2.1 Classification of IPOs based on the Type of Industry

This section compares the performance of IPOs of different sectors against the NSE NIFTY 50 index in Case 1 (Table 4.11), and against the BSE IPO index in Case 2. The BSE IPO index's data was unavailable before 2004, so IPOs launched before 2004 were excluded from analysis in Case 2.

Table 4.11 Classification of IPOs based the type of Industry

Industry	Case 1					Case 2		
		Average					Average	
	N ₁	RR (Listin g day close price of IPOs)	MAARs (NIFT Y 50 close price)	ARR (Listin g day Close price)	AMAAR s (NIFTY 50 Close price)	N ₂	MAAR s (BSE IPO close price)	AMAAR s (BSE IPO index close price)
All	466	20.02	17.93	423.74	397.79	440	17.37	394.89
Agri. & Agri. products	13	32.97	27.99	701.96	616.99	12	21.61	511.52
Automotive and Components industry	12	12.43	7.16	324.00	292.29	11	6.11	255.00
Chemical	10	3.92	-0.91	87.67	134.36	10	-3.58	68.32
Diversified	11	20.23	16.93	604.32	548.34	11	18.55	581.33
Electrical & Electronics	18	21.56	22.06	495.18	507.70	18	22.59	525.14
FMCG	21	39.81	29.73	673.97	426.19	21	39.65	710.68
Hotels, Restaurant and Resorts	9	25.49	23.87	554.47	519.08	9	22.58	493.72

Miscellaneous	10	39.50	40.37	584.61	620.13	10	22.11	244.99
‘Oil, Gas and Fuel’	8	40.72	37.58	829.71	772.05	6	15.95	421.52
Travel & Transport and Logistics	19	16.68	16.40	483.62	479.02	18	18.43	520.81
Banking Finance	14	33.08	32.08	961.89	919.84	14	33.08	950.83
Non Banking Finance	36	21.36	22.00	592.01	602.11	36	23.14	631.49
Rating & Stock Broking	8	36.16	31.83	864.64	785.37	8	30.82	748.84
Civil Construction	39	18.04	16.13	347.07	334.30	39	17.66	355.14
Construction & Engineering	15	35.13	34.12	674.17	661.87	15	35.35	692.37
Residential & Commercial Construction	18	12.28	11.81	272.32	268.28	18	11.24	260.90
Power	12	18.41	17.42	248.25	223.70	11	3.99	79.14
Entertainment	18	11.42	10.60	227.07	209.43	14	11.97	270.89
Printing Media and Broadcasting	16	15.30	14.36	254.59	233.58	14	7.66	107.25
Garments and Accessories	20	-0.52	-0.55	-14.00	-13.58	20	-0.22	-10.70
Textile and Textile Products	20	6.74	2.83	161.39	114.48	19	3.89	128.44
Healthcare & Hospital	12	6.52	5.97	205.28	185.27	12	9.90	258.23
Pharma	14	17.45	18.88	432.04	459.35	12	5.10	132.73
Metals and Metal products	15	38.47	34.50	811.24	741.86	15	35.23	755.09
Non Metallic products	21	6.61	8.23	213.52	240.41	21	9.60	270.38
Software and Hardware	18	22.35	4.90	130.64	4.44	13	5.77	-42.83

IT Service	21	23.00	24.54	407.03	442.09	19	22.48	391.06
Internet and Telecom Technology	18	17.08	17.84	377.69	399.39	15	19.99	454.58

Source: Researcher's Calculation

Case 1

In Case 1 the overall IPOs recorded positive average raw return, average annualized raw return, average market adjusted return, and average annualized market adjusted return, indicating the outperformance of IPOs as compared to the NSE NIFTY 50 index. The 'Civil Construction' sector (39) was most heavily represented in the sample, followed by the 'Non-Banking sector' (36), 'FMCG'(21), 'Non-Metallic' (21), 'IT service' (21), 'Garments and Accessories' (20), 'Textile and Textile product' (20) showed considerable IPO activity, which highlights the invested interest in these sectors due to their resilience and growth potential. The 'Oil, Gas and Fuel' recorded highest raw return, followed by 'Miscellaneous', 'Metals and Metallic products', 'Rating and Stock Broking', 'Construction and Engineering', 'Agri. and Agri. products', 'Banking and finance' sectors all demonstrated high raw returns. On comparing the returns of IPOs of these sectors to the NSE NIFTY 50 index, the 'Miscellaneous' sector showed the highest return, followed by the 'Oil, Gas and Fuel' sector, which recorded the second highest MAAR value. On observing the average annualized raw and market adjusted return, the 'Banking and Finance' sector showed the highest values, followed by the 'Rating and stock broking', 'Oil, Gas and Fuel', 'Metal and Metallic products', 'Agri. and Agri. products', 'Construction and Engineering' and the 'Miscellaneous' sectors, in decreasing order.

Case 2

The 440 IPOs in Case 2 recorded positive Avg. MAAR and Avg. AMAAR values, indicating the outperformance of IPOs compared to the BSE IPO index. The 'Civil Construction' sector (39) recorded the highest number of IPOs, followed by the 'Non-Banking' sector (36), 'FMCG' (21), 'Non-Metallic' (21), 'Garments and Accessories' (20), showed considerable IPO activity, which highlights the invested

interest in these sectors due to their resilience and growth potential. The FMCG sector recorded the highest Avg. MAAR value at 39%, followed by ‘Construction and Engineering’ at 35.35, ‘Metals and Metallic Products’ at 35.23, ‘Rating and Stock Broking’ at 33% and ‘Electrical and Electronics’ at 22%. The Avg. AMAAR values were highest for the Banking and finance sector. The Rating and stock broking sector recorded the second highest Avg. AMAAR value, followed by the ‘Metals and metallic products’, ‘FMCG’, ‘Construction and Engineering’, and ‘Electrical and electronics’ sectors in decreasing order.

In both the Cases, the ‘Banking and Finance’ sector consistently recorded highest Avg. AMAAR value. ‘Rating and Stock Broking’, ‘Metals and Metallic products’, ‘FMCG’, ‘Construction and Engineering’, and ‘Electrical and electronics’ also showed strong performance in comparison to the other sectors. Chhabra (2011) studied performance of 225 IPOs in the one-week period and revealed that only diversified sector showed poor performance, while all other sectors showed positive performance. Software and hardware sector recorded the highest wealth index indicating maximum wealth generation for the investors. Pandey (2010) highlights that all sectors showed positive and high returns on the first day of trading. Gupta (2016) studied 134 Indian IPOs launched between 2008 -2014 and found that consumer discretionary, Food, Finance, IT yielded positive return, while Energy and Telecom sectors showed negative returns. In the one week period Shah (2019) reported the profitable performance of performance of Agriculture, Construction, Chemical, Engineering, Banking, Beverages, Manufacturing, Mining, Miscellaneous, Paper, Steel, Insurance, Software, Investment sectors, while poor performance of Engineering, Pharmaceutical, Power, Synthesis, Gems and Jewelry, Infrastructure, Real estate sectors.

Case 2

4.1.2.2 Classification of IPOs based on the Lead-time

Table 4.12, analyses the performance of IPOs based on their lead-time. In Case 1 presents the return of 467 IPOs relative to the NSE NIFTY-50 index. Case 2, shows

the performance of 447 IPOs in comparison to the BSE IPO index, excluding IPOs launched before 2004 as the BSE IPO index was unavailable prior to 2004.

Table 4.12 Classification of IPOs based on Lead-time

	Case 1					Case 2		
		Average					Average	
Lead time (in days)	N ₁	RR (Listing day close price of IPOs)	MAARs (NIFTY 50 close price)	ARR (Listing day Close price)	AMAARs (NIFTY 50 Close price)	N ₂	MAARs (BSE IPO close price)	AMAARs (BSE IPO index close price)
All	467	19.99	17.89	422.92	396.99	447	17.34	394.43
0-15	156	14.48	13.44	489.61	457.44	155	14.84	501.25
15-20	154	16.75	16.17	335.12	323.99	145	13.50	270.22
21-50	144	29.61	26.22	480.92	443.52	134	25.05	426.20
>50	13	18.13	-0.43	20.15	20.90	13	5.17	-6.25

Source: Researcher's Calculation

Case 1

In Case 1, the 467 IPOs outperformed the NSE NIFTY 50 Index. The lead-time category of 0-15 days showed the highest number of IPOs, which was followed by the 15-20 days category, 21-50 days, and >50 days category in decreasing order. Notably, the 0-15 category showed the highest average annualized raw and market-adjusted return values, indicating the strongest performance of IPOs within this category. Although the 21-50 category showed the highest immediate raw and average market-adjusted return, when annualizing these return values, it became relatively lower than the 0-15 category. Therefore, the 0-15 category came out as the

strongest-performing category, followed by the 21-50 category based on the overall performance.

Case 2

In Case 2, the overall performance of the 447 IPOs were relatively stronger than the BSE IPO index, as indicated by the strong annualized and immediate market adjusted return values. All lead-time categories yielded positive Avg. MAAR and Avg. AMAAR values during the very short run, constantly outperforming the BSE IPO index. Among these, the 0-15 category recorded the highest Avg. AMAAR values while the 21-50 days category recorded the highest Avg. MAAR value, outperforming the other lead-time categories.

In both the cases (1 and 2), the run the short and medium lead-time categories showed strong and positive market performance. However, the larger lot size failed to deliver positive Avg. MAAR values, indicating its poor performance in comparison to the NSE NIFTY 50 and the BSE IPO benchmark indexes in the very short run. Bantwa (2022) found that, IPOs with listing delay in a range of 6 to 10 days have provided the highest rate of return in very-short run, while 26-30 days category showed the least return. Chhabra (2011) highlighted that, IPOs with a lead-time of less than 30 days showed lower returns, those with 60-90 days had negative returns, while IPOs with a lead-time of 30-60 days or greater than 90 days performed strongly. Kiran & Chopram Phil (2011), reported strong performance of IPOs having lead time of less than or equal to 15 days as compared to the IPOs falling in the lead time range of 15-30 days.

4.1.2.3 Classification of IPOs based on the Issue price

Table 4.13 assesses the performance of 467 IPOs in Case 1 and 441 IPOs in Case 2 by comparing their returns to the NSE NIFTY 50 and BSE IPO index respectively. The unavailability of the BSE IPO index before 2004, necessitated the exclusion of IPOs launched before 2004 in Case 2, to make it more comparable to the index.

Table 4.13 Classification of IPOs based on Issue price

	Case 1					Case 2		
		Average					Average	
Issue price (in Rs.)	N ₁	RR (Listing day close price of IPOs)	MAARs (NIFTY 50 close price)	ARR (Listing day Close price)	AMAARs (NIFTY 50 Close price)	N ₂	MAARs (BSE IPO close price)	AMAARs (BSE IPO index close price)
All	467	19.99	17.90	422.91	396.99	441	17.35	394.43
10-50	41	23.29	21.10	451.11	404.14	35	14.44	324.20
50-100	76	8.080	7.74	119.99	132.75	70	7.72	123.68
100-150	81	23.39	22.92	490.14	504.27	76	23.64	522.28
150-200	62	21.38	20.11	424.57	400.20	60	14.59	282.46
200-300	62	20.74	15.25	497.19	381.83	61	18.89	501.92
300-500	72	27.13	22.05	613.08	564.89	69	27.26	607.67
500-800	44	17.20	16.68	275.40	274.20	41	8.69	194.99
>800	29	19.02	18.46	578.50	574.73	29	18.70	577.79

Source: Researcher's Calculation

Case 1

In Case 1, the 467 IPOs showed considerably stronger performance than the NSE NIFTY 50 Index during the very short run period. All the issue price categories outperformed the benchmark index as indicated by the positive Avg. MAAR and the

Avg. AMAAR values. The 50-100 Rs. category showed the poorest performance as compared to the other issue price categories. Among all the issue size categories, the 300-500 category delivered the highest immediate raw and market adjusted returns, while the >800 category showed the highest ARR and AMAAR values.

Case 2

In Case 2, the overall performance of the 441 IPOs was comparatively stronger than the BSE IPO Index in the very short run, as highlighted by the positive Avg. MAAR and Avg. AMAAR values. The 300-500 Rs. issue price category clearly outperformed all other categories and yielded the strongest market performance, while the Rs. 50-100 issue size category showed relatively poorer performance. The >Rs. 800 Rs. issue price category also showed strong performance by delivering the second highest return values.

In both the Cases (1 and 2), the Rs. 300-500 and the >Rs. 800 category showed the strongest performance as compared to the other issue price categories. Chhabra (2011) found an inverse relation between the listing price and the return, as the low-priced IPOs yielded maximum return while the high-priced IPOs yielded the lowest return. Narendrasinh (2018) found that IPOs with an issue price below Rs.30 delivered better returns than those priced between Rs.30-120. Additionally, IPOs priced above Rs.120 also performed well, suggesting that both low-priced and high-priced IPOs tended to outperform those in the mid-price range. This indicates that IPOs with issue prices either below Rs.30 or above Rs.120 yielded higher returns compared to those within the Rs.30-120 range.

4.1.2.4 Classification of IPOs based on the issue size

Table 4.14 analyses the performance of IPOs based on their issue size. In case 1, the performance of 462 IPOs was analyzed in comparison to the NSE NIFTY 50 index, while in Case 2, 440 IPOs were analyzed in comparison to the BSE IPO index. IPOs listed before the availability of the BSE IPO Index (i.e. before 2004), were excluded in Case 2.

Table 4.14 Classification of IPOs based on issue size

	Case 1						Case 2	
		Average					Average	
Issue size (Cr.)	N ₁	RR (Listing day close price of IPOs)	MAARs (NIFTY 50 close price)	ARR (Listing day Close price)	AMAARs (NIFTY 50 Close price)	N ₂	MAARs (BSE IPO close price)	AMAARs (BSE IPO index close price)
All	462	28.29	16.12	679.57	450.09	440	17.89	478.79
0-100	149	22.91	20.68	416.48	405.88	142	19.49	379.90
100-400	132	22.12	20.52	411.51	385.83	126	16.60	315.98
400-1000	99	14.719	14.82	450.12	452.14	95	15.53	636.21
>1000	75	14.46	8.49	419.66	320.90	74	16.50	451.26

Researcher's Calculation

Case 1

In case 1, the overall performance of the 467 IPOs was comparatively better than the benchmark index (i.e. NSE NIFTY 50). All the issue size categories outperformed the benchmark index, as reflected by the positive and high Avg. MAAR values. Among all the issue size categories, the 0-100 category yielded the highest immediate raw and market-adjusted returns, while the 400-1000 category yielded the highest annualized raw and market adjusted return values.

Case 2

The 440 IPOs of Case 2 outperformed the BSE IPO index, as indicated by the high Avg. MAAR and Avg. AMAAR values. All the issue size categories showed positive immediate and annualized market return, highlighting the strong performance of these IPOs in comparison to the BSE IPO index. Among all the issue size

categories, the immediate MAAR of the 0-100 category was the highest, indicating the strongest very short-term market performance. The Avg. AMAAR value was highest for the Rs. 400-1000 category, indicating strong annualized returns as compared to the other categories.

In both the Cases 1 and 2, the IPOs outperformed the benchmark indexes by delivering strong immediate and annualized returns. The 0-100 Cr. category showed strong performance in terms of MAAR and the 400-1000cr. category delivered the strongest Avg. AMAAR values. Pandey (2021) also concluded that the IPOs with smaller issue size is more underpriced and shows poor returns. Chhabra (2011) did not find any consistent pattern between IPO issue size and initial returns, but observed that IPOs under 1000 lakhs had the highest raw and market-adjusted returns, suggesting increased investor confidence in smaller-sized issues.

4.1.2.5 Classification of IPOs based on the Face value

Table 4.15 shows the performance of 467 IPOs in Case 1 in relation to the NSE NIFTY 50 index, and 441 IPOs in Case 2 in relation to the BSE IPO Index. Since the BSE IPO Index was unavailable before 2004, IPOs launched before 2004 were excluded in Case 2 to ensure comparability.

Table 4.15 Classification of IPOs based on Face value

Face value (in Rs.)	Case 1					Case 2		
		Average					Average	
	N ₁	RR (Listing day close price of IPOs)	MAARs (NIFTY 50 close price)	ARR (Listing day Close price)	AMAARs (NIFTY 50 Close price)	N ₂	MAARs (BSE IPO close price)	AMAARs (BSE IPO index close price)
All	467	19.99	17.89	422.92	396.99	441	16.37	394.42
1-9	153	28.14	23.56	524.36	487.08	133	21.78	446.50
>9	314	16.03	15.14	373.49	353.10	308	15.43	371.94

Researcher's Calculation

Case 1

In case 1, the overall performance of the 467 IPOs were comparatively better than the benchmark index (i.e. NSE NIFTY 50). The >9 Rs. recorded higher frequency of IPOs as compared to the 1-9 Rs face value category. However, Rs. 1-9 face value category recorded higher return values across all the performance metrics in comparison to the Rs. >9 category.

Case 2

In Case 2, the overall performance of 441 IPOs were relatively better than the BSE IPO index during the very short run period. The average values across all the performance metrics were positive in both the face value categories, highlighting profitable performance compared to the BSE IPO index. While Rs.1-9 face value category recorded lower number of IPOs compared to the >Rs. 9 category, however the Rs. 1-9 category, it showed stronger performance than the >Rs. 9 category.

In both Cases 1 and 2, Rs. 1-9 recorded lower number of IPOs but yielded higher performance as compared to the >Rs. 9 face value category.

4.1.2.6 Classification of IPOs based on the lot size

Table 4.16 presents the performance of 450 IPOs in Case 1 measured against the NSE NIFTY 50 Index, and 441 IPOs in Case 2, evaluated relative to the BSE IPO index. To draw a meaningful comparison between the BSE IPO index and the IPOs, IPOs listed before 2004 were excluded, as the BSE IPO index was unavailable prior to the year 2004.

Table 4.16 Classification of IPOs based on lot size

Lot size (no. of shares)	Case 1						Case 2	
		Average					Average	
	N ₁	RR (Listing day close price of IPOs)	MAARs (NIFTY 50 close price)	ARR (Listing day Close price)	AMAARs (NIFTY 50 Close price)	N ₂	MAARs (BSE IPO close price)	AMAARs (BSE IPO index close price)
All	450	19.67	17.48	425.99	399.32	436	17.37	395.05
0-25	121	17.22	16.22	389.27	383.89	119	16.23	383.23
25-50	115	30.32	28.20	620.03	602.57	115	28.68	598.66
50-100	161	16.17	12.87	367.13	319.50	150	11.61	298.05
>100	53	12.74	11.06	267.63	235.97	52	11.56	251.61

Source: Researcher's Calculation

Case 1

In Case 1, the overall yield of the 450 IPOs was comparatively better than the NSE NIFTY 50 during the very short run period. All the categories of lot size showed positive Avg. MAAR and Avg.AMAAR values, indicating their superior performance compared to the NSE NIFTY 50 index. The lot size of 25-50 shares yielded the maximum Avg.RR, Avg.MAAR, Avg.ARR, and Avg.AMAAR values and outperformed all the other lot size categories.

Case 2

In Case 2, the 436 IPOs showed positive Avg.MAAR and Avg.AMAAR values indicating the strong performance of these IPOs compared to the BSE IPO index. All the lot size categories showed positive Avg.MAAR and Avg.AMAAR yield, highlighting their profitable performance compared to the BSE IPO index. The lot

size of 25-50 yielded highest returns across all the performance metrics and outperformed all the other lot size categories.

In both the Cases, the IPOs showed strong and profitable performance against the selected benchmark indexes. The lot size of 25-50 shares proved to be the highest return generating category in both the Cases.

4.1.2.7 Classification of IPOs based on the oversubscription

Table 4.17 shows the performance of 481 IPOs against the NSE NIFTY 50 index in case 1 and 454 IPOs against the BSE IPO Index in Case 2. To ensure comparability, the IPOs listed before the availability of the BSE IPO Index (i.e. before 2004) were excluded in Case 2.

Table 4.1.7 Classification of IPOs based on oversubscription

Oversubscription (no. of times)	Case 1					Case 2		
		Average					Average	
	N ₁	RR (Listing day close price of IPOs)	MAARs (NIFTY 50 close price)	ARR (Listing day Close price)	AMAARs (NIFTY 50 Close price)	N ₂	MAARs (BSE IPO close price)	AMAARs (BSE IPO index close price)
All	481	19.30	17.15	426.38	400.71	454	17.12	395.11
0-2	107	9.079	5.88	157.28	133.23	106	8.83	138.80
2-5	91	7.55	6.30	150.59	142.93	88	6.17	135.60
5-20	93	23.41	21.48	473.95	468.36	91	19.78	442.63
20-50	71	28.75	26.74	602.68	567.79	66	21.67	465.21
>50	66	36.14	33.98	986.23	914.74	66	36.82	1017.16

Researcher's Calculation

Case 1

The overall performance of 481 IPOs showed positive and high immediate and market adjusted returns as compared to the NSE NIFTY 50 index during the very short run. All the oversubscription categories showed positive Avg.MAAR and Avg.AMAAR values reflecting their strong performance against the benchmark index in Case 1. Out of all the oversubscription categories the >50 times category recorded the highest return value across all the performance categories, while the 0-2, and 2-5 categories showed poorest performance. It was also observed that the highly oversubscribed IPOs yielded higher returns as compared to the less oversubscribed IPOs.

Case 2

The overall IPOs outperformed the BSE IPO Index during the very short run. The 0-2 and the 2-5 times oversubscription categories, showed the lowest market adjusted return values, indicating poor performance compared to the other categories and low investor confidence. Whereas the >50 times oversubscription category showed the highest return, indicating the high investor demand.

In both the Cases 1 and 2, the less oversubscribed IPOs showed relatively poor performance than the highly oversubscribed IPOs. Chhabra (2011) found the IPOs falling in the 10-20 times oversubscription category yielding the highest return in comparison to the 1-10, 20-40 and >40 categories.

4.1.2.8 Classification of IPOs based on the Listing Close Price

Table 4.18 compares the performance of 467 IPOs against the NSE NIFTY 50 Index in Case 1 and 441 IPOs against the BSE IPO Index in Case 2, during the very short run period. The IPOs listed before the availability of the BSE IPO Index were excluded in Case 2 to ensure a meaningful comparison.

Table 4.18 Classification of IPOs based on Listing Close Price

	Case 1						Case 2	
		Average					Average	
Listing close price (in Rs.)	N ₁	RR (Listing day close price of IPOs)	MAARs (NIFTY 50 close price)	ARR (Listing day Close price)	AMAARs (NIFTY 50 Close price)	N ₂	MAARs (BSE IPO close price)	AMAARs (BSE IPO index close price)
All	467	19.99	17.89	422.92	396.99	441	17.35	394.43
0-100	119	56.02	-4.18	-4.41	-56.80	110	-7.01	-72.44
100-200	106	15.30	14.62	288.81	284.33	97	10.07	203.50
200-400	117	28.24	25.69	577.42	549.64	115	26.05	563.75
>400	125	39.28	37.09	848.71	796.55	119	34.98	802.29

Researcher's Calculation

Case 1

The IPOs in Case 1 outperformed the NSE NIFTY 50 index as indicated by the positive MAAR and AMAAR values. The 0-100 category showed negative immediate and annualized market adjusted values, reflecting the poor performance of IPOs of this category compared to the NSE NIFTY 50 index. The Rs.100-200, Rs. 200-400 and Rs. >400 listing close price ranges recorded positive returns across all metrics, in increasing order.

Case 2

In Case 2, the 441 IPOs showed positive Avg.MAAR and Avg.AMAAR values indicating the strong performance of these IPOs compared to the BSE IPO index. The 0-100 category recorded negative Avg.MAAR and Avg.AMAAR value, highlighting its poor performance compared to the BSE IPO Index. The Rs. >Rs. 400

listing price category recorded the highest return across all metrics, followed by the Rs. 200-400 category in the very short run.

In both the Cases 1 and 2, the >Rs. 400 category recorded the highest return and the Rs. 0-100 category recorded lowest returns. The performance of the high listing close price categories showed higher returns compared to the low listing close price categories. This indicates that the IPOs with higher listing close price tend to perform better due to high investor interest and demand.

4.1.2.9 Classification of IPOs based on the Age of the IPO issuing firm

Table 4.19 shows the pricing performance of 466 IPOs in comparison to the NSE NIFTY 50 Index in Case 1 and 441 IPOs in comparison to the BSE IPO Index. To ensure comparability, the IPOs listed before the availability of the BSE IPO Index (i.e. before 2004) were excluded in Case 2.

Table 4.19 Classification of IPOs based on Age

Age (in Years)	Case 1					Case 2		
		Average					Average	
	N ₁	RR (Listing day close price of IPOs)	MAARs (NIFTY 50 close price)	ARR (Listing day Close price)	AMAARs (NIFTY 50 Close price)	N ₂	MAARs (BSE IPO close price)	AMAARs (BSE IPO index close price)
All	466	20.04	17.93	423.79	397.72	441	17.34707	394.43
0-10	139	22.86	22.39	417.39	408.27	125	15.97	341.59
10-15	121	18.42	16.32	363.75	341.56	118	17.67	363.20
15-20	83	17.99	15.84	463.15	404.93	81	17.51	471.00
20-40	89	25.47	23.99	560.16	551.52	84	22.73	502.66
40-101	34	5.08	-5.39	210.60	134.19	33	7.28	242.72

Researcher's Calculation

Case 1

The average performance of the 466 IPOs were higher than the NSE NIFTY 50 Index, as indicated by the high Avg.MAAR and Avg.AMAAR values. Among the IPOs, The IPOs falling in the 20-40 age category showed highest returns across all the performance metrics. On contrary, the oldest age category (40-101 years) showed the poorest returns across all performance metrics. The young and the mid aged IPO categories showed positive and high returns as compared to the older IPO category, suggesting the newer companies perform better in the very short run.

Case 2

The average performance of 441 IPOs showed high and positive Avg.MAAR and Avg.AMAAR values, indicating their superior performance compared to the BSE IPO Index (benchmark index of Case 2). Out of all the age categories, the IPO performance of 20-40 years category showed highest Avg.MAAR and Avg.AMAAR value. The 40-101 years category (oldest) recorded the lowest Avg.MAAR and Avg.AMAAR value, reflecting its poorest performance.

In both the Cases, the mid aged IPO category showed strongest market performance while the oldest IPO category showed the poorest returns.

4.1.3 Short Run

In this study, short run refers to duration of one month from the listing of IPOs on the NSE website. This section 4.1.3 analyses the performance of IPOs during the short run based on factors like industry, lead-time, issue price, issue size, lot size, oversubscription, listing close price, age, and face value.

4.1.3.1 Classification of IPOs based on the Type of Industry

The pricing performance of IPOs was assessed during short run by classifying the IPOs according to their respective industries. The IPOs were classified under 28 sectors, which are presented in the Table 4.20 below.

Table 4.20 Classification of IPOs based on the type of industry

Industry	Case 1					Case 2		
		Average					Average	
	N ₁	RR (Listing day close price of IPOs)	MAARs (NIFTY 50 close price)	ARR (Listing day Close price)	AMAARs (NIFTY 50 Close price)	N ₂	MAARs (BSE IPO close price)	AMAARs (BSE IPO index close price)
All	485	19.72	16.69	439.57	395.26	460	16.33	387.28
Agri. & Agri. products	13	14.38	9.93	341.36	262.70	12	2.89	145.86
Automotive and Components Industry	13	2.78	-1.52	112.94	98.77	12	-2.67	58.396
Chemical	11	-5.410	-11.31	16.64	19.65	11	-12.73	-25.56
Diversified	13	20.28	15.60	501.08	401.80	13	17.57	423.45
Electrical & Electronics	19	16.50	16.85	359.50	379.04	19	17.24	388.72
FMCG	22	46.45	36.78	898.62	650.42	22	43.87	872.66
Hotels, Restaurant and Resorts	9	23.62	20.05	552.55	459.07	9	16.77	365.56
Miscellaneous	12	42.49	42.15	704.15	686.33	12	25.77	348.73
‘Oil, Gas and Fuel’	8	32.18	30.76	706.47	668.22	6	16.18	421.92
Travel & Transport and Logistics	20	28.47	26.51	974.39	927.88	19	29.25	967.57
Banking Finance	14	40.148	37.56	974.07	907.09	14	36.86	891.12
Non Banking Finance	38	42.78	40.67	1034.79	983.53	38	42.33	1021.59
Rating & Stock Broking	8	37.27	31.90	863.096	756.2378	8	32.37	765.0441
Civil Construction	41	18.38	16.24	359.11	336.68	41	18.98	380.32

Construction & Engineering	16	47.55	42.09	1070.66	970.68	16	44.19	1021.95
Residential & Commercial Construction	19	7.76	6.77	168.24	154.72	19	6.75	164.87
Power	12	10.31	8.68	41.19	4.37	11	-6.97	-160.88
Entertainment	19	24.23	22.14	591.28	540.42	15	29.21	656.88
Printing Media and Broadcasting	16	12.11	11.45	175.89	152.54	14	5.49	40.10
Garments and Accessories	21	2.37	0.86	66.62	31.07	21	2.94	75.99
Textile and Textile Products	21	5.73	-2.04	185.82	74.11	20	-6.81	-1.93
Healthcare & Hospital	12	1.37	0.43	82.71	59.12	12	4.03	114.83
Pharma	14	20.61	22.40	494.09	526.43	12	5.94	158.69
Metals and Metal Products	16	12.19	10.86	244.91	207.19	16	13.66	267.25
Non Metallic Products	21	-3.82	-3.77	-9.46	-5.70	21	-3.05	5.85
Software and Hardware	17	3.57	-15.80	-49.48	-80.53	13	-2.90	-201.33
IT Service	22	24.86	24.94	311.28	321.81	19	13.73	199.43
Internet and Telecom Technology	18	7.21	8.23	168.40	190.54	15	10.54	263.67

Source: Researcher's Calculation

Case 1

In Case 1, the 485 IPOs outperformed the NSE NIFTY 50 index during the short run, as reflected by the high Avg.MAAR and Avg.AMAAR values. The civil construction sector was the most heavily represented sector, followed by the 'Non-banking' sector, indicating high IPO frequency in these sectors. In the short run (one month), 'Software and Hardware', 'Non-Metallic', 'Chemical', 'Power' sectors showed poor performance while, 'Construction and Engineering', 'FMCG', 'Miscellaneous', 'Non-banking', 'Banking and finance', 'Travel & Transport and

Logistics', 'Rating & Stock Broking', 'Oil, Gas and Fuel', showed strong performance

Case 2

In Case 2, the 460 IPOs outperformed the BSE IPO Index during the short run. The "Construction and Engineering" sector recorded the highest Avg.AMAAR, followed by the 'Non-Banking Finance', 'Travel, Transport and Logistics', 'Banking and Finance', and FMCG sectors, which showed strong returns in decreasing order. On contrary the 'Software and Hardware', 'Non-metallic products', 'Power', 'Chemical', 'Automotive and Components industry' sectors showed the poorest performance during the short run.

In both the Cases 1 and 2, "Construction and Engineering" sector recorded the highest Avg.AMAAR, followed by the 'Non-Banking Finance', 'Travel, Transport and Logistics', 'Banking and Finance', and FMCG sectors, which showed strong market performance. Chhabra (2011) studied performance of 225 IPOs in the one-week period and revealed that only diversified sector showed poor performance, while all other sectors showed positive performance. Software and hardware sector recorded the highest wealth index indicating maximum wealth generation for the investors. Pandey (2010) highlights that all sectors showed positive and high returns on the first day of trading. Gupta (2016) studied 134 Indian IPOs launched between 2008 -2014 and found that consumer discretionary, Food, Finance, IT yielded positive return, while energy, telecom sectors showed negative returns. In the one month period Shah (2019) highlighted the poor performance of majority of sectors, such as, Construction, Software, Education, Agriculture, Banking, Beverages, Healthcare, Mining, Miscellaneous, Investment, Paper, Steel sectors, while poor performance of Engineering, IT, Manufacturing, Pharmaceutical, Power, Communication, Synthesis, Infrastructure, Real estate sectors.

4.1.3.2 Classification of IPOs based on the Lead-time

This section assesses the performance of IPOs based on their lead-time. Table 4.21 classifies IPO performance according to lead time and compares it to the NSE

NIFTY 50 in Case 1 and the BSE IPO index in Case 2. The difference in the number of IPOs is due to the omission of certain IPOs in Case 2, as the BSE IPO index was unavailable during the launch of those IPOs

Table 4.21 Classification of IPOs based on Lead-time

Lead time (no. of days)	Case 1					Case 2		
		Average					Average	
	N ₁	RR (Listing day close price of IPOs)	MAARs (NIFTY 50 close price)	ARR (Listing day Close price)	AMAARs (NIFTY 50 Close price)	N ₂	MAARs (BSE IPO close price)	AMAARs (BSE IPO index close price)
All	484	19.71	16.66	439.60	394.80	459	16.28	386.59
0-15	171	12.87	11.18	460.38	401.08	169	12.86	445.75
15-20	158	22.18	20.25	450.85	413.08	149	18.63	382.25
21-50	143	27.75	25.44	442.98	404.51	133	19.81	341.16
>50	12	-11.08	-57.25	-44.87	-51.41	8	-14.04	-27.42

Source: Researcher's Calculation

Case 1

The overall returns of the 484 IPOs outperformed the NSE NIFTY 50 index during the short run. All the lead-time categories except >50 days showed better performance compared to the benchmark index in short run. Among the lead-time categories, the 21-50 days category recorded the highest immediate raw return and market adjusted return, followed by the 15-20 days category. The 15-20 days lead time category recorded the highest Avg.AMAAR values, second highest Avg.RR, Avg.MAAR, and Avg.ARR values. The 0-15 category showed strong overall

performance and recorded highest Avg.ARR value and nearly matching the Avg.AMAAR value of the 21-50 category.

Case 2

The overall IPOs in case two showed positive Avg.MAAR and Avg.AMAAR values, indicating higher returns as compared to the BSE IPO Index in Case 2. All lead-time categories showed positive Avg.MAAR and Avg.AMAAR values except the >50 category. The 0-15 category recorded the highest annualized market return, while the 21-50 days lead-time category recorded the highest immediate market adjusted return.

In both the cases, the short run period, the short and medium lead-time category deliver high annualized market adjusted returns indicating the continued market demand and interest of the investors. Chhabra (2011) noted that, in one month period, IPOs with a lead time of less than 30 days showed relatively lower returns, and those with 60-90 days showed negative returns. In contrast, IPOs with lead times of 30-60 days and greater than 90 days showed strong performance. Bantwa (2022) IPOs with listing delay in a range of 6 to 10 days have provided the highest rate of return in short run, while 26-30 days category showed the least return.

4.1.3.3 Classification of IPOs based on the Issue price

This section analyses the effect of issue price on the pricing performance of IPOs. Table 4.22 presents the performance of 485 IPOs against the NSE NIFTY 50 index in Case 1 and the performance of 459 IPOs against the BSE IPO index in Case 2. The IPOs listed before 2004 were omitted while formulating Case 2 as the BSE IPO index was unavailable before 2004.

Table 4.22 Classification of IPOs based on Issue price

Issue price	Case 1					Case 2		
		Average					Average	
	N ₁	RR (Listing day close price of IPOs)	MAARs (NIFTY 50 close price)	ARR (Listing day Close price)	AMAARs (NIFTY 50 Close price)	N ₂	MAARs (BSE IPO close price)	AMAARs (BSE IPO index close price)
All	485	19.62	16.57	438.67	393.95	459	16.28	386.58
10-50	44	35.26	30.66	719.92	620.40	38	23.78	552.10
50-100	79	2.20	-0.05	54.26	34.92	73	0.01	23.03
100-150	83	25.79	23.72	563.89	546.74	78	24.90	571.53
150-200	66	20.54	19.34	448.93	416.71	64	15.90	333.01
200-300	67	16.42	11.24	477.27	361.31	66	14.27	454.67
300-500	72	27.41	22.20	627.79	602.35	69	28.39	612.70
500-800	45	16.14	14.27	210.18	176.92	42	6.02	105.14
>800	29	17.16	15.53	468.45	427.83	29	15.62	420.30

Source: Researcher's Calculation

Case 1

The overall performance of 485 IPOs in Case 1 indicated the superior performance of IPOs in the short run compared to the NSE NIFTY 50 index. Except the Rs. 50-100 category, all the other issue price categories yielded positive returns and outperformed the benchmark index. The 10-50 issue price category showed strongest

return across all the performance metrics, followed by the 300-500, 100-150, >800, 150-200, 200-300, 500-800 and 50-100 categories respectively in decreasing order.

Case 2

Overall IPOs in the Case 2 IPOs outperformed the BSE IPO index as indicated by the high Avg.MAAR and Avg.AMAAR values. All the issue price categories showed positive MAAR values indicating the strong performance of IPOs in comparison to the BSE IPO index. The Rs. 300-500 category showed the highest annualized market adjusted returns, followed by the Rs. 100-150, Rs. 10-50, Rs. 200-300, Rs. >800, Rs. 50-100 categories in decreasing order.

In both the cases, the Rs. 10-50, Rs. 100-150 and the Rs. 300-500 category recorded strong performance compared to the other issue price categories. Chhabra (2011) found that the IPOs of all issue price category yielded positive return however, the Rs. 10 category yielded the highest return. Narendrasinh (2018) found that the mid priced IPOs were more underpriced in the short run and yielded negative return however, the high and low priced IPOs showed strong market performance in the short run.

4.1.3.4 Classification of IPOs based on the Issue size

Table 4.23 shows the performance 456 IPOs in comparison to the NSE NIFTY 50 index in Case 1 and 438 IPOs in comparison to the BSE IPO index in Case 2. IPOs listed before 2004 were excluded in Case 2 as the BSE IPO Index was unavailable before 2004.

Table 4.23 Classification of IPOs based on Issue size

Issue size (Cr.)	Case 1					Case 2		
		Average					Average	
	N ₁	RR (Listing day close price of IPOs)	MAARs (NIFTY 50 close price)	ARR (Listing day Close price)	AMAARs (NIFTY 50 Close price)	N ₂	MAARs (BSE IPO close price)	AMAARs (BSE IPO index close price)
All	456	17.14	14.06	376.87	333.95	438	14.15	324.38
0-100	149	16.93	13.51	298.89	272.71	142	10.95	217.76
100-400	133	21.79	19.24	407.14	358.66	127	16.55	315.36
400-1000	99	13.86	13.25	441.16	413.46	95	14.74	438.93
>1000	75	13.62	7.08	393.28	306.84	74	15.40	397.41

Source: Researcher's Calculation

Case 1

In Case 1, the 456 IPOs outperformed the NSE NIFTY 50 Index, as indicated by the Avg.MAAR and Avg.AMAAR value. All the issue size categories yielded positive returns and outperformed the BSE IPO index during the short run. The Rs. 400-1000 Cr. issue size category yielded the highest Avg.MAAR and Avg.AMAAR values, followed by the Rs. 100-400 Cr., while the Rs. 0-100 Cr. yielded the lowest return.

Case 2

In Case 2, the 438 IPOs outperformed the BSE IPO index, as reflected by the high Avg.MAAR and Avg.AMAAR values. All the issue size categories yielded higher returns compared to the BSE IPO index, as indicated by the positive Avg.MAAR and Avg.AMAAR values across all the categories. The Rs. 400-1000 Cr. issue size category showed the highest Avg.AMAAR value, followed by the Rs. >1000 category, Rs. 100-400 Cr. category and the 0-100 Cr. category, in decreasing order. Thus, highlighting the relatively profitable performance of mid- to-large sized IPOs.

In both the Cases (1 and 2), the higher issue size categories recorded higher returns as compared to the small sized issue size category, implying that mid and large sized IPOs tend to perform better in the short run, possibly due to stronger market confidence and broader investor participation. Narendrasinh (2018), which found that IPOs (Initial Public Offerings) with an offer size ranging between ₹101 to ₹125 Crore had the highest initial raw return and market-adjusted return, while 51 to 75 and more than 125 crores offer size categories underperformed in the medium run. Pandey (2021) also concluded that the IPOs with smaller issue size is more underpriced but still shows poor market performance. Chhabra (2011) noted that the issues falling in the category of less than Rs. 1000 lakhs showed best market performance as well as raw return in the one-month period, indicating that issues with a smaller size have high underpricing.

4.1.3.5 Classification of IPOs based on the Lot Size

This section highlights the effect of lot size on the performance of the IPOs during the short run. Table 4.24, compares the performance of 450 IPOs against the NSE NIFTY 50 index in Case 1 and 438 IPOs against the BSE IPO index in Case 2. In Case 2, IPOs listed before 2004 were omitted, as the BSE IPO index was unavailable before 2004.

Table 4.24 Classification of IPOs based on Lot size

Lot size (no. of shares)	Case 1					Case 2		
		Average					Average	
	N ₁	RR (Listing day close price of IPOs)	MAARs (NIFTY 50 close price)	ARR (Listing day Close price)	AMAARs (NIFTY 50 Close price)	N ₂	MAARs (BSE IPO close price)	AMAARs (BSE IPO index close price)
All	450	17.64	15.16	382.10	338.94	438	14.15	324.38
0-25	121	20.47	18.74	411.63	384.81	120	19.47	394.43

25-50	115	19.45	17.38	448.12	397.91	115	17.38	397.85
50-100	161	16.34	13.37	370.23	329.50	151	11.75	307.18
>100	53	11.22	7.64	207.57	134.92	52	1.66	50.21

Source: Researcher's Calculation

Case 1

In Case 1, the overall IPOs showed stronger performance compared to the NSE NIFTY 50 index, as reflected by the high Avg.MAAR and Avg.AMAAR values of the 450 IPOs. All the lot size categories showed positive returns across all the performance metrics. The lot size category of 25-50 shares recorded the highest return, while the lot size >100 shares showed lowest return.

Case 2

In Case 2 the overall IPOs recorded positive Avg.MAAR and Avg.AMAAR values indicating their outperformance compared to the BSE IPO index. The positive Avg.MAAR and Avg.AMAAR values across all categories indicate the strong performance of IPOs compared to the benchmark index. The 25-50 category showed the highest Avg.AMAAR value, followed by 0-25, 50-100, >100 lot size categories, in decreasing order

In both Cases (1 and 2), the 20-50 category showed highest Avg.AMAAR values, followed by 0-20 category, 50-100 and >100 categories respectively. The high returns of 20-50 category shows the continued interest of the investors while the declining return of large lot sized IPOs reflects the reassessment of share value by the investors.

4.1.3.6 Classification of IPOs based on the oversubscription rate

This section analyses the effect of oversubscription rate on the pricing performance of IPOs. Table 4.25 compares the performance of 428 IPOs against the NSE NIFTY 50 Index in case 1, while performance of 419 IPOs against the BSE IPO Index in

Case 2. In Case 2, IPOs listed before 2004 were excluded, as the BSE IPO Index was unavailable prior to that year.

Table 4.25 Classification of IPOs based on oversubscription rate

Oversubscription (no. of times)	Case 1					Case 2		
		Average					Average	
	N ₁	RR (Listing day close price of IPOs)	MAARs (NIFTY 50 close price)	ARR (Listing day Close price)	AMAARs (NIFTY 50 Close price)	N ₂	MAARs (BSE IPO close price)	AMAARs (BSE IPO index close price)
All	428	16.45	14.51	373.31	333.94	419	13.71	325.98
0-2	107	-8.46	-10.65	-154.36	-192.93	107	-11.05	-207.13
2-5	91	-1.78	-2.76	-22.17	-36.49	88	-1.91	-17.27
5-20	93	16.47	14.47	333.51	300.21	92	14.03	274.87
20-50	71	39.28	36.91	813.13	772.21	66	31.63	702.46
>50	66	57.38	55.08	1356.96	1274.93	66	56.30	1342.69

Source: Researcher's Calculation

Case 1

Case 1 demonstrates the out performance of overall IPOs in comparison to the NSE NIFTY 50 index. The 0-2 and 2-5 times oversubscription category showed negative returns across all the performance metrics, indicating their poor performance compared to the benchmark index. The >50 times oversubscription category demonstrated highest return value across all the performance metrics, indicating their superior performance against the other categories.

Case 2

The overall IPOs in Case 2 outperformed the BSE IPO index during the short run. The 0-2 times and the 2-5 categories showed poor performance against the BSE IPO

index. In the 20-50 and >50 categories showed strong performance in comparison to the benchmark index.

In both the Cases 1 and 2, the less oversubscribed categories showed poor performance while the highly oversubscribed category showed strong performance. The oversubscription rate and the performance of the IPO show a positive association. Chhabra (2011) found the IPOs falling in the 10-20 times oversubscription category yielding the highest return in comparison to the 1-10, 20-40 and >40 categories.

4.1.3.7 Classification of IPOs based on the Listing day's close price

This section analyses the effect of listing day's close price on the pricing performance of IPOs. Table 4.26 compares the performance of 486 IPOs against the NSE NIFTY 50 Index in case 1, while performance of 460 IPOs against the BSE IPO Index in Case 2. In Case 2, IPOs listed before 2004 were excluded, as the BSE IPO Index was unavailable prior to that year.

Table 4.26 Classification of IPOs based on listing day's close price

Listing day's close price (in Rs.)	Case 1					Case 2		
		Average					Average	
	N ₁	RR (Listing day close price of IPOs)	MAARs (NIFTY 50 close price)	ARR (Listing day Close price)	AMAARs (NIFTY 50 Close price)	N ₂	MAARs (BSE IPO close price)	AMAARs (BSE IPO index close price)
All	486	19.64	16.61	438.36	394.05	460	16.33	387.29
0-100	138	-5.80	-9.71	-70.72	-93.77	126	-8.13	-117.10
100-200	104	10.42	8.08	243.40	212.92	99	5.37	166.17
200-400	121	33.94	31.04	738.01	685.88	117	31.67	697.07
>400	123	41.92	39.14	879.61	807.42	118	36.33	801.83

Source: Researcher's Calculation

Case 1

In Case 1 the IPOs outperformed the benchmark index i.e. NSE NIFTY 50 Index. The Rs. 0-100 category yielded negative market adjusted returns showing their poor performance against the NSE NIFTY 50 index. The 100-200 category showed the second lowest returns, while the >400 category showed the highest return across all performance metrics. It was observed that the higher listing closing price categories attracted better returns compared to the low listing price categories.

Case 2

Similarly, the IPOs of Case 2 also outperformed the BSE IPO index as indicated by the positive overall Avg.MAAR and Avg.AMAAR values. The 0-100 category showed the poorest performance among the listing price categories and the benchmark index. The >400 category recorded the highest immediate and annualized returns.

In both the Cases 1 and 2, the Rs. >400 category showed the strongest performance, followed by 200-400 category and the 0-100 and 100-200 showed poor return. Chhabra (2011) found the IPOs falling in the 10-20 times oversubscription category yielding the highest return in comparison to the 1-10, 20-40 and >40 categories.

4.1.3.8 Classification of IPOs based on the age of the company issuing the IPO

Table 4.27 analyses the pricing performance of 475 IPO in Case 1 against the NSE NIFTY 50 index and 452 IPOs against the BSE IPO index. The IPOs issued before 2004 were excluded from Case 2 due to unavailability of the BSE IPO Index before 2004.

Table 4.27 Classification of IPOs based on Age

	Case 1					Case 2		
		Average					Average	
Age (years)	N ₁	RR (Listing day close price of IPOs)	MAARs (NIFTY 50 close price)	ARR (Listing day Close price)	AMAARs (NIFTY 50 Close price)	N ₂	MAARs (BSE IPO close price)	AMAARs (BSE IPO index close price)
All	475	20.39	17.89	451.61	406.25	452	16.65	396.14
0-10	140	23.14	20.94	470.42	421.17	126	15.74	375.40
10-15	123	21.74	18.47	467.09	421.16	121	18.59	422.99
15-20	86	19.50	16.43	452.44	395.09	84	15.99	440.05
20-40	95	21.12	19.39	467.79	447.16	90	18.25	389.04
40-101	31	11.70	9.43	311.83	289.62	31	9.81	277.25

Source: Researcher's Calculation

Case 1

The overall IPOs in Case 1 generated higher returns as compared to the NSE NIFTY 50 index in short run. All the age categories showed positive MAAR values indicating the outperformance of IPOs compared the benchmark index. The older firms (40-101 years) yielded poor returns compared to the new and the mid aged firms.

Case 2

In Case 2 the overall Avg.MAAR and Avg.AMAAR values were positive indicating the outperformance of 452 IPOs against the BSE IPO index. The 40-101 category showed the poorest returns, while 10-15 and 15 -20 showed high Avg.MAAR and Avg.AMAAR values. The mid aged firms showed the strongest performance

compared to the newer and older IPOs. Narendrasinh (2018) found that IPOs in the 41-50 age bracket showed a positive and strong performance compared to other age categories. Chhabra (2011) observed positive performance of all age- wise IPO categories in the one-month period. However, the youngest firms gave the highest return followed by the mid aged firms.

4.1.3.9 Classification of IPOs based on the Face value

Table 4.28 classifies the performance of IPOs based on the face value of the IPOs. Case 1 of Table 4.28 demonstrates the pricing performance of 459 IPOs against the NSE NIFTY 50 Index, while Case 2 demonstrates the pricing performance of 440 IPOs against the BSE IPO index. In Case 2, IPOs listed prior to 2004 were excluded as the BSE IPO index was unavailable before 2004, leading to decreased number of IPOs in Case 2.

Table 4.28 Classification of IPOs based on Face value

Face value (in Rs.)	Case 1					Case 2		
		Average					Average	
	N ₁	RR (Listing day close price of IPOs)	MAARs (NIFTY 50 close price)	ARR (Listing day Close price)	AMAARs (NIFTY 50 Close price)	N ₂	MAARs (BSE IPO close price)	AMAARs (BSE IPO index close price)
All	459	17.30	14.22	379.11	336.28	440	14.36	327.88
1-9	148	25.01	19.25	491.46	444.87	134	20.11	402.14
>9	311	13.63	11.83	325.64	284.59	306	11.84	295.36

Source: Researcher's Calculation

Case 1

The overall performance of 459 IPOs was better than the NSE NIFTY 50 index during the short run. Both the face value categories showed strong performance

against the NSE NIFTY 50 index. The Rs. 1-9 face value category recorded lesser frequency of IPOs as compared to the >Rs. 9 category, however the Rs. 1-9 category demonstrated stronger performance as compared to the >9 category.

Case 2

The 440 IPOs outperformed the BSE IPO index as indicated by the positive Avg.MAAR and Avg.AMAAR values. The Rs.1-9 face value category observed less frequency of IPOs however it showed higher returns as compared to the BSE IPO index.

In both, Cases (1 and 2), the Rs. 1-9 category showed stronger performance compared to the Rs. >9 category.

4.1.4 Medium run

Medium run refers to a period of six months from the listing of IPOs on the NSE. This section highlights the performance of IPOs during the medium run based on factors like industry, lead-time, issue price, issue size, lot size, oversubscription rate, listing close price, age, and face value

4.1.4.1 Classification of IPOs based on the type of Industry

The pricing performance of IPOs during the short run was evaluated by categorizing the IPOs based on their respective industries. These IPOs were distributed across 28 sectors, as shown in Table 4.29 below. Case 1 analyses the performance of 475 IPOs against the NSE NIFTY 50 index, while Case 2 analyses the performance of 451 IPOs against the BSE IPO index. The IPO listed before 2004 were excluded in Case 2 as the BSE IPO was unavailable before 2004, leading to decreased number of IPOs.

Table 4.29 Classification of IPOs based on type of Industry

Industry	Case 1					Case 2		
		Average					Average	
	N ₁	RR (Listing day close price of IPOs)	MAARs (NIFTY 50 close price)	ARR (Listing day Close price)	AMAARs (NIFTY 50 Close price)	N ₂	MAARs (BSE IPO close price)	AMAARs (BSE IPO index close price)
All	475	26.70	19.88	649.94	522.91	451	20.27	528.46
Agri. & Agri. Products	13	23.25	15.43	627.69	479.70	12	4.45	277.69
Automotive and Components Industry	13	-0.07	-11.67	-37.59	-209.40	12	-17.84	-321.07
Chemical	11	9.81	-0.13	495.55	414.42	11	-3.64	343.61
Diversified	13	14.26	3.36	518.59	251.57	13	5.98	245.30
Electrical & Electronics	18	19.85	16.53	341.08	279.48	18	19.17	305.41
FMCG	21	74.18	58.23	1660.68	1297.56	21	70.16	1613.96
Hotels, Restaurant and Resorts	9	34.66	27.30	743.09	587.25	9	26.27	500.27
Miscellaneous	12	63.66	57.74	967.03	807.05	12	61.79	964.53
‘Oil, Gas and Fuel’	8	29.83	34.25	911.60	1007.69	6	32.45	1074.72
Travel & Transport and Logistics	20	54.44	46.82	1517.24	1369.37	19	48.54	1417.55
Banking Finance	13	46.68	38.60	1217.27	1097.50	13	39.32	1159.43
Non Banking Finance	38	47.86	42.73	1299.95	1159.97	38	45.71	1204.06
Rating & Stock Broking	8	29.80	19.84	754.29	559.99	8	25.50	762.40

Civil Construction	40	15.34	14.30	354.24	345.36	40	20.30	426.30
Construction & Engineering	16	32.97	23.62	906.33	706.49	16	29.92	850.76
Residential & Commercial Construction	19	24.63	19.03	541.75	415.99	19	17.53	413.09
Power	12	12.50	8.45	28.65	-49.25	11	-8.47	-209.68
Entertainment	19	17.23	11.15	578.31	420.12	15	18.77	500.65
Printing, Media and Broadcasting	16	13.70	6.71	203.56	60.78	14	-0.03	-60.42
Garments and Accessories	20	7.745	5.84	238.18	213.65	20	10.85	324.66
Textile and Textile Products	21	12.52	1.66	400.96	220.56	20	3.88	285.82
Healthcare & Hospital	12	2.01	-3.21	143.37	-11.78	12	0.31	24.71
Pharma	13	62.25	50.99	1390.99	1138.59	11	-4.00	30.24
Metals and Metal Products	16	-7.14	-7.11	-119.13	-142.19	16	2.37	45.08
Non Metallic Products	21	-3.32	-6.61	-8.47	9.16	21	-20.98	-40.56
Software and Hardware	15	49.79	16.83	660.92	398.94	11	22.70	146.80
IT Service	21	15.90	9.55	243.00	127.89	18	-0.27	-27.14
Internet and Telecom Technology	17	38.35	40.49	1224.23	1212.27	15	48.58	1293.73

Source: Researcher's Calculation

Case 1

The FMCG sector recorded the highest Avg.RR, Avg.MAAR, Avg.ARR value during the medium run and outperformed the other sectors. The miscellaneous sector recorded the second highest Avg.RR and Avg.MAAR values during the medium run. While, the 'Travel, Transport and Logistics' sector recorded the highest annualized return values, followed by 'Internet and Telecom Technology', 'Non-banking finance', 'Pharmaceutical', 'Banking Finance' and 'Oil, Gas and Fuel', all of which demonstrated resilient performance against the BSE IPO index.

Case 2

The 'FMCG' sector showed the highest immediate market-adjusted abnormal return (MAAR), followed closely by the 'Miscellaneous' sector. Additionally, the 'FMCG' sector recorded the highest annualized market-adjusted returns, followed by the 'Travel & Transport and Logistics,' 'Internet and Telecom Technology,' 'Non-banking Finance,' 'Banking Finance,' and 'Oil, Gas, and Fuel' sectors, which also showed strong returns.

In both Cases(1 and 2), the 'FMCG', 'Travel, Transport and Logistics', 'Internet and Telecom Technology', 'Non-Banking Finance', 'Pharmaceutical', 'Banking Finance', and 'Oil, Gas and Fuel' sectors emerged as the top-performing sectors. Chhabra (2011) studied performance of 225 IPOs in the one-month period and revealed that textile, diversified and mining sectors showed poor performance, while all other sectors showed positive performance. Software and hardware sector recorded the highest wealth index indicating maximum wealth generation for the investors. Pandey (2010) presents that most of the sectors showed positive and high returns on the first year of trading. Shah (2019) highlighted the strong performance of Construction, Chemical, Banking, Beverages, Healthcare, Miscellaneous, Agriculture, Insurance, Software, Investment, while poor performance of Engineering, IT, Manufacturing, Mining, Paper, Power, Steel, Synthesis, Infrastructure, Real estate, FMCG, Transportation, Automotive sectors in the six-month period.

4.1.4.2 Classification of IPOs based on Lead-time

The pricing performance of the 475 IPOs were analyzed against the NSE NIFTY 50 index Case 1, while performance 451 IPOs were analyzed against the BSE IPO index in Case 2. The IPOs listed before 2004 were excluded in Case 2, as the BSE IPO index was unavailable before 2004.

Table 4.30 Classification of IPOs based on Lead-time

Lead time (days)	Case 1					Case 2		
		Average					Average	
	N ₁	RR (Listing day close price of IPOs)	MAARs (NIFTY 50 close price)	ARR (Listing day Close price)	AMAARs (NIFTY 50 Close price)	N ₂	MAARs (BSE IPO close price)	AMAARs (BSE IPO index close price)
All	475	27.68	18.03	511.36	372.42	451	16.62	326.79
0-15	167	24.54	21.46	869.82	751.08	166	24.04	807.93
15-20	156	28.51	22.93	765.96	626.03	147	22.10	447.15
21-50	141	26.95	20.93	443.62	336.41	130	17.22	299.33
>50	11	-30.03	-83.52	-102.79	-103.35	8	-42.05	-53.38

Source: Researcher's Calculation

Case 1

The overall IPOs in Case 1 recorded positive immediate and annualized market-adjusted returns, indicating their outperformance compared to the NSE NIFTY 50 index. The 0-15 and the 15-20 categories showed high MAAR and AMAAR values indicating their stronger performance in comparison to other categories as well as the

market index. The 21-50 category recorded high immediate raw return but did not deliver high AMAAR values compared to the 0-15 and the 15-20 lead-time categories.

Case 2

The overall IPOs in Case 2 outperformed the BSE IPO index, as indicated by the positive MAAR and AMAAR values. The >50 categories showed the poorest performance, while the 0-15 category recorded the highest MAAR and AMAAR values, followed by the 15-20 category, which showed the second highest return value.

In both Cases 1 and 2, the overall IPOs outperformed their respective benchmark indexes. The >50 category showed poor performance in both cases and recorded negative returns. In contrast, the 0-15 and the 15-20 categories showed strong market performance and outperformed other categories in both cases. This trend revealed that smaller lead-time categories consistently outperformed the larger lead-time categories in both cases. Chhabra (2011) noted that in the six-month period, IPOs with a lead time of less than 30 days and 30-60 days showed better performance than those with a lead time greater than 60 days. Bantwa (2022) IPOs with listing delay in a range of 6 to 10 days have provided the highest rate of return in medium run, while 26-30 days category showed the least return.

4.1.4.3 Classification of IPOs based on the Issue Price

This section evaluated the performance of 453 IPOs in Case 1 against the NSE NIFTY 50 index and 434 IPOs in Case 2 against the BSE IPO Index. The difference in the number of IPOs pertains to the unavailability of BSE IPO Index data before 2004, which led to the omission of these IPOs in Case 2.

Table 4.31 Categorization based on the issue price of IPOs

Issue price (Rs.)	Case 1					Case 2		
		Average					Average	
	N ₁	RR (Listing day close price of IPOs)	MAARs (NIFTY 50 close price)	ARR (Listing day Close price)	AMAARs (NIFTY 50 Close price)	N ₂	MAARs (BSE IPO close price)	AMAARs (BSE IPO index close price)
All	453	24.91	17.84	600.32	472.77	434	18.92	484.71
10-50	40	12.09	5.95	234.24	118.74	36	-0.66	38.52
50-100	73	0.51	-6.31	0.42	-87.53	67	-5.64	-70.81
100-150	77	43.56	33.56	902.30	737.41	73	31.98	709.16
150-200	62	20.81	20.87	407.11	406.41	60	22.56	428.65
200-300	61	41.22	29.28	1107.63	833.16	60	31.19	902.73
300-500	68	33.20	24.74	886.18	787.52	68	31.64	809.98
500-800	43	20.29	14.93	585.19	453.30	42	13.48	398.93
>800	29	16.30	10.94	511.57	343.46	29	12.66	380.97

Source: Researcher's Calculation

Case 1

In Case 1, the overall IPOs showed high MAAR and AMAAR values, reflecting a stronger performance of IPOs in comparison to the NSE NIFTY 50. The Rs. 200-

300, Rs. 100-150, and Rs. 300-500 categories exhibited high returns in decreasing order, each outperforming the overall return of all IPOs. The Rs. 50-100 and the Rs. 10-50 categories were the least performing categories in the issue price categories. It was noted that the IPOs with issue price ranging below Rs. 100 attracted poor returns, while the issue price categories ranging between Rs. 100-800 showed profitable yield.

Case 2

In Case 2, the overall IPOs showed positive MAAR and AMAAR values indicating their strong performance against the BSE IPO index during the medium run. The issue price categories 10-50 and 50-100 showed negative MAAR and AMAAR values, reflecting their poor performance against the BSE IPO index during the medium run. In contrast, 200-300, 300-500, and 100-150 categories recorded higher annualized market-adjusted returns compared to other categories.

In both Cases (1 and 2), the Rs. 200-300, Rs. 300-500 and Rs. 100-500 categories showed strong annualized returns as compared to other categories, while the Rs. 10-50 and Rs. 50-100 categories showed lowest returns. It was noted that the IPOs with issue price ranging below Rs. 100 attracted poor returns, while the issue price categories ranging between Rs. 100-800 showed profitable yield. Chhabra (2011) found that the IPOs of all issue price categories yielded positive returns however, the Rs. 10 category yielded the highest return Narendrasinh (2018) found that IPOs with lower and mid-range prices resulted in negative returns over six months. In contrast, IPOs priced above ₹120 demonstrated positive and profitable performance during the same period.

4.1.4.4 Classification of IPOs based on the Issue size

The performance of IPOs was assessed in this section based on the issue size of IPOs. In Case 1, 449 IPOs were assessed against the NSE NIFTY 50 index, and 431 IPOs were assessed against the BSE IPO index. The difference in the number of IPOs pertains to the unavailability of BSE IPO Index data before 2004, which led to the omission of these IPOs in Case 2.

Table 4.32 Categorization based on the issue size of IPOs

Issue-size (Cr.) of IPOs	Case 1					Case 2		
		Average					Average	
	N ₁	RR (Listing day close price of IPOs)	MAARs (NIFTY 50 close price)	ARR (Listing day Close price)	AMAARs (NIFTY 50 Close price)	N ₂	MAARs (BSE IPO close price)	AMAARs (BSE IPO index close price)
All	449	24.66	17.72	596.87	471.49	431	18.85	484.62
0-100	145	24.47	17.47	487.34	388.81	138	15.46	289.55
100-400	130	29.52	22.95	560.46	435.39	124	25.63	496.31
400-1000	99	21.49	18.55	717.83	622.15	95	20.58	652.76
>1000	75	22.96	11.82	723.78	520.58	74	19.88	612.97

Source: Researcher's Calculation

Case 1

In Case 1, the Avg.MAAR and the Avg.AMAAR values of overall IPOs were positive, indicating the superior performance of IPOs compared to the NSE NIFTY 50 index. The Rs 400-1000 Cr. issue size category recorded the high Avg.AMAAR and ARR value, indicating the highest annualized raw return and the annualized market-adjusted return. The Rs. >1000 Cr. category also recorded the second highest Avg.ARR and Avg.AMAAR values, reflecting their strong individual as well as market performance. The Rs. 100-400 Cr. category showed the highest immediate Avg.RR and Avg.MAAR value.

Case 2

In Case 2, the Avg. MAAR and Avg. AMAAR value of overall IPOs was positive indicating their outperformance as compared to the BSE IPO Index. Among all categories, the 100-400 category showed the highest Avg. MAAR value, reflecting maximum immediate wealth generation, and recorded the third highest Avg. AMAAR value indicating strong annualized performance. The Rs. 400-1000 Cr. category recorded the highest Avg. AMAAR value, followed by the Rs. >1000 Cr. issue size category.

In both Cases (1 and 2), the Rs. 400-1000 Crore category recorded the highest Avg. AMAAR value while the 100-400 category recorded the highest immediate returns. In the medium run, the larger IPOs record the highest Avg. AMAAR values indicating increased stability, liquidity, and long-term investor interests. Narendrasinh (2018), which found that IPOs (Initial Public Offerings) with an offer size ranging between ₹101 to ₹125 Crore recorded the highest initial raw return and market-adjusted return, while 51 to 75 and more than 125 Crores offer size categories underperformed in the medium run. Pandey (2021) also concluded that the IPOs with smaller issue size is more underpriced and shows poor returns. Chhabra (2011) noted that all the offer size categories yielded positive returns in the six months; however, issues with larger issue sizes yielded higher returns than smaller issues. He also highlighted that the smaller problems are more underpriced leading to higher short-term gain however, the effect of underpricing fades in the long run and the returns decline.

4.1.4.5 Classification of IPOs based on the Lot size

The return of IPOs is assessed according to their lot size, with comparisons made to the NSE NIFTY 50 index in Case 1 and the BSE IPO index in Case 2. The variation in the number of IPOs is attributed to the lack of availability of the BSE IPO index before 2004, leading to the exclusion of IPOs launched before 2004 in Case 2.

Table 4.33 Classification of IPOs based on Lot size

Lot Size (shares)	Case 1					Case 2		
		Average					Average	
	N ₁	RR (Listing day close price of IPOs)	MAARs (NIFTY 50 close price)	ARR (Listing day Close price)	AMAARs (NIFTY 50 Close price)	N ₂	MAARs (BSE IPO close price)	AMAARs (BSE IPO index close price)
All	443	25.61	19.13	607.93	481.59	431	18.86	484.62
0-25	119	25.43	19.79	615.43	496.65	118	20.94	500.74
25-50	113	32.18	27.02	790.75	669.86	113	28.41	699.14
50-100	158	25.37	17.34	586.94	449.60	148	15.462	432.42
>100	53	12.71	6.175	263.88	141.67	52	3.026	130.49

Source: Researcher's Calculation

Case 1

In Case 1 the 443 IPOs showed relatively, higher returns than the NSE NIFTY-50 index. All categories surpassed the performance of the NSE NIFTY 50 index in Case 1 as clearly indicated by their positive Avg. MAAR and Avg. AMAAR values. Among all categories the 25-50 shares lot size outperformed all the other categories by delivering the highest RR, MAARs, ARR, and AMAAR values, followed by the 0-25 category. The >100 shares category recorded the lowest Avg. RR, MAAR, Avg. ARR, and Avg. AMAAR values, indicating their poorest performance during the medium run.

Case 2

In Case 2, the overall Avg. MAAR and Avg. AMAAR showed positive yield indicating the superior return of IPOs against the BSE IPO index. Similar to Case 1, the 25-50 category delivered the highest returns indicating their superior

performance against the other lot size categories. While the >100 category showed the poorest performance against the other IPO categories.

In both cases, the overall IPOs outperformed their benchmark indexes. All the lot size categories in both cases also outperformed their respective benchmark indexes, as indicated by the positive Avg. MAAR and Avg. AMAAR values throughout. Among all the categories the >100 category delivered positive but lowest return values in both cases, indicating their underperformance compared to the lot size categories. While the 25-50 shares lot size category showed the strongest performance and outperformed the other lot size categories.

4.1.4.6 Classification of IPOs based on Oversubscription

This section studied the pricing performance of IPOs based on their oversubscription rate. Case 1 of Table 4.34 shows the comparative performance of the IPOs against the NSE NIFTY 50 index, while Case 2 demonstrates the performance of 412 IPOs against the BSE IPO index. The comparative index of Case 2 i.e. BSE IPO index, was unavailable before 2004, henceforth the IPOs issued before 2004 were excluded in Case 2.

Table 4.34 Categorization of IPOs based on their Oversubscription rate

Oversubscription (times)	N ₁	RR (Listing day close price of IPOs)	MAARs (NIFTY 50 close price)	ARR (Listing day Close price)	AMAARs (NIFTY 50 Close price)	N ₂	MAARs (BSE IPO close price)	AMAARs (BSE IPO index close price)
All	420	24.00	18.49	591.34	475.16	412	19.10	498.40
0-2	104	-4.17	-8.97	-59.37	-158.22	104	-8.33	-140.26
2-5	89	11.25	6.63	260.63	178.02	86	7.040	204.61
5-20	93	11.29	6.11	279.76	166.87	92	9.48	231.97
20-50	69	48.71	42.89	1133.60	1016.02	64	40.29	985.50
>50	66	78.16	70.38	1945.10	1756.91	66	70.91	1786.59

Source: Researcher's Calculation

Case 1

The overall IPOs in Case 1 outperformed the NSE NIFTY 50 index as indicated by the positive Avg. MAAR and Avg. AMAAR values. All the oversubscription categories, except the 0-2 times, showed higher yield compared to the BSE IPO index during the medium run. As evident from Table 4.35, the highly oversubscribed categories outperformed the less and mildly oversubscribed categories.

Case 2

The overall performance of the 412 IPOs against the BSE IPO Index showed positive values, indicating that the IPOs outperformed the index. The 0-2 times oversubscribed IPO category showed relatively poor performance compared to both the other oversubscription categories and the benchmark index. In contrast, the 20-50 and the >50 times oversubscribed categories demonstrated the highest returns, indicating their superior performance compared to the benchmark index and the other categories.

In both cases, the highly oversubscribed categories outperformed the less and mildly oversubscribed categories. Chhabra (2011) found the IPOs falling in the 10-20 times oversubscription category yielding the highest return in comparison to the 1-10, 20-40 and >40 categories

4.1.4.7 Classification of IPOs based on Listing Day's close price

This section analyzed the performance of IPOs based on their closing prices on the listing day. Table 4.36 presents the performance of 453 IPOs against the NSE NIFTY 50 Index in Case 1 and 412 IPOs against the BSE IPO Index in Case 2. IPOs launched before 2004 were excluded from Case 2 due to the unavailability of the BSE IPO Index before that year.

Table 4.35 Categorization of IPOs based on listing day's close price

Closing price on the Listing day (Rs.)	Case 1					Case 2		
		Average					Average	
	N ₁	RR (Listing day close price of IPOs)	MAARs (NIFTY 50 close price)	ARR (Listing day Close price)	AMAARs (NIFTY 50 Close price)	N ₂	MAARs (BSE IPO close price)	AMAARs (BSE IPO index close price)
All	453	24.91	17.84	600.31	472.7	412	19.10	498.40
0-100	127	-12.66	-20.80	-192.78	-287.13	117	-19.31	-308.34
100-200	96	-2.45	-9.42	-16.96	-106.76	92	8.52	200.99
200-400	111	54.26	46.39	1172.02	1019.97	108	44.33	976.58
>400	119	48.70	42.20	1222.32	1046.86	117	41.86	1046.83

Source: Researcher's Calculation

Case 1

The MAAR and the AMAAR values of the 453 IPO were positive, indicating the superior performance of these IPOs against the NSE NIFTY 50 index. The Rs. 0-100 and Rs.100 -200 categories showed negative returns indicating their poor performance compared to both the NSE NIFTY 50 index and other listing day's close price categories. The >Rs. 400 category followed by the Rs.200-400 category showed high returns during the medium run.

Case 2

In Case 2, the overall returns of 412 IPOs outperformed the returns of the BSE IPO index during the short run. The Rs. 0-100 category showed the lowest market performance, followed by the Rs. 100-200 category. The >Rs.400 category showed the highest yield followed by the Rs. 200-400 category.

In both cases, the >Rs. 400 category recorded the highest returns, indicating its superior performance. The lower listing price categories performed poorly in comparison to the higher listing price category during the medium run.

4.1.4.8 Classification of IPOs based on Age of the issuing company

This section analyses the performance of the IPOs based on their age. Table 4.36 shows the performance of 468 IPOs against the NSE NIFTY 50 index in Case 1 and the performance of 446 IPOs against the BSE IPO index in Case 2. The IPOs listed before 2004 were excluded from Case 2 due to the unavailability of the BSE IPO index before 2004.

Table 4.36 Classification of IPOs based on Age of the issuing company

Age (years)	Case 1					Case 2		
		Average					Average	
	N ₁	RR (Listing day close price of IPOs)	MAARs (NIFTY 50 close price)	ARR (Listing day Close price)	AMAARs (NIFTY 50 Close price)	N ₂	MAARs (BSE IPO close price)	AMAARs (BSE IPO index close price)
All	468	26.71	20.52	658.92	531.76	446	20.91	546.12
0-10	138	26.62	21.08	580.07	469.77	125	21.57	509.92
10-15	120	29.01	20.57	666.24	505.84	117	18.05	453.89
15-20	86	24.29	18.11	737.99	580.26	84	21.78	671.80
20-40	93	27.48	24.10	716.25	656.16	89	24.45	620.55
40- 101	31	22.67	13.81	590.29	400.23	31	16.55	485.86

Source: Researcher's Calculation

Case 1

In Case 1 the overall IPOs showed higher returns compared to the NSE NIFTY 50 Index as reflected by the positive Avg. MAAR and Avg. AMAAR values of the overall IPOs. All the age categories showed higher performance compared to the benchmark index (NIFTY 50), while the 20-40 years category showed the highest Avg. AMAAR value indicating its strongest annualized market performance. The annualized value of the 20-40 category was followed by the 15-20 category. In the case of Avg. MAAR value the 20-40 category showed the highest return.

Case 2

In Case 2, the overall IPOs outperformed the BSE IPO index, reflected by the positive Avg. MAAR and the Avg. AMAAR values. All the age categories yielded higher returns compared to the benchmark index. The 15-20 and the 20-40 categories demonstrated strong performance as compared to the other categories, reflected by the high Avg. MAAR and AMAAR values.

In Cases(1 and 2), the 15-20 and the 20-40 categories demonstrated the strongest performance. The IPOs aged between 15-40 years, demonstrated strong performance in comparison to the IPOs younger than 15 years and older than 40 years. Narendrasinh (2018) found that IPOs from companies in the 41-50 age brackets recorded the highest returns, followed by those in the 51-60 age category. This indicated that mid-aged IPOs performed better over a six-month period compared to both newer and older IPOs. Chhabra (2011) observed that the IPOs aged between 5 to 9 years showed considerably better performance in comparison to the other categories.

4.1.4.9 Classification of IPOs based on Face value

The performance of IPOs based on their face value was analyzed in this section. Case 1 of Table 4.37 demonstrates the performance of 451 IPOs against the NSE NIFTY 50 Index, while Case 2 shows the performance of 433 IPOs against the BSE IPO index. The IPOs listed before 2004 were excluded in Case 2 due to the unavailability of the BSE IPO index before 2004.

Table 4.37 Classification of IPOs based on Face value

Face value (Rs.)	Case 1					Case 2		
		Average					Average	
	N ₁	RR (Listing day close price of IPOs)	MAARs (NIFTY 50 close price)	ARR (Listing day Close price)	AMAARs (NIFTY 50 Close price)	N ₂	MAARs (BSE IPO close price)	AMAARs (BSE IPO index close price)
All	451	25.16	18.05	602.97	475.62	433	18.93	484.92
1-9	146	40.19	31.99	857.61	701.97	146	28.83	650.54
>9	305	17.96	11.37	481.08	367.26	305	14.54	411.49

Source: Researcher's Calculation

Case 1

The average performance of the 451 IPOs was higher than the NSE NIFTY 50 index during the medium run. The Rs 1-9 face value category had a lower frequency of IPOs, but it recorded higher returns than the >Rs. 9 face value category.

Case 2

In Case 2, the overall IPOs outperformed the BSE IPO index during the medium run. The Rs.1-9 category recorded a lower number of IPOs compared to the >Rs. 9 category; however, the performance of the Rs. 1-9 category was better than the IPOs of the Rs. >Rs. 9 face value category.

In both Cases 1 and 2, the overall performance of the IPOs was better than that of the benchmark indexes. In both cases, the Rs. 1-9 category recorded superior performance compared to the >Rs. 9 category, indicating that IPOs with low face value tend to deliver better returns.

References

- Bantwa, A. R. (2022). Price Performance of Initial Public Offerings (IPOs) With Special Focus on Underpricing: A Comparative Study of securities Listed on Indian (BSE) And Chinese (SSEC) Stock Exchanges (Unpublished Doctoral Thesis). *Gujarat Technological University, Ahmadabad*.
- Chhabra, K. (2011). *Pricing performance of IPOs in India (Unpublished doctoral thesis)*. *Punjabi University Patiala, Commerce. Patiala: Shodhganga*.
- Chauhan, A. K. (2010). The analysis of the initial and post issue performance of initial public offerings (IPOs) in Indian stock market. In *Kumaun University, Nainital*.
- Ghosh, S. (2005). Underpricing of initial public offerings: The Indian experience. *Emerging Markets Finance and Trade*, 41(6), 45-57.
- Gupta, M.K. (2016). Performance of Initial Public Offering (IPOs) In Indian Capital Market (unpublished doctoral thesis). *UdaiPratap (Autonomous) college, Varanasi*
- KILARAHATTI, S., & V, J. B. (2022). An in-depth analysis of Trend, Pattern and Progress of IPOs: An Evidence from India. *International Journal of Creative Research Thoughts (IJCRT)*, 10(1), 405–407. <https://www.ijert.org>
- Kiran, R., & Chopram Phil, R. I. (2011). Price Performance of IPOS in Indian Stock Market. *Euro Economica*, 30 (4), 73-97.
- Kumari, S., & Singh, B. (2024). An empirical examination of the short-term pricing performance of Indian IPOs. *Mizoram University Journal of Humanities and Social Science*, 10(1), 33-45.
- Narendrasinh, R. B. (2018). An Analytical Study On Performance Of Initial Public Offerings And Issue Mechanism In India (Unpublished doctoral thesis). *Sardar Patel University*.

Pandey, K. C., (2011). Initial Public Offerings (IPOs) and the Price Behaviour (Unpublished doctoral thesis) *C.S.J.M. University, Kanpur*.

Parab ,B.R. ,(2019). *Initial Public Offering (IPO) Performance Evaluation (Unpublished doctoral thesis)*. Jamnalal Bajaj Institute of Management Studies, Mumbai

Sehgal, S., & Singh, B. (2008). *Determinants of Initial and Long-Run Performance of IPOs in Indian Stock Market. Asia Pacific Business Review*, 4(4), 24–37. doi:10.1177/097324700800400403

Sehgal, S., & Sinha, B. K. (2013). Valuation of IPOs in India-An empirical study. *Business and Economic Research*, 3(2), 183.

Shah, M. B. (2019). *Impact Of IPO Grading On Performance Of Stock Of Selected Companies In India* (Unpublished doctoral thesis). Department of Business Studies, *Sardar Patel University*

Singh, S., & Singh, B. (2008). Oversubscription and IPO underpricing: evidence from India. *The ICFAI Journal of Applied Finance*, 14(12), 65-73

CHAPTER 5

PERFORMANCE OF IPOs DURING LONG RUN AND VERY LONG RUN PERIOD IN INDIA

This chapter analyzes the performance of initial public offerings in the long and very long run. In this study, the long run refers to a period of one year from the listing date of the IPOs, while the very long run refers to a period of three years from the listing date of the IPOs. This chapter classifies the long-run and the very long run pricing performance of IPOs based on factors like industry, lead-time, issue price, issue size, lot size, oversubscription, listing close price, age, and face value. To analyze the long and very-long-run performance of IPOs across different categories this section employs the following formulas: - Average raw return (Average RR which shows the price changes of the IPOs), Average Market Adjusted Abnormal Return (Average MAAR, which shows the excess return earned by the IPOs in comparison to the selected relative indexes i.e. NSE NIFTY 50 and BSE IPO), Average Annualized Raw Return (Average ARR, shows the average annualized raw return which makes it more comparable), Average Annualized Market Adjusted Abnormal Return (AMAAR, shows the annualized figure of the market adjusted relative return of the IPOs) and Wealth Relative (shows the cumulative wealth generated by the IPOs in comparison to the market index).

5.1 Classification of performance of IPOs based on the selected factors

This chapter classifies the long-run and the very long run pricing performance of IPOs based on factors like industry, lead-time, issue price, issue size, lot size, oversubscription, listing close price, age, and face value

5.1.1 Long run (1 year from listing date of IPOs)

This section analyses the performance of IPOs in long run period with respect to the different factors selected for the study.

5.1.1.1 Classification of IPOs based on the Type of Industry

The IPOs have been classified by their respective industries to analyze if there is any difference in the performance of the IPOs across different sectors. This classification

was done according to the activity that the company engages in. Table 5.1 shows the performance of IPOs across different industries. In Table 5.1, Case 1, denotes the set of 479 IPOs, while in Case 2, there are 453 IPOs. Two sets were formulated based on the listing dates of IPOs. Since the research employs two major benchmark indexes, NSE NIFTY 50 and BSE IPO, the no. IPOs in both Cases differ as some of the IPOs got listed before 2004, i.e., before the availability of the BSE IPO index; therefore, to draw a comparison between the performance of the IPOs and the BSE IPO index, such IPOs were omitted in Case-2. It is evident from Table 5.1 that the IPOs launched from 1999 to 2019 were unevenly distributed over the different industry groups. When comparing IPO performance against the two-benchmark indexes, it was observed that the Avg. AMAAR adjusted from NSE NIFTY 50 (436.68) was lower than the Avg. AMAAR adjusted from the BSE IPO index (506.49). This indicates that the average return provided by the NIFTY 50 index was higher than that of the BSE IPO index. In both the Cases 1&2 ($N_1=479$, $N_2=453$), the Agri. and Agri. Products, IT service, Printing Media and Broadcasting, and Power industry sectors recorded negative Avg. AMAAR values which show the IPOs in these industries underperformed the market over the study period pointing towards the challenging environment of these industries and cautious investors.

Table 5.1: Classification of IPOs based on Industries

Industry	Case 1						Case 2		
	N_1	Wealth Relative	Average				N_2	Average	
			RR (Listing day close price of IPOs)	MAARs (NIFTY 50 close price)	ARR (Listing day Close price)	AMAARs (NIFTY 50 Close price)		MAARs (BSE IPO close price)	AMAARs (BSE IPO close price)
All	479	1.15	29.05	17.14	714.06	483.23	453	18.79	506.49
Agri. & Agri. products	13	0.85	-10.50	-16.22	-252.29	-383.44	12	-21.05	-488.98
Automotive and Components Industry	13	0.98	18.13	-1.36	376.90	89.78	12	-22.84	-297.67

Chemical	11	0.96	4.99	-8.74	495.05	320.47	11	-13.22	328.32
Diversified	13	0.98	14.51	-2.44	450.88	66.22	13	-1.56	-21.55
Electrical & Electronics	18	1.63	42.87	44.33	679.40	735.36	18	43.90	753.16
FMCG	21	1.10	56.23	35.49	1400.24	898.24	21	50.89	1295.73
Hotels, Restaurant and Resorts	9	1.12	48.06	36.15	1035.06	716.58	9	35.30	497.72
Miscellaneous	11	1.52	80.33	68.83	1220.72	927.91	11	66.133	859.23
Oil, Gas and Fuel	8	1.12	64.57	43.74	1738.48	1338.73	6	14.98	845.81
Travel & Transport and Logistics	21	0.91	45.47	25.47	1388.59	964.37	20	27.29	1020.09
Banking Finance	14	1.37	56.94	39.86	1507.63	1086.37	14	40.25	1056.69
Non Banking Finance	38	1.96	58.48	47.79	1397.44	1117.47	38	54.86	1286.03
Rating & Stock Broking	8	1.20	46.66	33.88	1404.67	1128.86	8	42.27	1384.27
Civil Construction	41	1.11	-3.47	2.34	82.97	191.21	41	12.02	335.90
Construction & Engineering	17	1.29	37.06	24.24	896.48	618.52	17	32.20	823.09
Residential & commercial construction	19	0.95	-1.39	-5.02	145.00	57.89	19	2.67	209.88
Power	11	1.64	16.22	-2.55	130.36	-174.35	10	-10.41	-208.48
Entertainment	19	1.06	52.05	28.58	1228.57	815.29	15	25.04	795.69

Printing, Media and Broadcasting	16	1.04	16.08	-1.81	146.40	-181.87	14	-7.48	-283.07
Garments and Accessories	21	0.84	1.15	-5.14	63.27	-47.55	21	2.80	134.10
Textile and Textile Products	20	0.98	24.30	1.47	626.73	258.34	19	4.20	328.51
Healthcare & Hospital	12	0.99	6.43	-0.24	239.67	75.53	12	0.99	80.32
Pharma	15	1.48	62.90	48.22	1327.98	976.32	12	-11.82	-150.98
Metals and Metal Products	16	1.29	25.41	21.59	596.58	559.27	16	27.06	627.68
Non Metallic Products	20	0.71	1.14	0.26	243.09	235.96	20	6.77	355.65
Software and Hardware	16	1.09	53.35	9.60	933.72	488.14	12	37.55	420.72
IT Service	20	1.00	8.98	-12.24	154.42	-258.96	17	-22.33	-493.99
Internet and Telecom Technology	18	1.22	31.06	33.84	1033.70	1018.93	15	51.70	1398.80

Source: Researcher's Calculation

Case 1

Table 5.1 shows, the Civil Construction firms (41) are heavily represented in the selected sample, followed by Non-Banking Finance sector (38), Travel, Transport & Logistics sector (21), FMCG (21), Garments & accessories sector (21). The other sectors like Textile and Textile products (20), Non-Metallic Products (20), and IT services (20) also showed considerable IPO activity, which highlights the invested interest in these sectors due to their resilience and growth potential. Kilarahatti and Basha (2022) also reported that most of the IPOs in their study belonged to the financial service sector.

As per Table 5.1, the Miscellaneous sector (80.33) IPO category yielded the highest absolute return (raw return), while the Agri. and Agri. Products (-10.55) category IPOs yielded the lowest return. Looking at the Average Market-Adjusted Abnormal Return (MAAR) and the annualized Average MAAR figures, it is evident that the benchmark index, i.e., the NSE NIFTY 50 Index, performed better than the IPOs of the ‘Agri. and Agri. Products’ industry and the ‘Miscellaneous’ industry. The average raw return yielded by the 479 IPOs in Case 1 is 29.05, while the average market adjusted abnormal return yielded by the 479 IPOs in Case 1 is 17.14, and the wealth index shows that the yield of the IPOs was higher than the benchmark NIFTY50 index. This highlights that on an average the performance of IPOs were more profitable than the NIFTY 50 index during the study period.

In Case 1 the lowest Average AMAAR was recorded by the ‘Agri. & Agri. Products’ (-383.44) which was followed by ‘IT service’ (-258.96), ‘Printing, Media and Broadcasting’ (-181.87), ‘Power’ (-174.35) and ‘Garments & Accessories’ (-47.55). The ‘IT sector’ may have recorded such negative Average AMAAR returns due to increased competitiveness or oversaturation of the industry, while the ‘Agri. & Agri. Products’, ‘Chemical and Pharmaceutical industry’ sector IPOs underperformed in comparison to the benchmark index (BSE IPO) due to strict regulatory policies and frequent price volatility, which may influence the sentiments of the investors. The ‘Printing, Media and Broadcasting’ and diversified sector attracted negative Average AMAAR likely due to limited investor enthusiasm and potential shifts in demand toward digital solutions or more focused investment areas. The ‘Oil, Gas and Fuel’ sector (1338.78) recorded the highest Average AMAAR value, possibly due to heightened energy demand and increased profitability amidst the volatile oil prices, which was followed by ‘Rating & Stock Broking’ (1128.86), ‘Non-Banking Finance’ (1117.47), ‘Banking & Finance’ (1086.37), and ‘Internet & Telecom’ (1018.93), respectively. The wealth index of the ‘Non-Banking Finance’ sector was highest (1.96) and the ‘Electrical & Electronics’ sector recorded the second highest wealth relative at 1.63. The wealth relative index shows that IPOs of these two sectors (‘Non-Banking Finance’ and ‘Electrical & Electronics’) were most beneficial for investors and generated maximum wealth. The high Average AMAAR values of

‘Rating & Stock Broking’ and ‘Banking & Finance’ sector points towards the increased investor enthusiasm due to increased market demand for financial services. ‘Non-Banking Finance’ and ‘Internet & Telecom’ also showed high returns, supported by growth in digital finance and connectivity. These sectors attracted investors due to their essential roles in economic growth, resilience, and alignment with market demands, leading to elevated annualized abnormal gains. Narendrasinh (2018) highlighted the strong performance of the Pharmaceutical sector in the long run period of 1 year, whereas the underperformance of ‘Electrical and Engineering’, ‘Banking and Finance’, ‘Chemical’, ‘Computer & IT’, ‘Construction and Realty’, ‘Other Apparel & Textile’ industries. Shah (2019) highlighted the favorable long-term performance of sectors such as Chemical, Finance & Banking, Mining, Education, and Agriculture, while noting the unfavorable performance of sectors like Construction, Engineering, Information Technology, Textile & Synthetic, Automobile, Paper & Pulp, and Real Estate. Pandey (2010) analyzed the long-run performance of 76 IPOs launched between 1993 and 2010, finding satisfactory results in sectors such as Banking, Software, Pharmaceuticals, Telecommunications, Entertainment, Chemicals, Engineering, and Construction. Among these eight sectors, the Pharmaceutical sector recorded the highest initial raw return, while the Chemical sector recorded the lowest. Parab (2019), mentioned in their study that, in the long run period, the Apperals and accessories sector showed significantly higher returns in comparison to the Banking and finance service sector, followed by Utilities, Realty, and the construction and engineering sector. Chhabra (2011), studied the industry wise long term performance of IPOs and highlighted that the Finanacial and services sectors showed the highest wealth generation which was follwed by Non-mettalic, Transport equipment, Metals and metal products and Chemical sectors. In their study, Pandey and Pattanayak (2021) highlighted that the performance of IPOs across all sectors declined over the course of a year, relative to their initial performance, with the exception of the machinery sector. Sharma et al. (2013) examined the performance of 319 Indian IPOs launched between 1999 and 2011 and revealed that public sector IPOs performed significantly better than other sectors during the long run.

Case 2-

As seen in the Table 5.1, the average raw return yielded by the 453 IPOs in Case 2 is 26.91%, while the market adjusted abnormal return yielded by the 453 IPOs in Case 2 is 18.79%, which shows that the yield of the IPOs was higher than the benchmark BSE IPO index. This highlights that on an average the performance of IPOs were more profitable than the BSE IPO index during the study period suggesting a favorable market condition for IPOs and potentially high interest of the investors. In Case 2 also the Civil Construction (41) sector recorded the highest frequency of IPOs during the study period, followed by Non-Banking Finance sector (38), FMCG (21), Garments & Accessories sector (21). The other sectors like Travel, Transport & Logistics sector (20), Textile and Textile Products (20), Non-Metallic Products (20), and IT services (20) also showed considerable IPO activity, which highlights the invested interest in these sectors due to their resilience and growth potential.

The automotives and components industry showed the lowest Avg. MAAR (-22.84%), while the miscellaneous sector showed the highest MAAR (66.133%) return. Other sectors which recorded high Avg. MAAR values after the automotive and components industry were Non-banking sector (54.86), internet and telecom technology (51.70) and the FMCG (50.89) sector. Least/negative average adjusted abnormal return were noted in IT service (-22.33), Agri. & Agri. Products (21.05), Chemical (-13.22), Pharma (-11.82), Power (-10.41), Printing, Media and Broadcasting (-7.48) and Diversified (-1.56) sectors respectively. Pandey and Pattanayak (2021) highlighted that the performance of IPOs across all sectors declined over the course of a year, relative to their initial performance, with the exception of the machinery sector. However, Narendrasinh (2018) reported the strong performance of the Pharmaceutical sector during the one year period, whereas the underperformance of Electrical and engineering, Banking and finance, Chemical, Computer & IT, construction and realty, other apparel & textile industries

The IT sector may have recorded such negative Avg. MAAR returns due to increased competitiveness or oversaturation of the industry, while the Agri. & Agri. Products, chemical and pharmaceutical industry sector IPOs underperformed in comparison to

the benchmark index (BSE IPO) due to strict regulatory policies and frequent price volatility, which may influence the sentiments of the investors. The Printing, Media and Broadcasting and diversified sector attracted negative Avg. MAAR likely due to limited investor enthusiasm and potential shifts in demand toward digital solutions or more focused investment areas. The highest Avg. AMAAR value (1398.80) is given by the internet and telecom technology sector possibly due to growing demand for technology driven solutions, while the lowest Avg. AMAAR value (-493.99) is yielded by the IT service sector could be possibly due to market saturation, competitive pressure or shifting of technological needs. The least Avg. AMAAR after the IT service sector was of Agri. & Agri. Products (-488.98) followed by Automotive and Components Industry (-297.67), Printing, Media and Broadcasting (-283.07), Power (-208.48), Pharmaceutical (-150.98) and Diversified (-21.55) sectors. On contrary, Shah (2019) highlighted the favorable long-term performance of sectors such as Chemical, Finance & Banking, Mining, Education, and Agriculture, while noting the unfavorable performance of sectors like Construction, Engineering, Information Technology, Textile & Synthetic, Automobile, Paper & Pulp, and Real Estate. Pandey (2010) analyzed the long-run performance of 76 IPOs launched between 1993 and 2010, finding satisfactory results in sectors such as Banking, Software, Pharmaceuticals, Telecommunications, Entertainment, Chemicals, Engineering, and Construction. Parab (2019), mentioned in their study that, in the long run period, the Apperals and accessories sector showed significantly higher returns in comparison to the Banking and finance service sector, followed by Utilities, Realty, and the construction and engineering sector. Chhabra (2011), studied the industry wise long term performance of IPOs and highlighted that the Finanacial and services sectors showed the highest wealth generation which was follwed by Non-mettalic, Transport equipment, Metals and metal products and Chemical sectors. Sharma et al. (2013) examined the performance of 319 Indian IPOs launched between 1999 and 2011 and revealed that public sector IPOs performed significantly better than other sectors during the long run.

5.1.1.2 Classification of IPOs based on Lead-time

According to Shah (1995), post liberalization, large no. of companies going public, changing regulatory guidelines, and the long listing delays make India a crucial market for analyzing the pricing performance of IPOs. Listing delay or Lead-time refers to the lag between the issue end date and the listing date of any IPO. The lead-time is different for each issue and is influenced by different circumstances. Some of the factors, which affect the lead-time, are lengthy regulatory compliance procedure, IPO sector specific requirements, market conditions, and different administrative and logistical concerns. Chhabra (2011) stated that initially the timeline for an issue to be listed was 70 days and 45 days, which were shortened to duration of 30 days. Later in 2015 the SEBI, (2015) mentioned a further reduction in the duration of lead time to T+6 days and presently the SEBI, (2023) guidelines mentioned a reduction of timeline for listing of shares in Public Issue from existing T+6 days to T+3 days. Ghosh (2005) analyzed 1,842 Indian IPOs launched between January 1993 and March 2001, following the abolition of the Controller of Capital Issues (CCI) and the establishment of the Securities and Exchange Board of India (SEBI), and reported that the time lag between the offer date and the listing of these IPOs was notably long, averaging four months. However, the listing delay in this study ranges from 7 to 3216 days which averages as 38 days.

To see the effect of listing delay on the performance of IPOs in the long run period (one year) this section divides the IPOs in four categories 0 to 15 days, 15 to 20 days, 21-50 days and >50 days which is shown in the Table 2. In Table 2 Case 1, denotes the set of 481 IPOs, while in Case 2, there are 454 IPOs. These sets were formulated based on the listing dates of IPOs. Since the research employs two major benchmark indexes, NSE NIFTY 50 and BSE IPO, the no. IPOs in both Cases differ as some of the IPOs got listed before 2004, i.e., before the availability of the BSE IPO index; therefore, to draw a comparison between the performance of the IPOs and the BSE IPO index, such IPOs were omitted in Case-2.

Table 5.2- Classification of IPO returns based on Lead-time of the IPOs

Lead time (days)	Case 1						Case 2		
			Average					Average	
	N ₁	Wealth relative	RR (Close price)	MAARs (Adj. With NIFTY 50 close price)	ARR (Listing day Close price)	AMAARs (Adj. With NIFTY 50 close price)	N ₂	MAARs (Adj. with BSE IPO close price)	AMAARs (adj. with BSE IPO close price)
All	481	1.15	29.05	17.19	705.30	476.27	454	19.05	504.28
0-15	171	1.22	27.93	22.99	939.69	741.46	168	26.45	816.95
15-20	155	1.16	33.15	18.29	655.19	361.13	146	13.85	281.83
21-50	142	1.17	32.29	19.62	556.34	338.43	132	22.00	388.84
>50	13	0.37	-40.80	-98.70	-	153.43	8	-90.36	-97.37

Source: Researcher's Calculation

Case 1

Case 1 shows the IPO performance of the 481 IPOs which were launched between the periods of 1999-2019. The raw return shows that the IPOs yielded a positive average return of 29.05% and on adjusting it with the NIFTY 50 index the MAAR value recorded was 17.19% which shows that the IPO yielded better return than the benchmark index. The wealth relative shows that the performance of the 481 IPOs were better than the NIFTY 50 benchmark index. Table 5.1.2 shows that the lead-time category of 0-15 days (177) recorded the highest frequency of IPOs which is followed by 15-20 days (155) category, 21-50 days (142) and >50 days (13) respectively.

The IPOs falling in the category 15 -20 days (33.15%) yielded the highest average raw return (RR) which is followed by the IPO category 21-50 days (32.29%)

category, 0-15 days (27.93%), and >50 days (-40.80) respectively. The categories 15-20 days and 21-50 days record higher average raw return as compared to the average raw return of the overall sample of 481 IPOs, which shows that the IPOs falling in these lead-time categories tend to perform better. However the ARR value in the 0-15 days category (939.69) was recorded highest followed by the 15-20 days (655.19) category, 21-50 (556.34) category and >50 (-153.43) days category. This highlights that while the highest average RR were observed in the 15-20 days lead time categories, the 0-15 day group had the most substantial ARR value, indicating a strong performance despite the lower raw return percentage.

On adjusting the raw return of the IPOs from the NIFTY 50 index, it was seen that the IPOs falling in the lead-time category 0-15 days (22.99%) recorded the highest MAAR value followed by the 21-50 days (19.62%) category, 15-20 days (18.29%) respectively. However, the lead-time category (-40.80%) recorded a negative return. Wealth index for the 0-15 days lead time category is 1.22 followed by, 21-50 days is 1.17, 15-20 days is 1.16, >50 days is 0.37, which shows that the IPO outperformed the NIFTY 50 index in all the categories.

AMAARs value for the 0-15days category was highest, followed by the 15-20 days category and 21-50 days categories respectively. In contrast the >50 days category recorded a negative return. The 0-15 days recorded the highest ARR value, MAAR value and the AMAAR value, which shows that the group of 171 IPOs, which took considerably lesser time to be listed, performed better when compared to the other categories. Following this the 15-20 days lead-time category also performed considerably well but not as good as the 15-20 days category. Whereas the greater than 50 days lead time category consistently recorded negative returns in terms of raw return, market adjusted return, annualized raw return and the annualized market adjusted return as well. This point towards the challenges faced by IPOs belonging to this category, suggesting that delayed lead times may lead to low interest of investors and poor performance in the market.

Case 2-

Case 1 shows the IPO performance of the 454 IPOs launched between the periods of 1999-2019. The raw return shows that the IPOs yielded a positive average return of 19.05 and on adjusting it with the BSE IPO index the AMAAR value recorded was 504.28% which shows that the IPO yielded better return than the benchmark index. The wealth relative shows that the performance of the 481 IPOs was better than the BSE IPO benchmark index. Table 5.12 shows that the lead-time category of 0-15 days (168) recorded the highest frequency of IPOs which is followed by 15-20 days (146) category, 21-50 days (132) and >50 days (8) respectively.

Table 5.2 shows that the IPOs falling to the lead-time 0-15 days (26.45%) category recorded the highest average MAAR value, followed by the 21-50 days category at 22% and 15-20 days at 13.85%. The AMAAR values also show the same trend as the MAAR values. The highest AMAAR value is recorded by the 0-15 days followed by 21-50 days, 15-20 days, and lowest by the >50 days category. The IPOs falling in the category of >50 days recorded negative average raw return of -90.36 and a negative AMAAR value of -97.37. The trend indicates that shorter lead times (particularly 0-15 days) yield the highest returns, while longer lead times tend to perform poorly.

In both the Cases (1&2), 0-15 days lead time category showed the strongest market performance, suggesting that IPOs with shorter lead-time perform better, followed by 21-50 days and 15-20 days category, indicating declining returns as the lead-time increases. Also in both the scenarios, IPOs falling in the >50 days lead time category showed the worst market performance. Bantwa (2022) also assessed the performance of 411 IPOs launched from 2007 to 2016 and highlighted that IPOs having a listing delay of 6-10 days showed the highest rate of return in the long run, IPOs having lead time greater than 15 days showed negative return and IPOs having lead time between 26-30 days showed the worst performance. Chhabra (2011), also highlighted in their study, the IPOs which had lesser listing delay had the best long run performance. In contrast, the findings of Ghosh (2005), Shelly and Singh (2008), and Sehgal & Sinha (2008), Sehgal & Sinha (2013) emphasized the effect of listing delay on IPO returns, concluding that IPOs with longer lead times exhibited higher underpricing.

5.1.1.3 Classification of IPOs based on the Issue price

The price at which a share is offered to investors is known as the issue price. In Table 5.3, Case 1 comprised of a set of 481 IPOs, while in Case 2, there were 454 IPOs. These sets were formulated based on the listing dates of IPOs. Since the research employs two major benchmark indexes, NSE NIFTY 50 and BSE IPO, the number of IPOs in both Cases differs as some of the IPOs got listed before 2004, i.e., before the availability of the BSE IPO index. Therefore, to draw a comparison between the performance of the IPOs and the BSE IPO index, such IPOs were omitted in Case-2.

Case 1 shows the IPO performance of the 481 IPOs that were launched between the periods of 1999 and 2019. The raw return shows that the IPOs yielded a positive average return of 29.05%, and on adjusting it with the NIFTY 50 index, the MAAR value recorded was 17.19%, which shows that the IPO yielded a better return than the benchmark index. This is also justified by the wealth relative index, i.e., 1.16, and the annualized market-adjusted abnormal return (AMAAR) value, i.e., 476.26%. While Case 2 shows the performance of 454 IPOs, the average MAAR value of which accounts for 19.04% and the annualized MAAR value accounts for 504.27%, which shows that the set of 454 IPOs in Case 2 also outperformed the benchmark index of Case 2, i.e., the BSE IPO index.

Table 5.3: Classification of IPOs based on the Issue price of the IPOs

Issue price (Rs.)	Case 1						Case 2		
			Average					Average	
	N ₁	Wealth relative	RR (Close price)	MAARs (Adj. With NIFTY 50 close price)	ARR (Listing day Close price)	AMAARs (Adj. With NIFTY 50 close price)	N ₂	MAARs (Adj. with BSE IPO close price)	AMAARs (adj. with BSE IPO close price)
All	481	1.16	29.05	17.19	705.30	476.26	454	19.04	504.27
10-50	43	1.30	45.82	33.76	1071.30	847.81	37	33.10	872.28
50-100	77	1.02	19.16	2.08	392.38	124.36	71	5.04	187.51
100-150	84	1.34	51.07	37.84	1077.85	866.56	79	30.48	727.03
150-200	65	1.16	24.43	17.14	535.08	379.90	63	21.44	468.94
200-300	68	1.12	29.78	13.22	906.02	496.23	66	17.60	599.26
300-500	70	1.20	31.02	22.41	853.08	732.47	67	32.06	793.26
500-800	45	1.13	13.09	5.05	447.74	234.95	42	4.23	233.05
>800	29	0.89	-4.82	-11.45	-131.85	-345.61	29	-6.31	-210.78

Source: Researcher's Calculation

Case 1

Table 5.3 shows that the issue price category of 100-150 received the maximum number of IPOs, followed by the 50-100 category, the 300-500 category, and the minimum number of IPOs listed in the price range category of >800. This shows that midrange IPOs were more common, whereas high-priced IPOs were rarely observed. The reason behind such behavior could be associated with investor accessibility, as low-range IPOs attract more investors than high-priced IPOs. Financially stable companies to make the offer appear highly attractive to the investors, whereas the high-priced IPOs typically require more capital investment and appear to be more risky to the investors usually launch the low-priced IPOs. An analysis of the wealth relative index (WRI) across various IPO price ranges revealed that the Rs. 100-150 category recorded the highest WRI at 1.34, indicating strong returns relative to the initial offering price. The Rs. 10-50 range closely followed the Rs.100-150 category, recording a WRI of 1.30. Other notable values included 1.20 for IPOs priced between Rs. 300-500, 1.16 for the Rs. 150-200 range, 1.13 for Rs. 500-800, and 1.12 for Rs. 200-300. IPOs in the Rs. 50-100 range showed a WRI of 1.02, while those priced above Rs. 800 recorded a lower WRI of 0.89, suggesting underperformance relative to their offering price. These trends indicate that moderate price ranges (Rs. 10-150) tend to deliver stronger returns, while high-priced IPOs (above Rs. 800) may face challenges in meeting performance expectations. The average raw return for the price range 100-150 (51.07) was the highest, which was then followed by the 10-50 (45.82) and 300-500 (31.02) price ranges, respectively, and was lowest for the >800 (-4.82) category. MAAR metric also followed the similar pattern. The MAAR value was highest for the category of 100-150 (37.84), followed by the 10-50 Rs. category, 300-500 category, and was recorded lowest for >800 category. The same continued for the ARR and AMAAR values, which were also highest for the 100-150 category and lowest for the >800 price range category. This reflects the underperformance of high-priced IPOs relative to their midrange counterparts. Chhabra (2011) emphasized that IPOs with an issue price of Rs.10 and those priced between Rs.10-Rs.50 showed the strongest performance, while IPOs priced between Rs.50-Rs.100 and above Rs.100 had the poorest performance. Narendrasinh (2018) reported that IPOs priced

below Rs.30 yielded better returns compared to those priced between Rs.30-Rs.120. However, the study also found that returns increased again for IPOs priced above Rs.120, suggesting that higher-priced IPOs did not necessarily underperform. As a result, the study concluded that it could not be stated that high-priced IPOs always yield lower returns.

Case 2

In Case 2, the Rs.100-150 issue price category also received the highest number of IPOs, followed by the Rs.50-100 and Rs.300-500 categories. The >Rs.800 range, once again, had the fewest IPOs. This distribution points to a preference for midrange IPOs, with fewer high-priced IPOs, likely due to increased investor accessibility and appeal within the lower and mid-price ranges. In Case 2, the MAAR and AMAAR metrics show that IPOs in the Rs.100-150 range yielded the highest abnormal returns, with the MAAR at 30.48 and AMAAR at 727.03. This was followed by the Rs.10-50 price range and then the Rs.300-500 range, while the >Rs.800 category exhibited the lowest performance, with negative MAAR (-6.31) and negative AMAAR (-210.78). This pattern suggests that midrange IPOs (especially Rs.100-150) consistently performed better relative to market benchmarks, while high-priced IPOs (>Rs.800) showed a tendency to underperform. The data in Case 2 illustrate that midrange IPOs, especially in the Rs.100-150 price category, continue to deliver the highest returns and attract the most offerings. Investor accessibility appears to be a key factor driving this pattern, as mid- to low-priced IPOs are more affordable and thus appeal to a broader segment of the investor base. Conversely, high-priced IPOs (particularly those priced above Rs.800) are both less frequent and tend to show lower performance across all metrics (MAAR and AMAAR), likely due to limited investor accessibility and the higher perceived risk associated with these investments. Chhabra (2011) emphasized that IPOs with an issue price of Rs.10 and those priced between Rs.10-Rs.50 showed the strongest performance, while IPOs priced between Rs.50-Rs.100 and above Rs.100 had the poorest performance. Narendrasinh (2018) found that IPOs with an issue price below Rs.30 delivered better returns than those priced between Rs.30 and Rs.120. Additionally, IPOs priced above Rs.120 also performed well, suggesting that both

low-priced and high-priced IPOs tended to outperform those in the mid-price range. This indicates that IPOs with issue prices either below Rs.30 or above Rs.120 yielded higher returns compared to those within the Rs.30-Rs.120 range.

5.1.1.4 Classification of IPOs based on Issue Size

In Table 5.4, Case 1 denotes the set of 462 IPOs, while Case 2 had 440 IPOs. Based on the listing date of the IPOs two sets were formed. Since the research employs two major benchmark indexes: - NSE NIFTY 50 and BSEIPO. The number of IPOs in both Cases differs as some of the IPOs got listed before 2004, i.e., before the availability of the BSE IPO index; therefore, to draw a comparison between the performance of the IPOs and the BSE IPO index, such IPOs were omitted in Case-2.

Table 5.4: Classification of IPOs based on the issue size of the IPOs

Issue size (Cr.)	Case 1						Case 2		
	N ₁	Wealth relative	Average				N ₂	Average	
			RR (Close price)	MAARs (Nifty close price)	ARR (Listing day Close price)	AMAARs (Adj. With NIFTY 50 close price)		MAARs (Adj. with BSE IPO close price)	AMAARs (adj. with BSE IPO close price)
All	462	1.14	28.29	16.12	679.54	450.09	440	17.89	478.79
0-100	156	1.20	38.67	22.92	845.67	605.36	145	17.99	539.19
100-400	135	1.18	30.34	19.62	582.12	390.76	129	23.84	468.40
400-1000	100	1.06	19.51	12.96	652.36	436.75	96	14.78	475.86
>1000	71	1.01	13.98	-1.02	538.00	240.56	70	11.00	376.86

Source: Researcher's Calculation

Case 1

Table 5.4 shows that the issue size 0-100 Cr. category recorded the highest number of IPOs, followed by the 100-400 Cr. category, which recorded the second highest frequency. This highlights that the more number of companies prefer to opt for smaller issue size while bringing their IPO. It is also evident that the IPOs falling in the category of Rs. 0-100 Cr. issue size, performed better than the other categories i.e. Rs. 100-400, Rs. 400-1000, >Rs.1000 which shows that the IPOs which have a smaller issue size relatively performs better in terms of return. The category Rs. 0-100 Cr. recorded the highest wealth relative (1.20), Avg. RR (38.67), Avg. MAARs (22.92), Avg. ARR (845.67), and Avg. AMAARs (605.36). The 100-400 categories also considerably performed well in terms of wealth relative (1.18), Avg. RR (30.34) and Avg. MAARs (19.62) but the Avg. ARR and Avg. AMAAR values were not that high. The Rs. 400-1000 Cr. Category had a moderate performance in terms of wealth relative, Avg. RR, Avg. MAARs however recorded a relatively higher Avg. ARR, and Avg. AMAARs compared to the Rs. 100-400 Cr. Category. In contrast, the >Rs. 1000 Cr. category underperformed, recording the lowest Wealth Relative of 1.01 and minimal or negative MAARs (-1.02), along with the lowest AMAARs (538.00 and 240.56), suggesting that large IPOs may be less favorable in terms of adjusted returns.

Case 2

The examination of Case 2 reveals that the most no. of IPOs fall in the category of 0-100 cr. issuance size of the IPO which was followed by the Rs. 100-400 cr., Rs. 400-1000 and >Rs.1000 cr. respectively. Issue size of Rs. 0-100cr. exhibits the highest Avg. AMAAR value followed by the Rs. 100-400 category which highlights that the small and midsize firms performed better when compared to the Rs. 400-1000 and >Rs. 1000 Cr. categories in terms of Avg. AMAAR metrics. This highlights that the small and the midsize IPOs tend to generate better-annualized market return comparison to the large size IPOs, likely due stronger investor demand and greater engagement in these offerings.

In both the Cases 1& 2, large sized IPOs performed poorly in comparison to the small sized IPOs. The findings of this study is supported by the findings of Parab (2019). Parab (2019) assessed the performance of 232 IPO listed during 2007-15 on BSE and NSE, revealing that the return of the IPOs having an issue size of greater than 500 Crore was found lower than the IPOs falling in the category of Rs. 100-500 crore and the below 100 crore category. Narendrasinh (2018) highlighted that the offer size categories of Rs. 26-50 Cr. and 76-100 Cr. showed profitable performance in comparison to the other categories. Chhabra (2011) noted that all the offer size categories yielded positive returns in the one-year period; however, issues with larger issue sizes yielded higher returns than smaller issues.

5.1.1.5 Classification of IPOs based on Lot Size

Lot size refers to minimum no. of IPO shares that investor has to apply for when bidding for an IPO. The issuing company sets the lot size of its IPO based on the share price, investor demand and regulatory guidelines. In Table 5.5, Case 1, denotes the set of 444 IPOs, while in Case 2, there are 432 IPOs. Based on the listing date of the IPOs two sets were formed. This research employs two major benchmark indexes, NSE NIFTY 50 and BSE IPO. The number of IPOs in both Cases differs as some of the IPOs got listed before 2004, i.e., before the availability of the BSE IPO index; therefore, to draw a comparison between the performance of the IPOs and the BSE IPO index, such IPOs were omitted in Case-2.

Table 5.5: Classification of IPOs based on lot size of the IPOs

	Case 1						Case 2		
Lot size	N NSE	Wealth relative	Average				N BSE	Average	
			RR (Close price)	MAAR (nifty close price)	ARRs (close price raw return)	AMAARs (on nifty Close price)		MAAR (BSE close price)	AMAARs (on BSE close price)
All	444	1.15	28.89	17.05	680.55	445.55	432	17.43	464.39
0-25	119	1.08	14.57	8.46	341.25	198.17	118	12.62	273.53
25-50	114	1.18	33.68	21.07	832.36	561.76	114	22.68	602.89
50-100	133	1.12	24.18	12.91	635.17	399.21	128	19.19	540.69
>100	78	1.26	51.79	31.34	1053.69	732.12	72	13.87	422.26

Source: Researcher's Calculation

Case 1

As seen in Table 5.5, the lot size category of 50-100 shares (133) recorded the highest frequency of IPOs followed by 0-25 (119) shares lot, 25-50 shares (114), and >100 lot size category recorded the least no of IPOs. The >100 lot size category recorded the highest wealth relative (1.26) which shows that the IPOs falling in this category yielded the highest return in comparison to the Nifty 50 benchmark index. The category of >100 shares lot size category recorded the least number of IPOs (78) but recorded the highest Avg. RR (51.79), Avg. MAAR (31.34), Avg. ARR (1053.69) and Avg. AMAAR (732.12) which indicates that IPOs with larger lot sizes tend to yield stronger returns. The 25-50 lot size, recorded the second highest average returns (Avg. ARR, Avg. MAAR and wealth relative), indicating that medium lot sizes also performed relatively well. On the contrary, the 0-25 share lot size recorded the lowest average returns and wealth relative indicating that investing in very small lot sizes might not be as profitable as purchasing larger lots in IPOs.

Case 2

On examining Case 2 it was noted that the lot size category of 50-100 shares recorded the highest number of IPOs followed by the second leading category i.e. 0-25 category, thirdly by the 25-50 category, and lastly by the >100 lot size category. In Case 2 the 25-50 category recorded the highest Avg. MAAR (22.68) and Avg. AMAAR (602.89) values which was then succeeded by the 50-100 and >100 lot size category. Conversely, the 0-25 lot share category recorded the lowest Avg. MAAR and Avg. AMAAR values. This hints towards the possibility of decreased investor confidence with the very small lot size probably as a smaller lot size is often associated with liquidity problems, increased volatility, and risk. However the 25-50 shares category seems to be an ideal lot size offering best market adjusted returns and the IPOs in this category can be termed as the best risk-return trade off in Case 2.

5.1.1.6 Classification of IPOs based on Oversubscription

In Table 5.6, Case 1 denotes the set of 481 IPOs, while in Case 2 had 454 IPOs. These sets were formulated based on the listing dates of IPOs. As the BSE IPO index was unavailable before 2004, therefore to draw a comparison between the IPOs and the BSE IPO index these IPOs were excluded from Case 2.

Table 5.6: Classification of IPOs based on oversubscription

Oversubscription (no. of times)	Case 1						Case 2		
	N ₁	Average					N ₂	Average	
		Wealth relative	RR (Close price)	MAAR (nifty close price)	ARRs (close price raw return)	AMAARs (on nifty Close price)		MAARs (BSE close price)	AMAARs (on BSE close price)
All	481	1.16	29.05	17.19	705.30	476.26	454	19.04	504.27
0-2	103	0.89	-1.73	-11.33	29.68	-169.79	1033	-7.84	-110.33
2-5	91	0.98	8.95	-2.47	206.09	-4.31	88	-3.86	26.34

5-20	93	1.08	20.60	9.36	452.06	214.14	92	12.90	272.05
20-50	73	1.51	54.22	44.25	1259.56	1070.27	68	47.25	1145.33
>50	63	1.11	61.48	55.17	1647.50	1421.74	63	60.75	1540.33

Source: Researcher's Calculation

Case 1

As evident from the table 5.6, the oversubscription category of 0-2 times recorded the highest number of IPOs followed by the 5-20 times category, 2-5 times, 20-50 times and the >50 respectively. The >50 times oversubscription category recorded the lowest no of IPOs. The 0-2 times category, recorded the low wealth relative (0.89), least Avg. RR (-1.73), Avg. MAAR (-11.33), Avg. ARR (29.68) and Avg. AMAAR (-169.79) values implying that the IPOs having low demand tend to perform poor. The >50 oversubscription category recorded the highest values across most of the metrics (i.e. Avg. RR, Avg. MAAR, Avg. ARR, Avg. AMAAR) showing that the high oversubscription rate is associated with better performance of the IPOs. The 20-50 times oversubscription category recorded the highest wealth relative (1.51), followed by the >50 times category (1.11), 5-20 times category at 1.08, 2-5 times category at 0.98 respectively and recorded considerably moderate values across all other metrics which shows that the IPOs having the oversubscription rate around 20 or above yields favorable long term returns.

Case 2

In Case 2 the most number of IPOs fall in the category of 0-2times (103) oversubscription category which is succeeded by the 5-20times (92), 2-5times (88), 20-50times (68), and lastly by >50 times category (63). The category that recorded the highest no of IPOs i.e. 0-2 times oversubscription category recorded the least MAAR and AMAAR values, which show that the IPOs, which have low demand, performed poorly in comparison to the BSE index and also in comparison to the other oversubscription category. The 2-5 times category also had poor performance

reassuring the statement that the low-demanded IPOs performed poorly. On the contrary, the IPO category of >50 categories recorded the highest MAAR and AMAAR values. The 20-50 times oversubscription category recorded the second highest MAAR and AMAAR values, followed by the 20 -50 times category in terms of performance along the metrics. This puts an emphasis on the finding that the higher oversubscription rate is generally associated with enhanced IPO performance. In addition, except the 0-2- and 2-50- times category, IPOs in all other categories performed better than the benchmark index of Case 2 (i.e. BSE IPO index). This indicates that investors can potentially achieve significantly higher returns than the BSE IPO index by focusing on IPOs with higher oversubscription rates.

In Cases (1 & 2), it is evident that the performance of IPOs of oversubscription categories of 5-20, 20-50 and >50 times is better as compared to the 0-2 and 2-5 times categories. Chhabra (2011) found the IPOs falling in the 10-20 times oversubscription category yielding the highest return in comparison to the 1-10, 20-40 and >40 times categories.

5.1.1.7 Classification of IPOs based on Listing Day's Closing Price.

In Table 5.7, Case 1 denotes the set of 476 IPOs, while in Case 2, includes 453 IPOs. These sets were formulated based on the listing dates of the IPOs. Since the research uses two major benchmark indexes, the NSE Nifty 50 and the BSE IPO, the number of IPOs in both cases differs. Some IPOs were listed before 2004, prior to the availability of the BSE IPO index. As a result, to draw a comparison between the performance of the IPOs and the BSE IPO index, these IPOs were omitted from Case 2.

Table 5.7: Classification based on the listing price of the IPOs

Listing close price (Rupees)	Case 1						Case 2		
	N ₁	Wealth relative	Average				N ₂	Average	
			RR (Close price)	MAAR (nifty close price)	ARRs (close price raw return)	AMAARs (on nifty Close price)		MAARs (BSE close price)	AMAARs (on BSE close price)
All	476	1.16	29.58	17.55	713.23	482.71	453	19.09	505.54
0-100	157	0.63	-32.58	-39.36	-580.72	-618.01	144	-35.33	-593.09
100-200	96	0.91	1.87	-10.02	20.10	-221.60	93	-4.44	-90.69
200-400	99	1.33	49.97	36.88	1009.89	724.22	97	39.33	773.68
>400	125	1.15	29.44	17.42	709.69	479.45	120	86.85	2082.38

Source: Researcher's Calculation

Case 1

In Case 1, the Rs. 0-100 listing price range had the highest frequency of IPOs, with 157 IPOs. This was followed by the > Rs. 400 category with 125 IPOs, the Rs. 200-400 category with 99 IPOs, and the Rs. 100-200 category with 96 IPOs. This highlights that most no. of IPOs were priced low to broaden the investor base. Although the listing price category of 0-100 Rs. recorded the most no. of IPOs the wealth relative of this category was lowest and recorded negative values along Avg. RR (-32.58), Avg. MAAR (-39.36), Avg. ARR (-580.72) and Avg. AMAAR (-618.01) highlighting the poor performance of low-priced IPOs against the NSE NIFTY 50 index as well. The Rs. 100-200 range of IPOs recorded the lowest no. of IPOs and in terms of performance did not fare that well showing second lowest wealth index. The Rs. 200-400 category of listing price recorded better values in comparison to the Rs. 0-100 and Rs. 100-200 categories showing moderate performance in terms of Avg. RR, Avg. MAAR, Avg. ARR, Avg. AMAAR, and wealth index (1.33) which highlights that the IPOs in this category did well in comparison to the benchmark index also. The category 200-400 gave the highest return in terms of Avg. RR, Avg. Avg. MAAR, Avg. ARR, and Avg. AMAAR

whereas the >Rs. 400 category recorded the second highest returns, indicating its IPOs performed reasonably well against the benchmark. This implies that more expensive initial public offerings (IPOs), particularly priced Rs. 200-400 and >Rs. 400 Rs., did not just yielded greater profits but also showed more robust wealth creation, making them potentially attractive to investors.

Case 2

In Case 2, the Rs. 0-100 listing price range had the highest frequency of IPOs, with 144 IPOs. This was followed by the >Rs. 400 category with 120 IPOs, the Rs. 200-400 category with 97 IPOs, and the Rs. 100-200 category with 93 IPOs. This highlights that most no. of IPOs were priced low to broaden the investor base. In Case 2, the categories Rs. 200-400 and >Rs. 400 performed better and generated high MAARs and AMAARs in comparison to the Rs. 0-100 and Rs. 100-200 categories, which recorded negative returns in terms of Avg. MAARs and Avg. AMAARs. The IPOs in the categories of Rs. 200-400 and >Rs. 400 outperformed the benchmark index of Case 2 which is BSE IPO index. It is also evident that the IPOs, which are high, priced performed better in comparison to the low priced IPOs indicating strong investor confidence and high market demand in high priced IPOs.

5.1.1.8 Classification of IPOs based on the Age of the issuing company

In Table 5.8, Case 1, denotes the set of 476 IPOs, while in Case 2, there are 452 IPOs. These sets were formulated based on the listing dates of IPOs. Since the research employs two major benchmark indexes (i.e. NSE NIFTY 50 and BSE IPO), the number of IPOs in both Cases differs, were listed before 2004, prior to the availability of the BSE IPO index. Therefore, to draw a comparison between the performance of the IPOs and the BSE IPO index, such IPOs were omitted in Case-2.

Table 5.8: Classification based on the age of the issuing company

Age (Years)	Case 1						Case 2		
	N ₁	Wealth relative	Average				N ₂	Average	
			RR (Close price)	MAAR (nifty close price)	ARRs (close price raw return)	AMAARs (on nifty Close price)		MAARs (BSE close price)	AMAARs (on BSE close price)
All	476	1.16	29.38	18.16	710.29	479.07	452	19.38	516.01
0-10	141	1.19	32.14	21.48	762.86	538.53	126	25.69	662.67
10-15	123	1.16	34.18	18.24	740.27	444.76	121	13.51	369.12
15-20	86	1.10	17.56	10.08	517.50	340.25	84	14.04	439.92
20-40	95	1.22	31.55	23.50	793.25	618.92	90	25.59	622.27
40-101	31	1.07	23.82	8.67	632.86	301.35	31	13.08	390.82

Source: Researcher's Calculation

Case 1

Table 5.8 shows, in Case 1 most IPOs fall in the age bracket of 0-10 years, from the date of incorporation to the date of bringing an IPO indicating that the IPOs do not have a very long operational history. The second highest frequency of IPOs were recorded for the 10-15 years age category, which was followed by the 20-40 years bracket, 15-20 years and >40-101 years brackets respectively. The 0-10 category recorded a wealth relative of 1.19, which is slightly lower than the overall wealth index of 1.16. The Avg. RR, Avg. MAAR, Avg. ARR, Avg. AMAAR values recorded by this category exceeded that of the overall IPOs which highlights the exceptional performance of the IPOs of this category. The category of 10-15 years recorded a wealth relative figure equivalent with the overall wealth index showing good wealth generation and also recorded third highest Avg. MAAR, Avg. ARR and Avg. AMAAR values which shows the IPOs in this category fared well. The 15-20

category recorded wealth relative of 1.10 which is slightly lower than the overall wealth relative index value and the Avg. RR (17.56) and Avg. MAAR (10.08), Avg. ARR (517.50) and Avg. AMAAR (340.25) values are also lower, in this price category, suggesting a more moderate performance compared to the younger companies. The 20-40 category recorded highest values along all metrics i.e. wealth relative of 1.22, Avg. MAAR, Avg. ARR, Avg. AMAAR values. This indicates that, on average, these companies offered strong returns to investors in comparison to the other categories. The 40-101 years age category recorded the lowest wealth relative indicating that the investors did not see much wealth generation. Moreover, this category also recorded lowest Avg. MAAR and Avg. AMAAR values indicating the performance of the companies in terms of averages and wealth generation were poor as compared to the other categories.

Case 2

In Case two most no. of IPOs fell in the age bracket of 0-10 years, followed by 10-15 years category, 20-40 years, 15-20 years, 40-101 years category. The 0-10 category in Case 2 recorded the highest Avg. MAAR and Avg. AMAAR value which surpassed the Avg. MAAR and Avg. AMAAR values of the overall IPOs. The 20-40 years category also considerably fared well providing the second highest Avg. MAAR and Avg. AMAAR values. The 15-20 years, 10-15 years and 40-101 years categories also yielded positive Avg. MAAR and Avg. AMAAR values however the values were relatively lower than the other categories.

In Case 1 and 2 the IPOs aged between 0-10 years, 20-40 years categories showed higher returns as compared to the other categories. Chhabra (2011) noted the positive performance of 0-1 years, 1-5 years, 9-13 years and >13 years categories and negative performance of 5-9 years category. Further, the mid-aged (5-9 years category) recorded the highest return as compared to the younger and the older IPOs.

5.1.1.9 Classification of IPOs based on Face value of the IPO

In Table 5.9, Case 1, denotes the set of 453 IPOs, while in Case 2, there are 434 IPOs. These sets were formulated based on the listing dates of IPOs. Since the research employs two major benchmark indexes, NSE NIFTY 50 and BSE IPO, the

number of IPOs in both Cases differs as some of the IPOs got listed before 2004, i.e., before the availability of the BSE IPO index. Therefore, to compare the performance of the IPOs and the BSE IPO index, such IPOs were omitted in Case-2.

Table 5.9: Classification based on the face value of the IPOs

Face Value (in Rs.)	Case 1						Case 2		
	N ₁	Wealth relative	Average				N ₂	Average	
			RR (Close price)	MAAR (nifty close price)	ARRs (close price raw return)	AMAARs (on nifty Close price)		MAARs (BSE close price)	AMAARs (on BSE close price)
All	453	1.14	28.57	16.02	678.81	443.12	434	17.53	465.30
0-5	146	1.30	54.11	35.77	1128.65	848.35	132	34.70	794.17
>5	307	1.06	16.43	6.62	464.87	250.40	302	10.03	321.56

Source: Researcher's Calculation

Case 1

Table 5.9, shows that most no. of IPOs fall in the face value category of > Rs. 5 however, the average returns of all the metrics (average- RR, MAARs, ARR, AMAARs) of Rs. 0-5 category of IPOs were considerably better than the > Rs. 5 category. On contrary, the wealth relative of the > Rs. 5 group is less than the Rs. 0-5 group indicating that the later group attracts more wealth accumulation and relatively better performance in comparison to the bench mark index (NSE NIFTY 50). This highlights that the greater face value stocks yield relatively lower return and is therefore opted by the investors looking for stable and modest return.

Case 2

In Case 2 of Table 5.9, it is evident that the majority of IPOs fall into the > Rs. 5 face value category. However, the Rs. 0-5 face value category shows significantly higher average returns across all metrics (Average MAARs & Average AMAARs). This suggests that IPOs with smaller face values might be more volatile or offer higher

growth potential. These findings indicate that higher face value stocks tend to yield relatively lower returns, making them suitable for investors seeking stability and modest gains.

5.1.2 Very Long Run (3 years from listing date of IPOs)

5.1.2.1 Classification of IPOs based on the Type of Industry

In Table 5.10, Case 1, denotes the set of 467 IPOs, while in Case 2, there are 446 IPOs. These sets were formulated based on the listing dates of IPOs. Since the research employs two major benchmark indexes (NSE NIFTY 50 and BSE IPO), the number of IPOs in both Cases differs as some of the IPOs got listed before 2004, i.e., before the availability of the BSE IPO index. Therefore, to draw a comparison between the performance of the IPOs and the BSE IPO index, such IPOs were omitted in Case-2.

Table 5.10: Classification of IPOs based on the type of Industry

Industry	Case 1						Case 2		
	N ₁	Wealth relative	Average				N ₂	Average	
			RR (Close price)	MAARs (nifty close price)	ARRs (close price raw return)	AMAARs (on nifty Close price)		MAARs (BSE close price)	AMAARs (on BSE close price)
All	467	0.92	23.44	-10.49	689.68	-82.05	446	-5.43	-150.75
Agri. & Agri. products	11	0.81	7.81	-25.51	154.38	-524.45	10	-12.08	-429.44
Automotive and Components Industry	12	0.77	16.19	-34.61	185.49	-901.61	11	-69.78	-1920
Chemical	11	1.36	90.79	50.49	3235.80	2424.03	11	38.81	2034.94
Diversified	13	0.95	29.35	-7.17	1192.68	201.57	13	-5.84	57.57
Electrical &	16	1.13	39.86	16.39	1991.83	1296.19	16	20.34	1085.83

Electronics									
FMCG	21	0.84	17.56	-22.53	194.78	-721.29	21	0.90	-271.40
Hotels, Restaurant and Resorts	9	0.86	15.79	-19.56	527.77	-551.52	9	-20.39	-807.98
Miscellaneous	10	2.41	224.69	190.18	4864.59	3674.07	10	157.16	2282.52
Oil, Gas and Fuel	8	1.03	48.93	5.03	1279.13	317.34	6	14.74	521.80
Travel & Transport and logistics	21	0.62	-15.49	-51.33	-165.00	-1053.71	20	-51.47	-1247.95
Banking Finance	14	0.98	28.45	-3.26	626.31	-309.47	14	9.28	-123.05
Non Banking Finance	38	1.95	156.66	125.21	4288.99	3425.99	38	109.00	2658.82
Rating & Stock Broking	8	0.74	4.31	-37.12	90.94	-888.33	8	-39.21	-1043.80
Civil Construction	40	0.84	1.49	-19.26	119.24	-393.52	40	-9.75	-473.20
Construction & Engineering	16	0.94	26.71	-8.58	190.56	-546.70	16	5.46	-250.65
Residential & Commercial Construction	19	0.53	-35.36	-57.38	-589.82	-1080.28	19	-34.96	-682.43
Power	12	0.80	24.63	-30.22	192.74	-753.90	11	-24.74	-553.39
Entertainment	18	0.73	6.75	-38.96	317.30	-460.03	15	-37.34	-750.49
Printing, Media and Broadcasting	16	0.64	-15.99	-47.87	-464.53	-1054.82	14	-58.83	-1265.67

Garments and Accessories	21	0.77	-4.81	-28.44	-79.49	-641.47	21	-24.62	-728.36
Textile and Textile Products	20	0.50	-31.32	-68.95	-484.56	-1281.66	19	-38.24	-639.84
Healthcare & Hospital	11	0.86	15.79	-19.55	527.77	-551.52	11	-20.39	-807.98
Pharma	15	0.95	47.07	-8.50	869.30	-335.60	12	-68.05	-1475.15
Metals and Metal Products	16	0.52	-37.68	-56.42	-692.92	-1013.97	16	-37.11	-617.286
Non Metallic Products	19	0.50	-42.57	-57.83	-614.38	-935.56	19	-31.02	-412.66
Software and Hardware	16	0.75	20.46	-39.25	569.78	-417.65	12	13.77	95.38
IT Service	20	0.55	-23.19	-62.62	-362.97	-1189.10	18	-46.65	-968.57
Internet and Telecom Technology	16	0.98	25.17	-2.85	531.90	-78.09	15	-21.07	-349.19

Source: Researcher's Calculation

Case 1

Table 5.10 shows that in Case 1, 467 companies recorded a wealth index of 0.92 which shows that the yield of IPOs was lower than that of the NSE NIFTY 50 index. The wealth index below 1 denotes that the return of the IPOs did not match the benchmark index. The RR value of 467 IPOs was recorded at 23.44%, MAAR at -

10.49%, ARR 689.69% and AMAAR at -82.05. The raw return and the annualized raw return of 467 IPOs were high however; it underperformed in comparison to the benchmark index.

The 'Miscellaneous (2.41)', 'Non-Banking (1.95)', 'Chemical (1.36)', 'Electrical & Electronics (1.13)', 'Oil, Gas & Fuel (1.03)' industry sectors recorded wealth index higher than 1, indicating that these sectors outperformed the NSE NIFTY 50 index. The other 24 sectors (i.e. 'Agri. and Agri. Products', 'Automotive and Components industry', 'Diversified', 'FMCG', 'Hotel, Restaurants and Resorts', 'Travel, Transport and Logistics', 'Banking and Finance', 'Ratings and Stock broking', 'Civil Construction', 'Construction and Engineering', 'Residential and Commercial construction', 'Power', 'Entertainment', 'Printing, Media and Broadcasting', 'Garments and Accessories', 'Textile and Textile Products', 'Healthcare & Hospital', 'Pharmaceutical.', 'Metals and Metal Products', 'Non-Metallic Products', 'Software and Hardware', 'IT Service and Internet' and 'Telecom Technology') recorded wealth index ranging from 0.50 to 0.90 which is less than 1. This indicates that these 24 sectors underperformed in comparison to the top-performing sectors (i.e., Miscellaneous, Non-banking Finance, Chemical, Electrical & Electronics, and Oil, Gas & Fuel) and in terms of the benchmark index (NSE NIFTY 50). The negative MAAR and the annualized market adjusted across these 24 sectors show that the IPOs of these sectors struggled to perform in the market, reflecting weak investor demand and low market confidence.

Case 2

In Case, two the 446 IPOs recorded Avg. MAAR of -5.43 and Avg. AMAAR of -150.75, indicating that the performance of these IPOs in comparison to BSE IPO Index was poor. In Case 2, the Chemical, electrical and electronics, Oil, Gas and Fuel, Miscellaneous, Non-banking Finance and Software & hardware recorded positive Avg. MAAR and Avg. AMAAR values, indicating the outperformance of these sectors as compared to the benchmark index and the other industry sectors. On the other hand, the remaining 22 sectors, including Agri. and Agri. Products, Automotive and Components, FMCG, Hotel, Restaurant, and Resort, Travel,

Transport and Logistics, Banking and Finance, Ratings and Stock Broking, Construction and Engineering, Healthcare & Pharmaceuticals, Metals and Metal Products, Textiles, and Telecom Technology, recorded negative Avg. MAAR and Avg. AMAAR values. The reason for underperformance could be attributed to market saturation, regulations and economic challenges. The Agriculture and Construction sector industries tend to face seasonal challenges and strict policy regulations. While, FMCG and healthcare sectors face increased competition, which may decrease investor, interest and returns.

In both the Cases (1& 2) on comparing IPOs with the NSE NIFTY 50 and the BSE IPO index, sectors like Miscellaneous, Chemical, Electrical and Electronics, Oil, Gas and Fuel, Non-Banking showed strong market performance, while the other 23 sectors showed poor performance in the very-long period. Chhabra (2011) conducted a study on 225 Indian IPOs and reported that only the Financial and the Communication sectors recorded a positive wealth index in the three-year study period, while other sector IPOs did not show a wealth index greater than 1, signifying poor market performance in the very-long run. Ritter (1991) analyzed the performance of 1,526 U.S. IPOs and found that financial institutions, pharmaceuticals, and airlines performed well in the very-long term, while the oil and gas industry showed the poorest performance in the very-long run. Parab (2019), mentioned in their study that, in the long run period, the Apparels and accessories sector showed significantly higher returns in comparison to the Banking and finance service sector, followed by Utilities, Realty, and the construction and engineering sector. Pandey (2010) analyzed the long-run performance (third year post-IPO) of 76 IPOs launched between 1993 and 2010, finding dissatisfactory results across all sectors, with returns declining in comparison to the first year after the IPO. Shah (2019) highlighted in their study the profitable performance of Chemical, Jewellery, FMCG, Software, Education sectors in the three year period, while poor performance of construction, engineering, Beverages, Miscellaneous, Paper, Pharmaceuticals, Steel, Synthesis, Infrastructure, Transportation, Automotive, Electronics in the three-year period.

5.1.2.2 Classification of IPOs based on Lead-time

In Table 5.11, Case 1, denotes the set of 468 IPOs, while in Case 2, there are 446 IPOs. These sets were formulated based on the listing dates of IPOs. Since the research uses two major benchmark indexes, the NSE NIFTY 50 and the BSE IPO, the number of IPOs in both Cases differs. This discrepancy arises because some IPOs were listed before 2004, which is prior to the availability of the BSE IPO index. To ensure a valid comparison between the performance of the IPOs and the BSE IPO index, IPOs listed before 2004 were excluded from Case 2.

Table 5.11: Classification of IPOs based of lead-time

Lead time	Case 1						Case 2		
			Average					Average	
	N ₁	Wealth relative	RR (Close price)	MAARs (nifty close price)	ARRs (close price raw return)	AMAARs (on nifty Close price)	N ₂	MAARs (BSE close price)	AMAARs (on BSE close price)
All	468	0.92	23.46	-10.48	692.39	-79.36	446	-5.27	-145.73
0-15	162	1.11	46.14	14.37	1605.20	497.39	161	-2.86	-222.67
15-20	97	0.86	18.37	-18.55	367.85	-403.63	93	-12.03	-251.15
21-50	197	0.81	7.76	-25.00	152.08	-389.60	184	-1.83	-28.35
>50	12	0.73	16.29	-42.43	-136.89	-151.36	8	-54.44	-71.40

Source: Researcher's Calculation

Case 1

The analysis of 468 IPOs reveals a wealth index of 0.92, indicating that these IPOs underperformed compared to the NSE NIFTY 50 index in Case 1. The average raw return (RR) for these IPOs was 23.46%, representing their standalone returns. However, when adjusted against the benchmark NSE NIFTY 50 index, the market-adjusted abnormal return (Avg. MAAR) was -10.48%, highlighting that these IPOs

performed poorly relative to the broader market. In Case 1, the 21-50 days lead time category had the highest frequency of IPOs, followed by the 0-15 days, 15-20 and >50 categories respectively. However, the 21-50 days category recorded a wealth index of 0.81, reflecting that these IPOs underperformed compared to the NSE NIFTY 50 index. This poor performance was further reflected by the negative Avg. MAAR and Avg. AMAAR values. The 0-15 day category, with the second-highest frequency of IPOs, recorded a positive wealth index of 1.11, along with high values for raw return (Avg. RR), market-adjusted abnormal return (Avg. MAAR), average raw return (Avg. ARR), and average market-adjusted abnormal return (Avg. AMAAR). These results suggest a strong performance trend for IPOs with a shorter lead-time, highlighting that IPOs that transition quickly from issuance to listing tend to retain investor interest, experience positive market reactions, and generate favorable returns. On the contrary, the lead-time categories like 15-20, 20-50 and >50 experience decreased investor enthusiasm and consequently perform poorly.

Case 2

Case 2 reveals the performance of 446 IPOs relative to the BSE IPO index. The market-adjusted abnormal return (Avg. MAAR) for these IPOs was -5.27, and the average market-adjusted abnormal return (Avg. AMAAR) was -145.73, both indicating the poor performance of these IPOs compared to the BSE IPO index. In Case 2, the 21-50 days lead time category had the highest frequency of IPOs, followed by the 0-15 days, 15-20 days, and >50 days categories. It is evident that all these categories—0-15, 15-20, 21-50, and >50—recorded negative MAAR and AMAAR values, reflecting poor performance when compared to the benchmark index over the very long-term period. The consistent negative performance of IPOs across different lead-time categories indicates that these IPOs were unable to sustain investor interest and lost their value over the long term.

In Case 1, only the 0-15 days category showed positive performance while in Case 2 none of the categories showed positive yield. Chakra (2011) also noted that in the very long run (3 years), IPOs with a lead-time of less than 30 days and 30-60 days, while those with a lead-time greater than 60 days showed negative returns. Bantwa

(2022) also assessed the performance of 411 IPOs launched from 2007 to 2016 and highlighted that IPOs having a listing delay of 6-10 days showed the highest rate of return in the long run, IPOs having lead time greater than 15 days showed negative return and IPOs having lead time between 26-30 days showed the worst performance. In contrast, the findings of Ghosh (2005), Shelly and Singh (2008), and Sehgal & Sinha (2008), Sehgal & Sinha (2013) emphasized the effect of listing delay on IPO returns, concluding that IPOs with longer lead times exhibited higher underpricing.

5.1.2.3 Classification of IPOs based on Issue price

In Table 5.12, Case 1, had a set of 468 IPOs, while in Case 2, had 446 IPOs. These sets were formulated based on the listing dates of IPOs. As the BSE IPO index was unavailable before 2004, therefore to draw a comparison between the IPOs and the BSE IPO index these IPOs were excluded from Case 2.

Table 5.12: Classification of IPOs based on issue price

Issue price	Case 1						Case 2		
	N ₁	Wealth relative	Average				N ₂	Average	
			RR (Close price)	MAARs (nifty close price)	ARRs (close price raw return)	AMAARs (on nifty Close price)		MAARs (BSE close price)	AMAARs (on BSE close price)
All	468	0.92	23.46	-10.48	692.39	-79.36	446	-5.27	-145.72
10-50	39	1.22	80.70	32.96	2078.93	1039.09	35	48.92	1421.75
50-100	74	0.91	32.14	-13.20	579.67	-195.47	69	6.71	13.76
100-150	80	1.23	64.48	30.81	1355.25	689.48	76	34.72	643.23
150-200	63	0.74	-7.29	-33.35	-9.02	-621.25	61	-20.74	-465.25
200-300	67	0.85	14.57	-20.83	842.46	-32.82	66	-18.65	-171.07

300-500	71	0.75	-6.76	-30.97	-218.59	-837.03	68	-28.50	-904.87
500-800	45	0.69	12.62	-39.12	220.66	-558.57	42	-46.56	1072.30
>800	29	0.94	28.54	-7.74	1426.29	260.10	29	-26.75	-632.80

Source: Researcher's Calculation

Case 1

Table 5.12 presents the very long-run performance of 468 IPOs in comparison to the NSE NIFTY 50 index. Over a three-year period, the raw return generated by these IPOs was 23.46%. However, both the average market-adjusted abnormal return and the average annualized market-adjusted abnormal return were recorded at -10.48 and -79.36, respectively, indicating a significant underperformance relative to the benchmark index. The issue price categories of 100-150 and 10-50 recorded wealth indices of 1.23 and 1.22, respectively. The strong performance of these categories is further reflected in the positive values for average raw return (Avg. RR), average market-adjusted abnormal return (Avg. MAAR), average raw return (Avg. ARR), and average market-adjusted abnormal return (Avg. AMAAR). However, the other issue price categories, such as Rs. 50-100, Rs. 150-200, Rs. 200-300, Rs. 300-500, Rs. 500-800, and >Rs. 800, recorded wealth indices lower than 1, indicating that these IPOs underperformed relative to the market. The other metrics in these categories, such as Avg. MAAR and Avg. AMAAR, also recorded negative values, further depicting the underperformance of these IPOs in comparison to the NSE NIFTY 50 index. Chhabra (2011) emphasized that IPOs with an issue price of Rs.10 and those priced between Rs.10-Rs.50 showed the strongest performance, while IPOs priced between Rs.50-Rs.100 and above Rs.100 had the poorest performance. Narendrasinh (2018) reported in their study that IPOs with an issue price below Rs. 30 yielded better returns compared to those with an issue price ranging between Rs. 30-120.

Case 2

The overall Avg. MAAR and Avg. AMAAR values of -5.27 and -145.72, respectively, suggest that the 446 IPOs generally underperformed compared to the BSE close price. The Rs. 0-10 issue price category recorded the highest Avg. MAAR

and Avg. AMAAR values, indicating its strong performance relative to other categories. The Rs. 100-150 followed this and Rs. 50-100 categories, which also showed favorable, though slightly lower, Avg. MAAR and Avg. AMAAR values. However, it is noted that IPOs in the price range of Rs. 150 to >Rs. 800 recorded negative returns, indicating that these higher-priced IPOs underperformed in comparison to the benchmark and the low priced IPOs. Chhabra (2011) emphasized that IPOs with an issue price of Rs. 10 and those priced between Rs.10-Rs.50 showed the strongest performance, while IPOs priced between Rs.50-100 and above Rs.100 had the poorest performance. Narendrasinh (2018) found that IPOs with an issue price below Rs.30 delivered better returns than those priced between Rs.30 and Rs.120. Additionally, IPOs priced above Rs.120 also performed well, suggesting that both low-priced and high-priced IPOs tended to outperform those in the mid-price range. This indicates that IPOs with issue prices either below Rs.30 or above Rs.120 yielded higher returns compared to those within the Rs.30-Rs.120 range.

5.1.2.4 Classification of IPOs based on Issue size of the IPO

In Table 5.13, Case 1 represents a set of 458 IPOs, while Case 2 consists of 436 IPOs. These sets were created based on the listing dates of the IPOs. Since the research uses two major benchmark indexes, the NSE NIFTY 50 and the BSE IPO, the number of IPOs in both Cases differs. This discrepancy arises because some IPOs were listed before 2004, which is prior to the availability of the BSE IPO index. To ensure a valid comparison between the performance of the IPOs and the BSE IPO index, IPOs listed before 2004 were excluded from Case 2.

Table 5.13: Classification of IPOs based on the Issue Size

Issue Size (Cr.)	Case 1						Case 2		
	N ₁	Wealth Relative	Average				N ₂	Average	
			RR (Close price)	MAARs (nifty close price)	ARRs (close price raw return)	AMAARs (on nifty Close price)		MAARs (BSE close price)	AMAARs (on BSE close price)
All	458	0.92	23.83	-	706.50	-63.39	436	-4.26	-110.74
0-100	152	1.01	42.14	0.83	979.27	258.60	140	18.45	481.71
100-400	134	0.80	3.01	-	122.39	-480.79	129	-13.61	-294.58
400-1000	100	0.89	16.20	-	664.15	-299.47	96	-20.30	-623.68
>1000	72	1.02	34.48	2.66	1276.56	361.60	70	-10.34	-251.38

Source: Researcher's Calculation

Case 1

Table 5.13 reveals the performance of 458 IPOs in comparison to the NIFTY 50 benchmark index. These IPOs recorded a wealth relative index of 0.92, signaling underperformance relative to the benchmark in Case 1. The average raw return for the 458 IPOs was 23.83%, but the average market-adjusted abnormal return (Avg. MAAR) stood at -10.28, further highlighting their weaker performance compared to the market. Additionally, the average annualized raw return and average annualized market-adjusted abnormal return (Avg. AMAAR) were 706.5 and -63.9, respectively, showing that although the raw return was favorable however, the average market-adjusted return showed underperformance of IPOs against NIFTY 50. The Rs. 0-100 Cr. issue size recorded the maximum no. of IPOs, whereas the >Rs. 1000 Cr. category recorded the least no. of IPOs. However, IPOs of Rs.0-100 Cr. issue size category recorded the highest raw return and a second highest wealth relative index. The >1000 category recorded the highest Avg. RR, Avg. MAAR, Avg. ARR, Avg. AMAAR and wealth index, indicating a strong performance of IPOs of this category. The other mid-ranged issue size categories (Rs. 100-400 Cr. and 400-1000 Cr.) recorded wealth relative below 1 and negative values along other average market-

adjusted metrics depicting their poor performance compared to the benchmark index. The results reveal that the small size IPOs i.e. Rs. 0-100 and above Rs. 1000 Cr. show strong performance compared to the mid-ranged IPOs. The reason behind such strong performance of small sized IPOs could be attributed to the increased demand of these IPOs while the high return of large sized IPOs could be because of past financial records and increased confidence.

Case 2

Case 2 in Table 5.13, shows the performance of 436 IPOs in comparison to the BSE IPO index. The Avg. MAAR value of -4.26 and the Avg. AMAAR value of -110.4% shows the high underperformance of these IPOs in comparison to the BSE IPO index. The 0-100 Cr. issue size category showed positive Avg. MAAR and Avg. AMAAR values, indicating the strong performance of these IPOs in comparison to the other categories and the BSE IPO index. The companies having an issue size greater than 100 Cr. showed poor market performance when compared to the BSE IPO index.

In Case 1 the IPOs of the smaller issue size and the larger issue size categories outperformed the mid-sized issues, while in Case 2 the smaller sized issues outperformed the mid and the large sized issues in the three year period. Narendrasinh (2018) highlighted the poor performance of all the issue size categories in long run however, the less than 25 Crore shows the poorest return. Chhabra (2011) noted that all the offer size categories yielded positive returns in the three-year period; however, issues with larger issue sizes yielded higher returns than smaller issues.

5.1.2.5 Classification of IPOs based on Lot size

In Table 5.14, Case 1 includes 441 IPOs, while Case 2 comprises 430 IPOs. These sets were defined based on the listing dates of the IPOs. Since the research uses two major benchmark indexes, the NSE NIFTY 50 and the BSE IPO, the number of IPOs differs between the two Cases. Some IPOs were listed before 2004, prior to the availability of the BSE IPO index, and were excluded from Case 2 in order to facilitate a proper comparison with the BSE IPO index.

Table 5.14: Classification of IPOs based on the Lot Size

Lot Size (in no. of shares)	Case 1						Case 2		
	N ₁	Wealth Relatives	Average				N ₂	Average	
			RR (Close price)	MAARs (nifty close price)	ARRs (close price raw return)	AMAARs (on nifty Close price)		MAARs (BSE close price)	AMAARs (on BSE close price)
All	441	0.93	22.91	-9.85	691.26	-62.97	430	-5.08	-130.07
0-25	121	0.74	-6.33	-32.95	153.58	-512.50	120	-27.13	-622.23
25-50	112	0.71	-7.68	-37.00	32.93	-678.60	129	-28.51	-644.50
50-100	129	1.01	31.12	0.38	866.08	152.46	125	13.36	285.06
>100	79	1.31	97.67	47.28	2162.64	1146.59	73	35.48	757.38

Source: Researcher's Calculation

Case 1

Table 5.14 shows the performance of 441 IPOs in Case 1, indicating the overall yield of these IPOs in comparison to the NSE NIFTY 50 index. The Avg. RR value of the 441 IPOs was 22.91%, and the Avg. ARR value was 691.26%, showing a positive yield. However, the wealth index was below 1, and both the Avg. MAAR and Avg. AMAAR values were negative, indicating the poor performance of these IPOs relative to the benchmark index. The greater lot size categories i.e. 50-100 and >100, recorded wealth index greater than 1 and positive values along the Avg. RR, Avg. ARR, Avg. MAAR and Avg. AMAAR metrics. The 0-25 shares and 25-50 shares lot size categories showed wealth relative indices lower than 1, indicating the poor performance of IPOs in these categories compared to the benchmark index. Additionally, the Avg. RR, Avg. MAAR, and Avg. AMAAR values were negative, further reflecting the underperformance of these IPOs. The results indicate that the IPOs having a smaller lot size perform poorer than the IPOs having bigger lot sizes.

Case 2

Case 2 of Table 5.14 depicts the performance of 430 IPOs in comparison to the BSE IPO index. The overall Avg. MAAR and Avg. AMAAR values for these IPOs indicate their underperformance relative to the benchmark index. The Avg. MAAR

and Avg. AMAAR values for the 0-25 shares and 25-50 shares lot size categories were negative, reflecting the poor performance of IPOs in these categories. However, the 50-100 shares and >100 shares lot size categories recorded positive Avg. MAAR and Avg. AMAAR values, indicating strong and profitable performance. These results suggest that IPOs with larger lot sizes tend to perform better than IPOs with smaller lot sizes.

5.1.2.6 Classification of IPOs based on Oversubscription

Table 5.15 shows the performance of IPOs in two Cases. Case 1 analyzes the performance of 414 IPOs, while Case 2 studies 407 IPOs. As this study entails two benchmarking indexes to assess the performance of IPOs, two sets were formulated. Cases 1 & 2 have different number of IPOs, as Case 2 excludes some IPOs that were listed before 2004, before the BSE IPO index became available.

Table 5.15: Classification of IPOs based on the oversubscription

Over Subscription (times)	Case 1						Case 2		
	N ₁	Wealth Relative	Average				N ₂	Average	
			RR (Close price)	MAARs (nifty close price)	ARRs (close price raw return)	AMAARs (on nifty Close price)		MAARs (BSE close price)	AMAARs (on BSE close price)
All	414	0.89	16.23	-14.98	576.26	-167.61	40 7	-7.54	-177.58
0-2	103	0.61	- 20.13	- -52.03	- 441.55	- -1238.26	10 3	-47.87	-1334.74
2-5	85	1.07	44.25	9.24	1393.6 1	629.69	82	14.48	570.17
5-20	91	0.67	- 12.23	- -42.55	- 191.74	- -922.85	90	-32.81	-890.87
20-50	69	0.98	24.01	-2.31	732.29	173.64	66	14.11	424.82
>50	66	1.28	68.02	36.40	2007.7 9	1160.97	66	41.14	1078.61

Source: Researcher's Calculation

Case 1

The IPOs in Case 1 recorded a positive raw return of 16.23%. However, the wealth index (0.89), Avg. MAAR (-14.98), and Avg. AMAAR (-167.61) indicate the underperformance of these 414 IPOs relative to the benchmark index, the NSE NIFTY 50. The >50 times oversubscription category recorded a wealth index of 1.28, followed by the 2-5 times oversubscription category with a wealth index of 1.07. The other three categories—0-2, 5-20, and 20-50 oversubscription—had wealth index values below 1, reflecting the poor performance of IPOs in these categories compared to the BSE IPO index. The Avg. RR, Avg. MAAR, Avg. ARR, and Avg. AMAAR values for these categories further emphasize their underperformance. The findings suggest that IPOs in 2-5 and >50 oversubscription categories tend to perform better.

Case 2

Case 2 highlights the performance of 407 IPOs in comparison to the BSE IPO index. The negative MAAR and AMAAR values for these IPOs indicate their underperformance relative to the BSE IPO index. The 0-2 times oversubscription category had the highest number of IPOs, but their market performance was poor. In contrast, the 20-50 and >50 times oversubscription categories, despite having the lowest number of IPOs, recorded positive MAAR and AMAAR values, reflecting strong market performance compared to both the benchmark and other categories. The 2-5 oversubscription categories also recorded highest MAAR value and second highest AMAAR value, showing relatively good performance.

In Cases 1 & 2 the 2-5 and the >50 category showed the positive and strong performance in comparison to the 0-2, 5-50 and >50 categories. Chhabra (2011) found the IPOs falling in the 10-20 times oversubscription category yielding the highest return in comparison to the 1-10, 20-40 and >40 categories.

5.1.2.7 Classification of IPOs based on Listing closing price

In Table 5.16, Case 1 includes 468 IPOs, while Case 2 includes of 446 IPOs. These sets were determined based on the IPO listing dates. Since the analysis uses two

primary benchmark indexes, the NSE NIFTY 50 and the BSE IPO, the number of IPOs differs between the two Cases. IPOs listed before 2004, when the BSE IPO index was unavailable, were excluded from Case 2 to ensure a valid comparison with the BSE IPO index.

Table 5.16: Classification of IPOs based on the listing closing price

Listing Closing Price (Rs.)	Case 1						Case 2		
	N ₁	Wealth relative	Average				N ₂	Average	
			RR (Close price)	MAARs (nifty close price)	ARRs (close price raw return)	AMAARs (on nifty Close price)		MAARs (BSE close price)	AMAARs (on BSE close price)
All	468	0.92	23.46	-10.48	692.39	-79.36	446	-5.27	-145.73
10-100	200	0.34	-56.70	-85.17	-1134.30	-1670.74	190	-66.55	-1397.96
100-200	99	0.66	-16.78	-42.92	-418.78	-1006.16	95	-26.74	-782.43
200-400	78	1.02	42.97	3.38	919.93	-116.34	76	-3.38	-491.97
400-900	59	1.90	186.23	135.20	4040.47	2879.61	54	126.66	2490.59
>900	32	2.73	301.35	254.27	8819.39	7368.57	31	201.68	5737.00

Source: Researcher's Calculation

Case 1

Table 5.16 shows the performance of 468 IPOs, with an Avg. RR of 23.46%, Avg. MAAR of -10.48%, Avg. ARR of 692.39%, Avg. AMAAR of -79.36% and wealth index of 0.92. The positive Avg. RR and Avg. ARR show that these IPOs yielded positive return in the very long run period i.e. 3 years. However, the negative Avg. MAAR and Avg. AMAAR values show the poor performance of these IPOs in comparison to the NSE NIFTY 50 index. The wealth index value below 1 further highlights the underperformance of these IPOs compared to the benchmark. Approximately 50% of IPOs fall in the listing closing price category of Rs. 10-100, however the wealth index of this category reflects their underperformance in comparison to the BSE IPO index. The second highest frequency of IPOs was recorded by Rs. 100-200 category; however, the wealth relative, Avg. RR, Avg.

MAAR, Avg. ARR, and Avg. AMAAR values all indicate the poor performance of the IPOs of this category as well. The > Rs. 900, Rs. 400-900, and Rs. 200-400 listing closing price categories recorded wealth indices of 2.73, 1.90, and 1.02, respectively, indicating strong market performance, with the >Rs. 900 category showing the highest wealth generation. The Avg. RR, Avg. ARR, Avg. MAAR, and Avg. AMAAR values for the >Rs. 900, Rs. 400-900, and Rs. 200-400 categories also showed high positive values, with the >Rs. 900 category recording the highest values across all metrics. The results highlight the strong investor interest and favorable market conditions for IPOs having higher listing price.

Case 2

In Case 2 of Table 5.16, the overall IPOs recorded a MAAR value of -5.27% and AMAAR value of -145.73%, indicting underperformance of these IPOs in comparison to the BSE IPO index. The most number of IPOs fell in the low listing price category i.e. Rs. 10-100. This could be a strategy to engage more investors by making the IPOs look attractive and affordable to small investors. However, the IPOs falling in the listing price category of Rs. 10-100 did not perform well, as indicated by the negative MAAR and AMAAR values for this category. The results show that despite the lower listing price aimed at attracting more investors, these IPOs failed to outperform the BSE IPO market index over the very long term. The IPO category of Rs. 100-200 and 200-400 categories also performed poorly in comparison to the BSE IPO market index. The listing closing price category of Rs. 400-900 and >900, outperformed the BSE IPO index in the very long period which is reflected by the positive MAAR and AMAAR values. It is evident that IPOs having a higher listing price generate positive and better returns in comparison to the IPOs with lower listing price due to increased investor confidence.

5.1.2.8 Classification of IPOs based on Age of the issuing company

In Table 5.17, Case 1 includes 446 IPOs, while Case 2 comprises 446 IPOs. These sets were defined based on the listing dates of the IPOs. Since the research uses two major benchmark indexes, the NSE NIFTY 50 and the BSE IPO, the number of IPOs differs between the two Cases. Some IPOs were listed before 2004, prior to the

availability of the BSE IPO index, and were excluded from Case 2 in order to facilitate a proper comparison with the BSE IPO index.

Table 5.17: Classification of IPOs based on the Age of the issuing company

Age- years	Case 1						Case 2		
	N ₁	Wealth relative	Average				N ₂	Average	
			RR (Close price)	MAARs (nifty close price)	ARRs (close price raw return)	AMAARs (on nifty Close price)		MAARs (BSE close price)	AMAARs (on BSE close price)
All	466	0.93	23.67	-9.47	694.95	-69.72	446	-5.27	-145.73
0-10	136	0.94	26.42	-8.05	722.25	-8.19	124	2.72	139.27
10-15	124	0.84	9.75	-21.68	201.10	-460.92	122	-15.40	-404.14
15-20	83	0.88	12.09	-15.34	853.96	160.01	82	-14.60	-37.92
20-40	90	1.08	48.59	11.36	1175.45	233.55	85	12.07	-47.92
40- 101	33	0.92	25.71	-11.43	727.65	-258.23	33	-19.31	-781.08

Source: Researcher's Calculation

Case 1

Table 5.17 shows a comparative performance of 466 IPOs against the NSE NIFTY 50 index in Case 1. The overall wealth relative index below 1 indicates that, over a three-year period, these 466 IPOs collectively underperformed compared to the NSE Nifty 50 index in Case 1. To assess the performance of IPOs based on age, i.e., from the year of incorporation to the year of listing, Table 5.1.17 divides the 466 IPOs into 0-10 years , 10-15 years, 15-20 years, 20-40 years, and 40-101 years categories. The most number of IPOs fell into the age bracket of 0-10 years, the least no. of IPOs fell in the category of 40-101 years age bracket, and IPOs of both the categories underperformed in comparison to the benchmark index. The IPO category of 20-40 years showed a wealth index greater than 1 and an Avg. RR value of 48.59, Avg. MAAR of 11.36, Avg. ARR of 1175.45, and Avg. AMAAR of 233.55, indicating the strong performance of IPOs of this category in comparison to the benchmark index

and the other categories. The remaining four IPO categories (0-10, 10-15, 15-20, and 40-101 years) underperformed compared to the benchmark index, as indicated by wealth index values below 1 and negative Avg. MAAR and Avg. AMAAR values, reflecting the poor performance in comparison to the 20-40 years category. The results of Case 1 indicate that IPOs in the mid-age bracket of 20-40 years outperformed both newer and older IPOs, demonstrating stronger market performance relative to these groups.

Case 2

Case 2 of Table 5.17 shows the relative performance of 468 IPOs in comparison to the BSE IPO index. The 446 IPOs shows negative Avg. MAAR and Avg. AMAAR values, indicating the poor performance of these IPOs in comparison to the benchmark index i.e. BSE IPO index. In Case 2, the 0-10 years age category demonstrated strong performance relative to the benchmark BSE IPO index, as reflected by high and positive Avg. MAAR and Avg. AMAAR values. Whereas, the 10-15 years, 15-20 years, 20-40 years, and 40-101 years categories showed low Avg. MAAR and Avg. AMAAR values, indicating poor long-term performance of IPOs in these categories compared to the BSE IPO index. The results of Case 2 highlight the strong performance of newer IPOs (0-10 years) compared to the mid-ranged (10-40 years) and older IPOs (40-101 years), as reflected in their higher MAAR and AMAAR values relative to the BSE IPO index.

On comparing the returns of IPOs with the NSE NIFTY 50 index, IPOs aged between 20-40 years yielded the highest returns. In contrast, when compared with the BSE IPO index, the 0-10 year's category showed a positive return. Chhabra (2011) found IPOs age categories of 0-1 years, 1-5 years, 9-13 years, >13 years showed positive performance while the 5-9 years category yielded negative return. The IPO aged between 9-13 years yielded the highest performance followed by the >13 years IPOs.

5.1.2.9 Classification of IPOs based on Face Value of the IPOs

In Table 5.18, Case 1 includes 468 IPOs, while Case 2 includes of 446 IPOs. These sets were determined based on the IPO listing dates. Since the analysis uses two

primary benchmark indexes, the NSE NIFTY 50 and the BSE IPO, the number of IPOs differs between the two Cases. IPOs listed before 2004, when the BSE IPO index was unavailable, were excluded from Case 2 to ensure a valid comparison with the BSE IPO index.

Table 5.18: Classification of IPOs based on the Face Value

Face Value (Rs.)	Case 1						Case 2		
	N NSE	Wealth relative	Average				N BSE	Average	
			RR (Close price)	MAARs (nifty close price)	ARRs (close price raw return)	AMAARs (on nifty Close price)		MAARs (BSE close price)	AMAARs (on BSE close price)
All	468	0.92	23.46	-10.48	692.39	-79.36	446	-5.27	-145.73
0-5	150	1.11	55.17	15.47	1177.26	369.33	133	17.94	250.91
>5	318	0.83	8.51	-22.72	463.69	-291.01	313	-15.14	-314.26

Source: Researcher's Calculation

Case 1

Case 1 shows the relative performance of 468 IPOs compared to the NSE NIFTY 50. The overall IPOs recorded Avg. RR value of 23.46, Avg. MAAR of -10.48, Avg. ARR of 692.39, Avg. AMAAR of -79.36, indicating the poor performance of overall IPOs in comparison to the NSE NIFTY 50 index. The Rs. 0-5 face value category showed a relative index of 1.11 and positive values across all other metrics, suggesting that this category outperformed the other category i.e. > Rs. 5. On the contrary, the > Rs. 5 category recorded the most number of IPOs however the IPOs of this category underperformed. The results highlight the underperformance of IPOs having a face value greater than Rs. 5 in the very long run period.

Case 2

The Case 2 highlights the performance of 446 IPOs in comparison to the BSE IPO Index. The Avg. MAAR and Avg. AMAAR of 446 IPOs was negative, which showed the underperformance of these IPOs in comparison to the BSE IPO index. The >Rs. 5

face value category recorded the most no. of IPOs however the performance of this category was poor which was indicated by the negative Avg. MAAR and Avg. AMAAR values of this category. On contrary, the Rs. 0-5 category showed positive Avg. Avg. MAAR and Avg. AMAAR values, indicating their strong performance in comparison to the BSE IPO index. The results of Case 2 highlights that low priced IPOs showed strong performance in comparison to the high-priced IPOs.

References

- Bantwa, A. R. (2022). Price Performance Of Initial Public Offerings (Ipos) With Special Focus On Underpricing: A Comparative Study Of securities Listed On Indian (Bse) And Chinese (Ssec) Stock Exchanges (Unpublished Doctoral Thesis). *Gujarat Technological University, Ahmedabad*.
- Chhabra, K. (2011). Pricing performance of IPOs in India (*Unpublished doctoral thesis*). *Punjabi University Patiala, Commerce. Patiala: Shodhganga*.
- Ghosh, S. (2005). Underpricing of initial public offerings: The Indian experience. *Emerging Markets Finance and Trade*, 41(6), 45-57.
- Gupta, M.K. (2016). Performance of Initial Public Offering (IPOs) In Indian Capital Market (unpublished doctoral thesis). *Udai Pratap (Autonomous) college, Varanasi*
- KILARAHATTI, S., & V, J. B. (2022). An in-depth analysis of Trend, Pattern and Progress of IPOs: An Evidence from India. *International Journal of Creative Research Thoughts (IJCRT)*, 10(1), 405–407. <https://www.ijcrt.org>
- Kiran, R., & Chopram Phil, R. I. (2011). Price Performance of IPOs in Indian Stock Market. *Euro Economica* , 30 (4), 73-97.
- Narendrasinh, R. B. (2018). An Analytical Study On Performance Of Initial Public Offerings And Issue Mechanism In India (Unpublished doctoral thesis). *Sardar Patel University* .
- Pandey, K. C., (2011). Initial Public Offerings (IPOs) and the Price Behaviour (Unpublished doctoral thesis) *C.S.J.M. University, Kanpur*.
- Pandey, A., & Pattanayak, J. K. (2021). Earnings Management and IPO Anomalies—Evidence from Indian Stock Market. *Business Perspectives and Research*, 10(1), 27–45. <https://doi.org/10.1177/2278533721994719>

Parab ,B.R. ,(2019). *Initial Public Offering (IPO) Performance Evaluation (Unpublished doctoral thesis)*. Jamnalal Bajaj Institute of Management Studies, Mumbai

Ritter, J. R. (1991). *The Long-Run Performance of Initial Public Offerings*. *The Journal of Finance*, 46(1), 3. doi:10.2307/2328687

Securities and Exchange Board of India. (2023, August 9). Reduction in timeline for listing of shares in public issue from T+6 days to T+3 days [Circular No. SEBI/HO/CFD/TPD1/CIR/P/2023/140]. https://www.sebi.gov.in/legal/circulars/aug-2023/reduction-of-timeline-for-listing-of-shares-in-public-issue-from-existing-t-6-days-to-t-3-days_75122.html

Sehgal, S., & Singh, B. (2008). *Determinants of Initial and Long-Run Performance of IPOs in Indian Stock Market*. *Asia Pacific Business Review*, 4(4), 24–37. doi:10.1177/097324700800400403

Sehgal, S., & Sinha, B. K. (2013). Valuation of IPOs in India-An empirical study. *Business and Economic Research*, 3(2), 183.

Shah, A. (1995). The Indian IPO market: Empirical facts. *Social Science Research Network*, 1-29.

Shah, M. B. (2019). *Impact Of Ipo Grading On Performance Of Stock Of Selected Companies In India* (Unpublished doctoral thesis). Department of Business Studies, Sardar Patel University

Singh, S., & Singh, B. (2008). Oversubscription and IPO underpricing: evidence from India. *The ICFAI Journal of Applied Finance*, 14(12), 65-73

Sharma, S. K., Mittal, S., Gupta, N. K., (2013). Post-issue Performance of IPOs in India. *International Journal of Financial Management*, 3(1), 19-30. <http://ssrn.com/abstract=2245410>

CHAPTER 6

COMPARATIVE PERFORMANCE OF IPOs ACROSS DIFFERENT PERIODS

This chapter focuses on a comparative analysis of IPOs during the listing day, very short run, short run, medium run, long run, and very long run. In section 6.1, the study assesses the pricing performance of IPOs listed during 1999-2019, based on selected factors like:- industry, lead time, issue price, issue size, lot size, oversubscription, listing close price, age, and face value. To analyze the performance of IPOs, the following formulas were used:

- a) Average raw return (Average RR, which shows the return of IPOs),
- b) Market-adjusted abnormal return (MAAR) - It shows the excess return earned by the IPOs in comparison to the selected relative indexes, i.e., NSE NIFTY 50 and BSE IPO
- c) Average annualized raw return (Average ARR) - which shows the average annualized raw return, which makes it more comparable
- d) Average Annualized Market-adjusted Abnormal Return (Average AMAAR) - which shows the average annualized figure of the market-adjusted relative return of the IPOs

To assess whether the returns of the IPOs and the benchmark index returns showed any significant difference during the different time frames, various hypotheses were formulated and tested using the Wilcoxon signed ranks test, as discussed in Sections 6.2 and 6.3.1. Section 6.2 of this chapter focuses on testing the hypothesis using the Wilcoxon signed ranks test to assess the performance of IPOs launched between 1999 and 2019, while Section 6.3.1 assesses the performance of IPOs launched between 2020 and 2025.

6.1- Classification of IPOs based on various factors

This section assesses the performance of IPOs based on various factors across different runs using the RR, MAAR, ARR, and AMAAR metrics.

6.1.1 Classification of IPOs based on the Type of industry

The pricing performance of IPOs was assessed during listing day, very short run, short run, medium run, long, and very long runs by classifying the IPOs according to their respective industries. The IPOs were spread across 28 sectors, which are presented in Table 6.1 below.

Table 6.1 Industry-wise Classification of IPOs

Industry		Case 1										Case 2	
		Average										Average	
	TP (Time Period)	N ₁	RR (open)	RR (Close price)	MAARs (Nifty open price)	MAARs (Nifty close price)	ARRs (open price)	ARRs (Close price)	AMAARs(Nifty open price)	AMAARs (Nifty Close price)	N ₂	MAARs (BSE close price)	AMAARs (BSE close price)
Agri. & agri. products	LD	13	28.54	34.91	24.08	31.00	636.42	687.08	557.96	620.68	12	25.13	525.55
	1W	13	NA	32.97	NA	27.99	NA	701.96	NA	616.99	12	21.61	511.52
	1M	13	NA	14.38	NA	9.93	NA	341.36	NA	262.70	12	2.89	145.86
	6M	13	NA	23.25	NA	15.43	NA	627.69	NA	479.70	12	4.45	277.69
	1y	13	NA	- 10.50	NA	-16.22	NA	-252.29	NA	-383.44	12	-21.05	-488.98
	3y	11	NA	7.81	NA	-25.51	NA	154.38	NA	-524.45	10	-12.08	-429.44
Automotive and Components industry	LD	12	8.00	7.61	2.20	2.26	215.86	260.61	176.83	233.56	11	2.22	208.13
	1W	12	NA	12.43	NA	7.16	NA	324.00	NA	292.29	11	6.11	255.00
	1M	13	NA	2.78	NA	-1.52	NA	112.94	NA	98.77	12	-2.67	58.39

	6M	13	NA	-0.07	NA	-11.67	NA	-37.59	NA	-209.40	12	-17.84	-321.07
	1y	13	NA	18.13	NA	-1.36	NA	376.90	NA	89.78	12	-22.84	-297.67
	3y	12	NA	16.19	NA	-34.61	NA	185.49	NA	-901.61	11	-69.78	-1920
Chemical	LD	10	5.20	16.86	1.42	13.29	117.25	275.34	174.28	340.51	10	5.82	221.68
	1W	10	NA	3.92	NA	-0.91	NA	87.67	NA	134.36	10	-3.58	68.32
	1M	11	NA	- 5.410	NA	-11.31	NA	16.64	NA	19.65	11	-12.73	-25.56
	6M	11	NA	9.81	NA	-0.13	NA	495.55	NA	414.42	11	-3.64	343.61
	1y	11	NA	4.99	NA	-8.74	NA	495.05	NA	320.47	11	-13.22	328.32
	3y	11	NA	90.79	NA	50.49	NA	3235.80	NA	2424.03	11	38.81	2034.94
Diversified	LD	11	24.65	21.61	22.31	19.31	614.71	589.12	588.85	565.30	11	20.60	594.21
	1W	11	NA	20.23	NA	16.93	NA	604.32	NA	548.34	11	18.55	581.33
	1M	13	NA	20.28	NA	15.60	NA	501.08	NA	401.80	13	17.57	423.45
	6M	13	NA	14.26	NA	3.36	NA	518.59	NA	251.57	13	5.98	245.30
	1y	13	NA	14.51	NA	-2.44	NA	450.88	NA	66.22	13	-1.56	-21.55
	3y	13	NA	29.35	NA	-7.17	NA	1192.68	NA	201.57	13	-5.84	57.57

Electrical & Electronics	LD	18	18.87	25.72	19.00	25.80	465.35	638.52	459.72	630.43	18	24.91	615.77
	1W	18	NA	21.56	NA	22.06	NA	495.18	NA	507.70	18	22.59	525.14
	1M	19	NA	16.50	NA	16.85	NA	359.50	NA	379.04	19	17.24	388.72
	6M	18	NA	19.85	NA	16.53	NA	341.08	NA	279.48	18	19.17	305.41
	1y	18	NA	42.87	NA	44.33	NA	679.40	NA	735.36	18	43.90	753.16
	3y	16	NA	39.86	NA	16.39	NA	1991.83	NA	1296.19	16	20.34	1085.83
FMCG	LD	21	37.27	41.13	34.82	38.20	574.47	684.22	564.76	664.52	21	39.50	654.37
	1W	21	NA	39.81	NA	29.73	NA	673.97	NA	426.19	21	39.65	710.68
	1M	22	NA	46.45	NA	36.78	NA	898.62	NA	650.42	22	43.87	872.66
	6M	21	NA	74.18	NA	58.23	NA	1660.68	NA	1297.56	21	70.16	1613.96
	1y	21	NA	56.23	NA	35.49	NA	1400.24	NA	898.24	21	50.89	1295.73
	LD	21	37.27	41.13	34.82	38.20	574.47	684.22	564.76	664.52	21	39.50	654.37
Hotels, Restaurants and Resorts	LD	9	19.85	24.88	18.50	24.13	439.09	560.84	396.65	536.36	9	22.75	513.47
	1W	9	NA	25.49	NA	23.87	NA	554.47	NA	519.08	9	22.58	493.72
	1M	9	NA	23.62	NA	20.05	NA	552.55	NA	459.07	9	16.77	365.56

	6M	9	NA	34.66	NA	27.30	NA	743.09	NA	587.25	9	26.27	500.27
	1y	9	NA	48.06	NA	36.15	NA	1035.06	NA	716.58	9	35.30	497.72
	3y	9	NA	15.79	NA	-19.56	NA	527.77	NA	-551.52	9	-20.39	-807.98
Miscellaneous	LD	10	9.57	34.20	10.68	36.07	91.81	491.75	137.35	552.81	10	34.63	500.99
	1W	10	NA	39.50	NA	40.37	NA	584.61	NA	620.13	10	22.11	244.99
	1M	12	NA	42.49	NA	42.15	NA	704.15	NA	686.33	12	25.77	348.73
	6M	12	NA	63.66	NA	57.74	NA	967.03	NA	807.05	11	61.79	964.53
	1y	11	NA	80.33	NA	68.83	NA	1220.72	NA	927.91	12	66.133	859.23
	3y	10	NA	224.69	NA	190.18	NA	4864.59	NA	3674.07	10	157.16	2282.52
Oil, Gas and Fuel	LD	8	28.30	33.68	27.09	31.84	637.35	726.54	612.83	691.05	6	19.28	515.72
	1W	8	NA	40.72	NA	37.58	NA	829.71	NA	772.05	6	15.95	421.52
	1M	8	NA	32.18	NA	30.76	NA	706.47	NA	668.22	6	16.18	421.92
	6M	8	NA	29.83	NA	34.25	NA	911.60	NA	1007.69	6	32.45	1074.72
	1y	8	NA	64.57	NA	43.74	NA	1738.48	NA	1338.73	6	14.98	845.81
	3y	8	NA	48.93	NA	5.03	NA	1279.13	NA	317.34	6	14.74	521.80

Travel, Transport and Logistics	LD	18	23.72	23.22	24.96	23.93	460.91	506.83	490.36	525.32	18	16.72	465.37
	1W	19	NA	16.68	NA	16.40	NA	483.62	NA	479.02	18	18.43	520.81
	1M	20	NA	28.47	NA	26.51	NA	974.39	NA	927.88	19	29.25	967.57
	6M	20	NA	54.44	NA	46.82	NA	1517.24	NA	1369.37	19	48.54	1417.55
	1y	21	NA	45.47	NA	25.47	NA	1388.59	NA	964.37	20	27.29	1020.09
	3y	21	NA	- 15.49	NA	-51.33	NA	-165.00	NA	-1053.71	20	-51.47	-1247.95
Banking finance	LD	14	27.45	29.56	27.24	28.94	882.64	926.32	869.33	900.84	14	29.75	924.22
	1W	14	NA	33.08	NA	32.08	NA	961.89	NA	919.84	14	33.08	950.83
	1M	14	NA	40.14 8	NA	37.56	NA	974.07	NA	907.09	14	36.86	891.12
	6M	13	NA	46.68	NA	38.60	NA	1217.27	NA	1097.50	13	39.32	1159.43
	1y	14	NA	56.94	NA	39.86	NA	1507.63	NA	1086.37	14	40.25	1056.69
	3y	14	NA	28.45	NA	-3.26	NA	626.31	NA	-309.47	14	9.28	-123.05

Industry	TP	N ₁	RR (open)	RR (Close price)	MAAR (Nifty open price)	MAAR (Nifty close price)	ARR (open price)	ARR (Close price)	AMAAR (Nifty open price)	AMAAR (Nifty Close price)	N ₂	MAAR (BSE close price)	AMAAR (BSE close price)
Non-banking finance	LD	36	18.84	21.91	19.13	22.17	514.50	574.69	523.09	585.46	36	23.37	617.21
	1W	36	NA	21.36	NA	22.00	NA	592.01	NA	602.11	36	23.14	631.49
	1M	38	NA	42.78	NA	40.67	NA	1034.79	NA	983.53	38	42.33	1021.59
	6M	38	NA	47.86	NA	42.73	NA	1299.95	NA	1159.97	38	45.71	1204.06
	1y	38	NA	58.48	NA	47.79	NA	1397.44	NA	1117.47	38	54.86	1286.03
	3y	38	NA	156.66	NA	125.21	NA	4288.99	NA	3425.99	38	109.00	2658.82
Rating & Stock Broking	LD	8	11.76	28.13	9.09	25.01	180.01	655.00	123.77	601.91	8	24.12	568.51
	1W	8	NA	36.16	NA	31.83	NA	864.64	NA	785.37	8	30.82	748.84
	1M	8	NA	37.27	NA	31.90	NA	863.096	NA	756.24	8	32.37	765.04
	6M	8	NA	29.80	NA	19.84	NA	754.29	NA	559.99	8	25.50	762.40

	1y	8	NA	46.66	NA	33.88	NA	1404.67	NA	1128.86	8	42.27	1384.27
	3y	8	NA	4.31	NA	-37.12	NA	90.94	NA	-888.33	8	-39.21	-1043.80
Civil Construction	LD	39	18.47	17.02	16.89	15.75	365.49	316.65	356.25	312.93	38	13.37	285.41
	1W	39	NA	18.04	NA	16.13	NA	347.07	NA	334.30	39	17.66	355.14
	1M	41	NA	18.38	NA	16.24	NA	359.11	NA	336.68	41	18.98	380.32
	6M	40	NA	15.34	NA	14.30	NA	354.24	NA	345.36	40	20.30	426.30
	1y	41	NA	-3.47	NA	2.34	NA	82.97	NA	191.21	41	12.02	335.90
	3y	40	NA	1.49	NA	-19.26	NA	119.24	NA	-393.52	40	-9.75	-473.20
Construction & Engineering	LD	16	22.83	36.19	21.77	34.78	415.47	732.57	406.96	718.47	16	37.00	772.56
	1W	15	NA	35.13	NA	34.12	NA	674.17	NA	661.87	15	35.35	692.37
	1M	16	NA	47.55	NA	42.09	NA	1070.66	NA	970.68	16	44.19	1021.95
	6M	16	NA	32.97	NA	23.62	NA	906.33	NA	706.49	16	29.92	850.76
	1y	17	NA	37.06	NA	24.24	NA	896.48	NA	618.52	17	32.20	823.09
	3y	16	NA	26.71	NA	-8.58	NA	190.56	NA	-546.70	16	5.46	-250.65
Residential	LD	18	11.23	12.41	10.58	12.15	231.69	290.78	223.75	288.70	18	11.56	279.69

&Commercial Construction	1W	18	NA	12.28	NA	11.81	NA	272.32	NA	268.28	18	11.24	260.90
	1M	19	NA	7.76	NA	6.77	NA	168.24	NA	154.72	19	6.75	164.87
	6M	19	NA	24.63	NA	19.03	NA	541.75	NA	415.99	19	17.53	413.09
	1y	19	NA	-1.39	NA	-5.02	NA	145.00	NA	57.89	19	2.67	209.88
	3y	19	NA	- 35.36	NA	-57.38	NA	-589.82	NA	-1080.28	19	-34.96	-682.43
Power	LD	12	19.20	22.92	19.33	23.20	286.42	354.77	284.90	355.90	11	9.35	199.41
	1W	12	NA	18.41	NA	17.42	NA	248.25	NA	223.70	11	3.99	79.14
	1M	12	NA	10.31	NA	8.68	NA	41.19	NA	4.37	11	-6.97	-160.88
	6M	12	NA	12.50	NA	8.45	NA	28.65	NA	-49.25	10	-8.47	-209.68
	1y	11	NA	16.22	NA	-2.55	NA	130.36	NA	-174.35	10	-10.41	-208.48
	3y	12	NA	24.63	NA	-30.22	NA	192.74	NA	-753.90	11	-24.74	-553.39
Entertainment	LD	18	10.94	11.87	4.78	6.00	250.97	274.98	134.85	164.35	14	17.21	437.54
	1W	18	NA	11.42	NA	10.60	NA	227.07	NA	209.43	14	11.97	270.89
	1M	19	NA	24.23	NA	22.14	NA	591.28	NA	540.42	15	29.21	656.88
	6M	19	NA	17.23	NA	11.15	NA	578.31	NA	420.12	15	18.77	500.65

	1y	19	NA	52.05	NA	28.58	NA	1228.57	NA	815.29	15	25.04	795.69
	3y	18	NA	6.75	NA	-38.96	NA	317.30	NA	-460.03	15	-37.34	-750.49
Printing Media Broadcasting	LD	16	21.93	17.46	22.04	17.65	388.78	296.75	391.27	301.25	14	15.63	307.86
	1W	16	NA	15.30	NA	14.36	NA	254.59	NA	233.58	14	7.66	107.25
	1M	16	NA	12.11	NA	11.45	NA	175.89	NA	152.54	14	5.49	40.10
	6M	16	NA	13.70	NA	6.71	NA	203.56	NA	60.78	14	-0.03	-60.42
	1y	16	NA	16.08	NA	-1.81	NA	146.40	NA	-181.87	14	-7.48	-283.07
	3y	16	NA	- 15.99	NA	-47.87	NA	-464.53	NA	-1054.82	14	-58.83	-1265.67
Garments Accessories	LD	19	4.31	-0.51	4.97	-0.02	75.92	-18.70	92.08	-5.99	19	1.87	34.36
	1W	20	NA	-0.52	NA	-0.55	NA	-14.00	NA	-13.58	20	-0.22	-10.70
	1M	21	NA	2.37	NA	0.86	NA	66.62	NA	31.07	21	2.94	75.99
	6M	20	NA	7.745	NA	5.84	NA	238.18	NA	213.65	20	10.85	324.66
	1y	21	NA	1.15	NA	-5.14	NA	63.27	NA	-47.55	21	2.80	134.10
	3y	21	NA	-4.81	NA	-28.44	NA	-79.49	NA	-641.47	21	-24.62	-728.36
Textile and Textile	LD	20	2.72	3.43	-1.03	0.34	83.36	94.89	41.82	64.07	19	2.13	84.82

products	1W	20	NA	6.74	NA	2.83	NA	161.39	NA	114.48	19	3.89	128.44
	1M	21	NA	5.73	NA	-2.04	NA	185.82	NA	74.11	20	-6.81	-1.93
	6M	21	NA	12.52	NA	1.66	NA	400.96	NA	220.56	20	3.88	285.82
	1y	20	NA	24.30	NA	1.47	NA	626.73	NA	258.34	19	4.20	328.51
	3y	20	NA	- 31.32	NA	-68.95	NA	-484.56	NA	-1281.66	19	-38.24	-639.84
Healthcare & Hospital	LD	12	16.15	8.88	15.38	8.32	436.77	269.32	409.04	246.68	12	13.22	351.72
	1W	12	NA	6.52	NA	5.97	NA	205.28	NA	185.27	12	9.90	258.23
	1M	12	NA	1.37	NA	0.43	NA	82.71	NA	59.12	12	4.03	114.83
	6M	12	NA	2.01	NA	-3.21	NA	143.37	NA	-11.78	12	0.31	24.71
	1y	12	NA	6.43	NA	-0.24	NA	239.67	NA	75.53	12	0.99	80.32
	3y	11	NA	15.79	NA	-19.55	NA	527.77	NA	-551.52	11	-20.39	-807.98
Pharma	LD	14	18.72	25.81	19.48	26.95	419.33	602.20	432.90	623.96	12	10.79	236.34
	1W	14	NA	17.45	NA	18.88	NA	432.04	NA	459.35	12	5.10	132.73
	1M	14	NA	20.61	NA	22.40	NA	494.09	NA	526.43	12	5.94	158.69
	6M	13	NA	62.25	NA	50.99	NA	1390.99	NA	1138.59	11	-4.00	30.24

	1y	15	NA	62.90	NA	48.22	NA	1327.98	NA	976.32	12	-11.82	-150.98
	3y	15	NA	47.07	NA	-8.50	NA	869.30	NA	-335.60	12	-68.05	-1475.15
Industry	TP	N ₁	RR (opening price)	RR (Closing price)	MAAR (Nifty opening price)	MAAR (Nifty closing price)	ARR (opening price)	ARR (Closing price)	AMAAR (Nifty opening price)	AMAAR (Nifty Closing price)	N ₂	MAAR (BSE closing price)	AMAAR (BSE closing price)
Metals and Metal products	LD	15	17.06	27.89	12.99	24.32	329.57	582.27	253.71	518.27	15	24.97	531.80
	1W	15	NA	38.47	NA	34.50	NA	811.24	NA	741.86	15	35.23	755.09
	1M	16	NA	12.19	NA	10.86	NA	244.91	NA	207.19	16	13.66	267.25
	6M	16	NA	-7.14	NA	-7.11	NA	-119.13	NA	-142.19	16	2.37	45.08
	1y	16	NA	25.41	NA	21.59	NA	596.58	NA	559.27	16	27.06	627.68
	3y	16	NA	-37.68	NA	-56.42	NA	-692.92	NA	-1013.97	16	-37.11	-617.286
Nonmetallic products	LD	21	16.91	8.82	18.84	11.19	336.99	228.62	366.38	266.95	21	15.32	346.36
	1W	21	NA	6.61	NA	8.23	NA	213.52	NA	240.41	21	9.60	270.38
	1M	21	NA	-3.82	NA	-3.77	NA	-9.46	NA	-5.70	21	-3.05	5.85
	6M	21	NA	-3.32	NA	-6.61	NA	-8.47	NA	9.16	21	-20.98	-40.56

	1y	20	NA	1.14	NA	0.26	NA	243.09	NA	235.96	20	6.77	355.65
	3y	19	NA	-42.57	NA	-57.83	NA	-614.38	NA	-935.56	19	-31.02	-412.66
Software and Hardware	LD	16	8.39	12.59	-9.48	-4.38	192.88	215.27	191.09	224.44	14	21.62	277.10
	1W	18	NA	22.35	NA	4.90	NA	130.64	NA	4.44	13	5.77	-42.83
	1M	17	NA	3.57	NA	-15.80	NA	-49.48	NA	-80.53	13	-2.90	-201.33
	6M	15	NA	49.79	NA	16.83	NA	660.92	NA	398.94	11	22.70	146.80
	1y	16	NA	53.35	NA	9.60	NA	933.72	NA	488.14	12	37.55	420.72
	3y	16	NA	20.46	NA	-39.25	NA	569.78	NA	-417.65	12	13.77	95.38
IT service	LD	21	21.41	16.48	21.19	16.12	392.87	274.46	386.53	265.83	19	16.92	337.60
	1W	21	NA	23.00	NA	24.54	NA	407.03	NA	442.09	19	22.48	391.06
	1M	22	NA	24.86	NA	24.94	NA	311.28	NA	321.81	19	13.73	199.43
	6M	21	NA	15.90	NA	9.55	NA	243.00	NA	127.89	18	-0.27	-27.14
	1y	20	NA	8.98	NA	-12.24	NA	154.42	NA	-258.96	17	-22.33	-493.99
	3y	20	NA	-23.19	NA	-62.62	NA	-362.97	NA	-1189.10	18	-46.65	-968.57

Internet and Telecom technology	LD	15	14.39	19.88	12.62	18.87	361.17	461.20	338.92	453.78	15	19.75	471.03
	1W	18	NA	17.08	NA	17.84	NA	377.69	NA	399.39	15	19.99	454.58
	1M	18	NA	7.21	NA	8.23	NA	168.40	NA	190.54	15	10.54	263.67
	6M	17	NA	38.35	NA	40.49	NA	1224.23	NA	1212.27	15	48.58	1293.73
	1y	18	NA	31.06	NA	33.84	NA	1033.70	NA	1018.93	15	51.70	1398.80
	3y	16	NA	25.17	NA	-2.85	NA	531.90	NA	-78.09	15	-21.07	-349.19

Source: Researcher's Calculation

Table 6.1 (pages 1–9) shows the performance of IPOs across varied sectors during different periods. On the listing day, sectors like ‘Banking-finance’, ‘Construction and Engineering’, ‘Agri. and Agri. products’, ‘Non-Banking’, ‘Oil, Fuel and Gas’, ‘Rating and Stock Broking’, FMCG, ‘Electrical and Electronics’, ‘Hotels, Restaurants & Resorts’, and show resilient performance due to increased investor demand and positive investor sentiments, with high annualized raw and market-adjusted returns. On the listing day, the ‘Garments and Accessories,’ ‘Textile and Textile Products,’ and ‘Software and Hardware’ sectors were the least performing. Chhabra (2011) examined the performance of 225 initial public offerings (IPOs) on the day of listing and found that all other sectors performed well, except the Diversified sector. According to Pandey (2010), on the first trading day, all sectors displayed strong and positive returns. Kilarahatti and Basha (2022) studied 137 Indian IPOs issued during 2016-2021 and reported that excluding the aviation industry all other sectors such as Railways, Chemical, FMCG, Service, etc recorded positive and high market-adjusted returns, indicating their strong market performance during the period.

In the very short run, the yield stabilizes across most of the sectors. In the very short run, only a few sectors showed incremental growth compared to the listing day: Miscellaneous, ‘Oil, Gas, and Fuel’, Banking-Finance, ‘Rating & Stock Broking’, and ‘Civil Construction’. On the other hand, sectors like ‘FMCG’, ‘Non-Banking’, and ‘Construction & Engineering’ showed a slight decline in the one week. Gupta (2016) studied 134 Indian IPOs launched between 2008 -2014 and found that consumer discretionary, Food, Finance, and IT yielded positive returns, while energy and telecom sectors showed negative returns. In one week, Shah (2019) reported the profitable performance of Agriculture, Construction, Chemical, Engineering, Banking, Beverages, Manufacturing, Mining, Miscellaneous, Paper, Steel, Insurance, Software, and Investment sectors, while poor performance of Engineering, Pharmaceutical, Power, Synthesis, Gems and Jewelry, Infrastructure, Real estate sectors,

In the short run (one month), ‘Software and Hardware’, ‘Non-Metallic’, Chemical, and Power sectors showed poor performance, ‘Construction and Engineering’, FMCG, Miscellaneous, Non-banking, and Banking finance showed strong performance. In

one month Shah (2019) highlighted the poor performance of the majority of sectors, such as Construction, Software, Education, Agriculture, Banking, Beverages, Healthcare, Mining, Miscellaneous, Investment, Paper, and Steel sectors, while the poor performance of Engineering, IT, Manufacturing, Pharmaceutical, Power, Communication, Synthesis, Infrastructure, Real estate sectors.

In the medium run, the yield increased for these sectors- 'Internet and Telecom', Pharmaceutical, 'Textile and Textile products', 'Garments and Accessories', Non-Metallic products, 'Metals and Metal products', 'Residential and Commercial', 'Banking and Finance', 'Non-Banking', 'Oil, Gas & Fuel', 'Miscellaneous', 'Restaurant', 'FMCG', 'Electrical & Electronics'. On the contrary, the return for these sectors declined for 'IT', 'Software & hardware', 'Healthcare and Hospital', 'Printing, Media and Broadcasting', Entertainment, Power, 'Construction and Engineering', Civil Construction, 'Rating and Stock Broking', 'Hotels and Resorts', 'Diversified', 'Chemical' sectors. Shah (2019) highlighted the strong performance of Construction, Chemical, Banking, Beverages, Healthcare, 'Miscellaneous', 'Agriculture', 'Insurance', 'Software', and 'Investment', while poor performance of 'Engineering', 'IT', 'Manufacturing', 'Mining', 'Paper', 'Power', 'Steel', 'Synthesis', 'Infrastructure', 'Real Estate', 'FMCG', 'Transportation', 'Automotive sectors' in the six months. Pandey (2010) also claimed that most of the sectors showed positive and high returns in the six months.

In the long run period, the 'Oil, Gas and Fuel' sector recorded the highest return, and the sectors like 'Banking-Finance', 'Non-Banking', 'Entertainment', 'Software and Hardware', 'Metals and Metal Products', 'Textile and Textile products', 'Construction and Engineering', 'Rating and Stock Broking', 'Travel, Transport and Logistics', 'Hotel, Restaurant and Resorts', 'Electrical and Electronics' sectors also showed positive returns. On the contrary, sectors like; IT, Pharmaceutical, Healthcare, 'Garments and Accessories', 'Printing, Media and Broadcasting', Power, 'Residential Construction', Diversified, Chemical, 'Automotive and Auto Components', and 'Agri. and Agri. Products' and 'Civil Construction' showed low and negative returns. Narendrasinh (2018), the Pharmaceutical sector showed strong performance over one year, while sectors like 'Electrical and Engineering', 'Banking and Finance', 'Chemical',

‘Computer & IT’, ‘Construction and Realty’, and ‘Other Apparel & Textile’ underperformed. In contrast, Shah (2019) identified Chemical, Finance & Banking, Mining, Education, and Agriculture as having favorable long-term performance, while Construction, Engineering, Information Technology, Textile & Synthetic, Automobile, Paper & Pulp, and Real Estate faced unfavorable results. Pandey (2010), analyzing the performance of 76 IPOs between 1993 and 2010, found that sectors like Banking, Software, Pharmaceuticals, Telecommunications, Entertainment, Chemicals, Engineering, and Construction performed satisfactorily.

In the very-long run, ‘Internet and telecom technology’, IT, Non-metallic, ‘Metals and Metal products’, Pharmaceutical, ‘Healthcare and hospital’, ‘Textile and Textile products’, Garments, ‘Printing, Media and Broadcasting’, Power, ‘Residential Construction’, ‘Banking Finance’, ‘Travel, Transport and Logistics’, Diversified, FMCG, ‘Automotive and auto components’, ‘Agri. and agri. Products yielded negative returns. Only a few sectors still showed positive performance, which was ‘Construction and Engineering’, ‘Non-Banking’, ‘Oil, Gas and Fuel’, ‘Hotels, Resorts & Restaurants’, and Chemicals. Pandey (2010) analyzed the long-run performance (third year post-IPO) of 76 IPOs launched between 1993 and 2010, finding dissatisfactory results across all sectors, with returns declining in comparison to the first year after the IPO. Parab (2019), mentioned in their study that, in the long run period, the apparel and accessories sector showed significantly higher returns in comparison to the Banking and Finance service sector, followed by Utilities, Realty, and the construction and engineering sector.

The ‘Miscellaneous’ and ‘Non-Banking’ sectors showed the strongest performance across all the runs. These two sectors showed progressive/incremental performance, with Miscellaneous having the highest and the Non-Banking sector having the second highest return. It was also observed that the IPOs showed the strongest performance in the medium run (six-month period), as most of the sectors showed high and positive returns. This is because there is high excitement around the select IPOs during the listing day, very short run and short run, which tends to settle in the medium run as the IPOs show their real market performance. As IPOs transition from the medium run to

the long and very long run, most IPOs showed declining performance however, the Non-banking and the miscellaneous sectors had high and positive returns.

6.1.2 Classification of IPOs based on the Lot size of the IPOs

This section analyses the effect of lot size on the pricing performance of the IPOs during different periods. Table 4.2 shows the pricing performance of IPOs based on the lot size of the IPOs

Table 6.2 Classification of IPOs based on lot size

		Case 1										Case 2	
			Averages									Averages	
Lot size (shares)	TP (Time Period)	N ₁	RR (open)	RR (Close price)	MAAR (Nifty open price)	MAAR (Nifty close price)	ARR (open price)	ARR (Close price)	AMAAR (Nifty open price)	AMAAR (Nifty Close price)	N ₂	MAAR BSE close price	AMAAR (BSE close price)
0-25	LD	122	19.31	21.39	18.48	20.66	407.05	450.71	402.41	448.66	120	19.68	436.97
	1W	121	NA	17.22	NA	16.22	NA	389.27	NA	383.89	119	16.23	383.23
	1M	121	NA	20.47	NA	18.74	NA	411.63	NA	384.81	120	19.47	394.43
	6M	119	NA	25.43	NA	19.79	NA	615.43	NA	496.65	118	20.94	500.74
	1y	119	NA	14.57	NA	8.46	NA	341.25	NA	198.17	118	273.53	12.62
	3y	121	NA	-6.33	NA	-32.95	NA	153.58	NA	-512.50	120	-27.13	-622.23
25-50	LD	114	18.40	21.67	16.03	19.30	417.01	492.96	372.54	448.51	114	19.92	460.78
	1W	115	NA	30.32	NA	28.20	NA	620.03	NA	602.57	115	28.68	598.66
	1M	115	NA	19.45	NA	17.38	NA	448.12	NA	397.91	115	17.38	397.85
	6M	113	NA	32.18	NA	27.02	NA	790.75	NA	669.86	113	28.41	699.14
	1y	114	NA	33.68	NA	21.07	NA	832.36	NA	561.76	114	602.89	22.68
	3y	112	NA	-7.68	NA	-37.00	NA	32.93	NA	-678.60	129	-28.51	-644.50
50-100	LD	161	14.97	20.13	13.92	19.44	306.90	425.68	310.68	437.39	151	17.82	404.90

	1W	161	NA	16.17	NA	12.87	NA	367.13	NA	319.50	150	11.61	298.05
	1M	161	NA	16.34	NA	13.37	NA	370.23	NA	329.50	151	11.75317	307.18
	6M	158	NA	25.37	NA	17.34	NA	586.94	NA	449.60	148	15.462	432.42
	1y	133	NA	24.18	NA	12.91	NA	635.17	NA	399.21	128	540.69	19.19
	3y	129	NA	31.12	NA	0.38	NA	866.08	NA	152.46	125	13.36	285.06
>100	LD	53	20.50	15.63	19.97	15.05	416.73	292.67	406.22	280.23	52	11.79	248.92
	1W	53	NA	12.74	NA	11.06	NA	267.63	NA	235.97	52	11.56	251.61
	1M	53	NA	11.22	NA	7.64	NA	207.57	NA	134.92	52	1.66	50.21
	6M	53	NA	12.71	NA	6.175	NA	263.88	NA	141.67	52	3.026	130.49
	1y	78	NA	51.79	NA	31.34	NA	1053.69	NA	732.12	72	422.26	13.87
	3y	79	NA	97.67	NA	47.28	NA	2162.64	NA	1146.59	73	35.48	757.38

Source: Researcher's Calculation

On the listing day, the IPOs falling in the 20-50 shares lot size yielded the highest return with RR close = 21.67% and AMAAR close = 448.51, indicating their high demand and affordability. The performance of the 0-25 lot size is also close to the 20-50 lot size which is then followed by the 50-100 and >100 categories respectively.

In the very short run also the performance of the 20-50 is the strongest indicating the continued investor demand and interest. The 0-20 lot size category showed a slight decline in the raw and market-adjusted returns whereas the large lot size category showed slight improvement.

In the short run, the 20-50 category still showed the highest AMAAR values, followed by the 0-20 category, 50-100, and >100 categories respectively. The high returns of the 20-50 category show the continued interest of the investors while the declining return of large lot-sized IPOs reflects the reassessment of share value by the investors.

In the medium run, all lot size categories showed strong performance. The larger lot size categories, which failed to deliver returns as high as the mid lot sized category showed remarkable improvement in the long run period. However, the lot size 20-50 again recorded the highest annualized market-adjusted return.

In the long run, the lot size >100 recorded the highest annualized market-adjusted return in the one-year period. The 25-50 category also recorded an incremental return however it was not the highest.

In the very long run, the 0-25 and the 25-50 categories showed negative returns while the 50-100 and >100 showed positive returns. In the very long run, the 0-25 and the 25-50 categories showed negative returns while the 50-100 and >100 showed positive returns. In the medium run, all the lot size categories recorded their strongest performance, reflecting the stabilization of IPO returns after the initial post-listing excitement. The medium run shows the actual performance of the IPOs as the listing, very short run, and short run period are highly influenced by the strong investor enthusiasm. In the medium run the larger lot sizes normalized and the mid lot size - still showed strong performance.

6.1.3 Classification of IPOs based on the Issue size/ offer size of the IPOs

This section analyses the effect of issue size on the pricing performance of the IPOs during different periods Table 6.3 shows the performance of IPOs based on the offer size of the IPOs.

Table 6.3 Classification of IPOs based on issue size/ offer size

		Case 1										Case 2	
			Averages									Averages	
Issue size (Cr.)	TP	N ₁	RR (open)	RR (Close price)	MAAR (Nifty open price)	MAAR (Nifty close price)	ARR (open price)	ARR (Close price)	AMAAR (Nifty open price)	AMAAR (Nifty Close price)	N ₂	MAAR BSE close price	AMAAR (BSE close price)
10-100	LD	153	18.87	23.67	16.92	21.98	327.39	427.83	320.15	425.52	146	21.52	413.57
	1W	149	NA	22.91	NA	20.68	NA	416.48	NA	405.88	142	19.49	379.90
	1M	149	NA	16.93	NA	13.51	NA	298.89	NA	272.71	142	10.95	217.76
	6M	145	NA	24.47	NA	17.47	NA	487.34	NA	388.81	138	15.46	289.55
	1y	156	NA	38.67	NA	22.92	NA	845.67	NA	605.36	145	17.99	539.19
	3y	152	NA	42.14	NA	0.83	NA	979.27	NA	258.60	140	18.45	481.71
100-400	LD	132	17.82	21.09	15.96	19.25	330.83	398.95	300.21	368.19	126	16.36	315.06
	1W	132	NA	22.12	NA	20.52	NA	411.51	NA	385.83	126	16.60	315.98

	1M	133	NA	21.79	NA	19.24	NA	407.14	NA	358.66	127	16.55	315.36
	6M	130	NA	29.52	NA	22.95	NA	560.46	NA	435.39	124	25.63	496.31
	1y	135	NA	30.34	NA	19.62	NA	582.12	NA	390.76	129	23.84	468.40
	3y	134	NA	3.01	NA	-26.44	NA	122.39	NA	- 480.79	129	-13.61	-294.58
400-1000	LD	99	15.79	15.80	15.76	15.78	458.03	458.05	457.04	457.58	95	17.17	493.57
	1W	99	NA	14.719	NA	14.82	NA	450.12	NA	452.14	95	15.53	636.21
	1M	99	NA	13.86	NA	13.25	NA	441.16	NA	413.46	95	14.74	438.93
	6M	99	NA	21.49	NA	18.55	NA	717.83	NA	622.15	95	20.58	652.76
	1y	100	NA	19.51	NA	12.96	NA	652.36	NA	436.75	96	14.78	475.86
	3y	100	NA	16.20	NA	-14.85	NA	664.15	NA	- 299.47	96	-20.30	-623.68
>1000	LD	71	13.35	13.63	9.30	9.95	406.08	433.64	399.21	437.12	70	15.42	442.52
	1W	75	NA	14.46	NA	8.49	NA	419.66	NA	320.90	74	16.50	451.26
	1M	75	NA	13.62	NA	7.08	NA	393.28	NA	306.84	74	15.40	397.41

	6M	75	NA	22.96	NA	11.82	NA	723.78	NA	520.58	74	19.88	612.97
	1y	71	NA	13.98	NA	-1.02	NA	538.00	NA	240.56	70	11.00	376.86
	3y	72	NA	34.48	NA	2.66	NA	1276.5 6	NA	361.60	70	-10.34	-251.38

Source: Researcher's Calculation

Table 6.3 evaluates the pricing performance of IPOs by measuring their return across varied issue size groups during different periods. On the listing day, IPOs having a smaller issue size recorded the highest open and close raw return values and strong annualized raw returns; the 40-1000 Cr. issue size category recorded the highest annualized values, although its raw return was not as high as the 10-100 Cr. category. The greater than >1000 category also showed the second highest AMAAR values although the immediate returns were not that high as compared to the small-sized issues. The mid-sized IPOs showed the strongest performance overall based on annualized return values in both Cases 1 and 2. Kiran (2011) also studied the performance of IPOs based on the issue size and revealed that the mid-sized IPOs performed better than the big-sized and the small-sized IPOs stating that the 120-180 lakh shares as the ideal size

In the very short run, the smaller-sized IPOs show the highest raw return (calculated on close price) while the mid-sized IPOs show the highest annualized returns. The other two categories 100-400 and >1000 categories also showed incremental returns as compared to the listing day returns. In the short run, the 400-1000 recorded the highest annualized and market-adjusted returns which indicates its persistent strong performance and continued investor interest. All the other issue size categories also recorded positive return and a slight decline compared to the listing day's raw and market-adjusted returns. Narendrasinh (2018) found that IPOs (Initial Public Offerings) with an offer size ranging between Rs. 101 to Rs. 125 Crore had the highest initial raw return and market-adjusted return, while Rs. 51 to 75 and more than Rs. 125 Crore offer size categories underperformed in the very short and the short run.

In the medium run, the larger IPOs record the highest AMAAR values indicating increased stability, liquidity, and long-term investor interests. The mid-sized IPOs also perform considerably well, with their AMAAR values approaching those of the larger IPOs reflecting the balanced interest of the institutional as well as retail investors. The Rs. 10-100 and Rs. 100- 400 categories show high raw and market-adjusted returns however the annualized raw and market-adjusted return did not surpass the mid and the large-sized IPO categories. In the long run, the small-sized

IPOs (Rs. 10-100 Cr.), showed the highest raw and annualized market-adjusted values. The Rs. 400-1000 category also continues to deliver high and positive raw and market-adjusted returns, indicating the continued investor interest and balanced pricing strategy. Narendrasinh (2018) highlighted that the offer size categories of Rs. 26-50 and Rs. 76-100 showed profitable performance in comparison to the other categories. Chhabra (2011) noted that all the offer size categories yielded positive returns in the medium and long run; however, issues with larger issue sizes yielded higher returns than smaller issues.

In the very long run, only the Rs. 10-100 Cr. issue size category showed positive performance while the annualized value for all other categories showed negative values. The strong performance of the smaller IPOs suggests the rapid market adaptability and continued interest of the retail investors. The large-sized IPOs showed mixed results based on the benchmark used. On comparing the performance of the large-sized IPOs to the NSE NIFTY 50 index the IPOs showed strong performance however on comparing the performance of the large IPOs with the BSE IPO index the IPOs showed poor performance. This differential performance shows that IPOs fared well in comparison to the broader market however; the IPOs show relatively poor performance in comparison to their IPO-specific index. Narendrasinh (2018) highlighted the poor performance of all the issue size categories in the long run however, the less than Rs. 25 Crore shows the poorest return. Chhabra (2011) noted that all the offer size categories yielded positive returns in the three years; however, issues with larger issue sizes yielded higher returns than smaller issues.

It was noted that the returns for all issue size categories peaked during the medium run therefore it is the best-performing IPO period. For all the IPO categories the annualized raw and the market returns showed a positive increment in the six months, indicating the stabilization of returns as the speculative excitement around the IPOs settled.

6.1.4 Classification of IPOs based on the issue Face value of the IPOs

This section analyses how IPOs performed based on their face value. Table 6.4 shows the performance of IPOs based on the face value of the IPOs.

Table 6.4 Classification of IPOs based on face value

		Case 1										Case 2	
			Averages									Averages	
Face value (Rs.)	TP(Time Period)	N ₁	RR (open)	RR (Close price)	MAAR (Nifty open price)	MAAR (Nifty close price)	ARR (open price)	ARR (Close price)	AMAAR (Nifty open price)	AMAAR (Nifty Close price)	N ₂	MAAR (BSE close price)	AMAAR (BSE close price)
1-9	LD	148	22.48	27.22	17.55	22.50	429.15	537.32	397.33	510.18	133	22.63	470.29
	1W	153	NA	28.14	NA	23.56	NA	524.36	NA	487.08	133	21.78	446.50
	1M	148	NA	25.01	NA	19.25	NA	491.46	NA	444.87	134	20.11	402.14
	6M	146	NA	40.19	NA	32.00	NA	857.61	NA	701.97	133	28.83	650.54
	1y	146	NA	54.11	NA	35.77	NA	1128.65	NA	848.35	132	34.70	794.17
	3y	150	NA	55.17	NA	15.47	NA	1177.26	NA	369.33	133	17.94	250.91
>9	LD	311	15.29	16.59	14.95	16.39	350.04	379.52	347.12	379.31	305	16.25	384.09
	1W	314	NA	16.03	NA	15.14	NA	373.49	NA	353.10	308	15.43	371.94
	1M	311	NA	13.63	NA	11.83	NA	325.64	NA	284.59	306	11.84	295.36

	6M	298	NA	17.96	NA	11.37	NA	481.08	NA	367.27	300	14.54	411.49
	1y	307	NA	16.43	NA	6.62	NA	464.87	NA	250.40	302	10.03	321.56
	3y	318	NA	8.51	NA	-22.72	NA	463.69	NA	-291.01	313	-15.14	-314.26

Source: Researcher's Calculation

The IPOs having a face value of Rs. 1-9 showed relatively higher raw and annualized market-adjusted returns on the listing day. The IPOs in both the categories outperformed the NSE NIFTY 50 and the BSE IPO index on the listing day however, the Rs. 1-9 face value category showed the highest values across all the performance metrics.

In the very short run, the raw return of the Rs. 1-9 category slightly rose from the listing day but the Avg. AMAAR values showed a slight decline as compared to the listing day. The IPO category having a face value greater than Rs. 9 also showed higher returns in comparison to the benchmark indexes (NIFTY 50 and BSE IPO index) which are reflected by the positive Avg. MAAR and Avg. AMAAR values in Cases 1 and 2. In comparison to the listing day performance, the returns in the one week slightly declined for the Rs. 1-9 category.

In the short run, the return for all the IPO categories is positive; however, in comparison to the listing day and the very short run period, it declined. In the one month, also the Rs. 1-9 category showed relatively higher returns as compared to the greater than Rs. 9 category. In addition, the IPOs of both categories outperformed the benchmark indexes in both cases.

In the medium run, the performance of both the categories recorded the highest performance of both categories. The Rs. 1-9 category still overperformed in comparison to the greater than Rs. 9 category. The IPOs in both categories outperformed the benchmark indexes in both cases.

In the one-year period i.e. the long run, the IPO category of the Rs. 1-9 category showed incremental gains in comparison to the six-month period and outperformed the greater than Rs. 9 categories in terms of raw and the annualized market-adjusted returns. The greater than Rs. 9 categories showed a slight decline in raw and market-adjusted returns in comparison to the bi-annual returns (medium run).

In the very long period i.e. three years, the Rs. 1-9 category continued to outperform the greater than Rs. 9 face value category, depicting the consistency in returns, effective pricing strategy, market adaptability, and continued investor interest. The

IPO category of face value greater than Rs. 9 could not sustain the returns in the very long run, which is evident from the negative MAAR and AMAAR values.

The Rs. 1-9 category consistently outperformed the greater than Rs. 9 categories in the run, indicating continued investor interest, market adaptability, and effective pricing strategy. As the IPOs transitioned from the short run to the medium run, both the IPO categories recorded remarkable enhancement in the raw as well as the market return, projecting the medium run as the best-performing period.

6.1.5 Classification of IPOs based on Oversubscription

This section analyses the performance of IPOs as per their oversubscription rate which was measured in number of times. Table 6.5 shows the performance of IPOs based on the oversubscription rate.

Table 6.5 Classification of IPOs based on Oversubscription

oversubscription (times)		Case 1										Case 2	
			Averages									Averages	
	TP (Time Period)	N ₁	RR (open)	RR (Close price)	MAAR (Nifty open price)	MAAR (Nifty close price)	ARR (open price)	ARR (Close price)	AMAAR (Nifty open price)	AMAAR (Nifty Close price)	N ₂	MAAR BSE close price	AMAAR (BSE close price)
1-2	LD	107	-0.27	-1.02	-0.69	-1.23	- 22.72	-19.67	-19.78	-10.94	107	-0.92	-7.31
	1W	107	NA	9.079	NA	5.88	NA	157.28	NA	133.23	106	8.83	138.80
	1M	107	NA	-8.46	NA	-10.65	NA	-154.36	NA	-192.93	107	-11.05	-207.13
	6M	104	NA	-4.17	NA	-8.97	NA	-59.37	NA	-158.22	104	-8.33	-140.26
	1y	103	NA	-1.73	NA	-11.33	NA	29.68	NA	-169.79	103	-7.84	-110.33
	3y	103	NA	-20.13	NA	-52.03	NA	-441.55	NA	-1238.26	103	-47.87	-1334.74
2-5	LD	90	8.69	5.74	8.96	6.22	177.1 5	120.74	191.19	139.10	86	7.52	174.38

	1W	91	NA	7.55	NA	6.30	NA	150.59	NA	142.93	88	6.17	135.60
	1M	91	NA	-1.78	NA	-2.76	NA	-22.17	NA	-36.49	88	-1.91	-17.27
	6M	89	NA	11.25	NA	6.63	NA	260.63	NA	178.02	86	7.040	204.61
	1y	91	NA	8.95	NA	-2.47	NA	206.09	NA	-4.31	88	-3.86	26.34
	3y	85	NA	44.25	NA	9.24	NA	1393.61	NA	629.69	82	14.48	570.17
5-20	LD	94	13.02	17.25	11.53	15.93	281.2 7	365.32	263.37	350.52	93	14.14	298.51
	1W	93	NA	23.41	NA	21.48	NA	473.95	NA	468.36	91	19.78	442.63
	1M	93	NA	16.47	NA	14.47	NA	333.51	NA	300.21	92	14.03	274.87
	6M	93	NA	11.29	NA	6.11	NA	279.76	NA	166.87	92	9.48	231.97
	1y	93	NA	20.60	NA	9.36	NA	452.06	NA	214.14	92	12.90	272.05
	3y	91	NA	-12.23	NA	-42.55	NA	-191.74	NA	-922.85	90	-32.81	-890.87
20-50	LD	70	30.03	36.32	28.37	34.55	615.5 8	744.47	585.93	712.89	65	29.42	650.05
	1W	71	NA	28.75	NA	26.74	NA	602.68	NA	567.79	66	21.67	465.21

	1M	71	NA	39.28	NA	36.91	NA	813.13	NA	772.21	66	31.63	702.46
	6M	69	NA	48.71	NA	42.89	NA	1133.60	NA	1016.02	64	40.29	985.50
	1y	73	NA	54.22	NA	44.25	NA	1259.56	NA	1070.27	68	47.25	1145.33
	3y	69	NA	24.01	NA	-2.31	NA	732.29	NA	173.64	66	14.11	424.82
>50	LD	66	46.85	54.39	46.48	54.25	1165.68	1323.75	1156.63	1319.32	66	54.22	1323.18
	1W	66	NA	36.14	NA	33.98	NA	986.23	NA	914.74	66	36.82	1017.16
	1M	66	NA	57.38	NA	55.08	NA	1356.96	NA	1274.93	66	56.30	1342.69
	6M	66	NA	78.16	NA	70.38	NA	1945.10	NA	1756.91	66	70.91	1786.59
	1y	63	NA	61.48	NA	55.17	NA	1647.50	NA	1421.74	63	60.75	1540.33
	3y	66	NA	68.02	NA	36.40	NA	2007.79	NA	1160.97	66	41.14	1078.61

Source: Researcher's Calculation

Table 6.5 shows the pricing performance of IPOs according to the oversubscription rate. It is evident from Table 6.5 that the more oversubscribed IPOs showed better performance in comparison to the IPOs, which had a lower oversubscription ratio. This also highlights the pricing performance of the IPO is directly proportional to the rate of oversubscription on the listing day of the IPO. The greater than 50 times oversubscription category showed the highest performance while the 1-2 times showed the poorest returns (Avg. RR, Avg. MAARs, Avg. ARRs, and Avg. AMAARs values). Chhabra (2011) and Chauhan (2011) also highlighted the existence of a monotonic relation between the oversubscription ratio and the yield of the IPOs. IPOs falling in the higher oversubscription category recorded higher returns while the IPOs falling in the lower oversubscription category showed relatively lower returns.

As the IPOs transitioned to the one week the performance of the IPOs in the low and medium oversubscription categories showed considerable improvement however, the raw and the market-adjusted return for the highly oversubscribed category declined in comparison to the listing day gains. The gains of the highly oversubscribed categories (20-50 and >50 times) were considerably higher than the lesser and moderately oversubscribed categories (1-2, 2-5, 5-20 times). In the short run period, the 1-2, 2-5, and 5-20 times categories showed a considerable decline in their returns while the 20-50 and >50 categories showed incremental performance as compared to the very short run. The 20-50 and >50 times categories showed strong performance in comparison to the benchmark index.

In the medium run, the loss percentage for the 1-2 times oversubscription category declined however it still showed negative returns. The 2-5 times oversubscription category showed a profitable yield in comparison to the yield of the short-run period which was negative. The 5-20 times category returns declined in comparison to the short run while the return for the 20-50 and >50 times oversubscription categories showed higher returns in comparison to the short run period. Returns for all the categories except the 1-2 times showed profitable raw and market-adjusted returns.

During the long run, the >50 showed the strongest performance which was followed by the 20-50 times category. The 1-2 and the 2-5 times categories showed negative market-adjusted values and low raw return indicating the poor performance of these IPOs. In the very long run, the 2-5 and the >50 categories showed positive raw and market-adjusted returns whereas the other categories recorded negative values. The >50 categories continued to lead by showing high raw and market-adjusted returns.

The >50 times oversubscription category leads the performance in all runs, indicating the highly oversubscribed IPOs as the best-performing IPOs. The IPOs of all the oversubscription categories showed the best performance during the medium run. Chhabra (2011) found the IPOs falling in the 10-20 times oversubscription category yielding the highest return in comparison to the 1-10, 20-40, and >40 categories in all the runs.

6.1.6 Classification of IPOs based on Lead-time

This section analyses the return of IPOs based on their lead-time also termed as listing delay. Table 6.6 shows the yield of IPOs according to the lead-time of the IPOs.

Table 6.6 Classification of IPOs based on lead-time

Lead time (days)		Case 1										Case 2	
			Averages									Averages	
	TP (Time Period)	N ₁	RR (open)	RR (Close price)	MAAR (Nifty open price)	MAAR (Nifty close price)	ARR (open price)	ARR (Close price)	AMAAR (Nifty open price)	AMAAR (Nifty Close price)	N ₂	MAAR BSE close price	AMAAR (BSE close price)
0-15	LD	156	11.84	13.62	11.64	13.62	408.69	466.71	403.66	468.07	155	13.68	469.27
	1W	156	NA	14.48	NA	13.44	NA	489.61	NA	457.44	155	14.84	501.25
	1M	171	NA	12.87	NA	11.18	NA	460.38	NA	401.08	169	12.86	445.75
	6M	167	NA	24.54	NA	21.46	NA	869.82	NA	751.08	166	24.04	807.93
	1y	171	NA	27.93	NA	22.99	NA	939.69	NA	741.46	168	26.44	816.95
	3y	162	NA	46.14	NA	14.37	NA	1605.20	NA	497.39	161	-2.86	-222.67
15-20	LD	153	17.95	18.94	16.99	18.03	355.22	381.15	338.18	364.22	144	16.99	343.27
	1W	154	NA	16.75	NA	16.17	NA	335.12	NA	323.99	145	13.50	270.22
	1M	158	NA	22.18	NA	20.25	NA	450.85	NA	413.08	149	18.63	382.25
	6M	156	NA	28.51	NA	22.93	NA	765.96	NA	626.03	147	22.10	447.15
	1y	155	NA	33.15	NA	18.29	NA	655.19	NA	361.13	146	13.85	281.82
	3y	97	NA	18.37	NA	-18.55	NA	367.85	NA	-403.63	93	-12.03	-251.15
21-50	LD	142	23.65	28.66	22.60	27.85	382.03	467.25	365.49	454.55	133	26.04	451.72

	1W	144	NA	29.61	NA	26.22	NA	480.92	NA	443.52	134	25.05	426.20
	1M	143	NA	27.75	NA	25.44	NA	442.98	NA	404.51	133	19.81	341.16
	6M	141	NA	26.95	NA	20.93	NA	443.62	NA	336.41	130	17.22	299.33
	1y	142	NA	32.29	NA	19.62	NA	556.34	NA	338.42	132	22.00	388.84
	3y	197	NA	7.76	NA	-25.00	NA	152.08	NA	-389.60	184	-1.83	-28.35
>50	LD	9	14.71	10.91	-42.84	-46.78	8.423	7.95	-9.86	-10.79	7	7.65	-3.85
	1W	13	NA	18.13	NA	-0.43	NA	20.15	NA	20.90	13	5.17	-6.25
	1M	12	NA	-11.08	NA	-57.25	NA	-44.87	NA	-51.41	8	-14.04	-27.42
	6M	11	NA	-30.03	NA	-83.52	NA	-102.79	NA	-103.35	8	-42.05	-53.38
	1y	13	NA	-40.80	NA	-98.70	NA	-153.43	NA	-133.70	8	-90.36	-97.37
	3y	12	NA	16.29	NA	-42.43	NA	-136.89	NA	-151.36	8	-54.44	-71.40

Source: Researcher's Calculation

The IPOs having short and medium lead-time categories performed well on the listing day however, the IPO with larger lot sizes showed negative returns on the listing day. The shorter lead-time category (0-15 days) showed the highest Avg. AMAAR returns, which was followed by the 21-50 days lead-time category. Kiran & Chopram Phil, (2011), reported strong performance of IPOs having a lead time of less than or equal to 15 days as compared to the IPOs falling in the lead time range of 15-30 days. On analyzing 251 Indian IPOs, Chhabra (2011) found that IPOs falling in the category of 30-60 days yielded the highest return which was followed by the IPOs falling in the >120 days category. Bantwa (2022) also assessed the performance of 411 IPOs launched from 2007 to 2016 and highlighted that IPOs having a listing delay of 6-10 days showed the highest rate of return on the listing day, while IPOs having lead time greater than 15 days showed negative return and IPOs having lead time between 26-30 days showed the worst performance.

In the very short run, also, the same pattern followed the short and medium lead-time categories showed strong and positive market performance while the larger lot size failed to deliver positive MAAR values, indicating its poor performance in comparison to the NSE NIFTY 50 and the BSE IPO benchmark indexes. The 0-15 days again proved to be the strongest performing lead-time category in the very short run, followed by the 21-50 days category. Kiran & Chopram Phil, (2011), reported strong performance of IPOs having a lead time of less than or equal to 15 days as compared to the IPOs falling in the lead time range of 15-30 days. Bantwa (2022) found that IPOs with listing delay in a range of 6 to 10 days have provided the highest rate of return in the very short run, while the 26-30 days category showed the least return.

In the short run period, the short and medium lead-time category continues to deliver higher annualized market-adjusted returns indicating the continued market demand and interest of the investors. The longer lead-time category delivered negative returns. Bantwa (2022) also highlighted that the IPOs with listing delay in a range of 6 to 10 days have provided the highest rate of return in the short run, while the 26-30 days category showed the least return.

In the medium run, the shorter lead-time category i.e. 0-15 outperformed all the other lead-time categories while the >50 days category still showed negative returns. It was also observed that the 0-15 days and the 15-20 lead time categories showed incremental returns as compared to the listing day, very short run, and the short run. The findings of Bantwa (2022) highlighted that IPOs with listing delay in a range of 6 to 10 days have provided the highest rate of return in the medium run, while the 26-30 days category showed the least return.

The performance of the shorter lead-time category i.e. 0-15 days again outperformed the returns of other categories in the long run period. For the 15-20, 20-50 days categories also showed positive yield however, the percentage of return slightly increased for the 20-50 days category and 20-50 days category it declined in comparison to the six-month period. The >50 days lead time category showed a huge loss percentage in all the performance metrics. Chhabra (2011), also highlighted in their study, that the IPOs, which had lesser listing delay showed the best long-run performance.

In the very long run period, the raw return for 0-15, 15-20, and 21-50 all showed positive values however, the market adjusted return for 15-20, 21-50 showed negative returns, indicating the poor performance of these categories in comparison to the benchmark index. The 0-15 category proved to have the most profitable performance in comparison to the other categories while the >50 category turned out to be the worst performing category. Bantwa (2022) also assessed the performance of 411 IPOs launched from 2007 to 2016 and highlighted that IPOs having a listing delay of 6-10 days showed the highest rate of return in the long run, IPOs having lead time greater than 15 days showed negative return and IPOs having lead time between 26-30 days showed the worst performance.

The 0-15 category showed the best performance in all the runs indicating that the IPOs of this category showed market resilience, effective pricing, and continued investor interest. In the medium run, the return for all the categories showed incremental returns except the >50 category therefore the medium run proves to be the most efficient IPO performance period. Ghosh (2008) mentioned that lead time

significantly affects the underpricing phenomenon, as a longer time lag between the offer date and the issue date allows for greater information dissemination. The findings of Ghosh (2005), Singh and Singh (2008), and Sehgal&Sinha (2013) emphasized the effect of listing delay on IPO returns, concluding that IPOs with longer lead times exhibited higher underpricing.

6.1.7 Classification of IPOs based on Issue-Price of the IPOs

This section analyses the performance of IPOs based on their issue price. Table 6.7 shows the performance of IPOs in relation to the Issue price of the IPOs.

Table 6.7 Classification of IPOs based on the Issue Price

		Case 1										Case 2	
			Averages									Averages	
Issue price (Rs.)	TP (Time Period)	N ₁	RR (open)	RR (Close price)	MAAR (Nifty open price)	MAAR (Nifty close price)	ARR (open price)	ARR (Close price)	AMAAR (Nifty open price)	AMAAR (Nifty Close price)	N ₂	MAAR BSE close price	AMAAR (BSE close price)
10-50	LD	39	27.15	24.63	26.11	23.59	543.66	447.27	520.08	423.61	35	17.39	350.59
	1W	41	NA	23.29	NA	21.10	NA	451.11	NA	404.14	35	14.44	324.20
	1M	44	NA	35.26	NA	30.66	NA	719.92	NA	620.40	38	23.78	552.10
	6M	40	NA	12.09	NA	5.95	NA	234.24	NA	118.74	36	-0.66	38.52
	1y	37	NA	45.82	NA	33.76	NA	1071.30	NA	847.81	43	33.10	872.28
	3y	39	NA	80.70	NA	32.96	NA	2078.93	NA	1039.09	35	48.92	1421.75
50-100	LD	75	16.48	13.55	15.42	12.94	263.38	217.37	266.39	228.62	70	13.04	218.58
	1W	76	NA	8.08	NA	7.74	NA	119.99	NA	132.75	70	7.72	123.68

	1M	79	NA	2.20	NA	-0.05	NA	54.26	NA	34.92	73	0.01	23.03
	6M	73	NA	0.51	NA	-6.31	NA	0.42	NA	-87.53	67	-5.64	-70.81
	1y	71	NA	19.16	NA	2.08	NA	392.38	NA	124.36	77	5.04	187.51
	3y	74	NA	32.14	NA	-13.20	NA	579.67	NA	-195.47	69	6.71	13.76
100-150	LD	79	14.21	20.34	13.49	19.96	285.48	417.04	295.09	432.95	75	21.42	464.32
	1W	81	NA	23.39	NA	22.92	NA	490.14	NA	504.27	76	23.64	522.28
	1M	83	NA	25.79	NA	23.72	NA	563.89	NA	546.74	78	24.90	571.53
	6M	77	NA	43.56	NA	33.56	NA	902.30	NA	737.41	73	31.98	709.16
	1y	79	NA	51.07	NA	37.84	NA	1077.8 5	NA	866.56	84	30.48	727.03
	3y	80	NA	64.48	NA	30.81	NA	1355.2 5	NA	689.48	76	34.72	643.23
150-200	LD	62	18.53	23.74	15.50	20.61	373.76	496.87	316.68	437.71	60	17.39	356.30
	1W	62	NA	21.38	NA	20.11	NA	424.57	NA	400.20	60	14.59	282.46
	1M	66	NA	20.54	NA	19.34	NA	448.93	NA	416.71	64	15.90	333.01
	6M	62	NA	20.81	NA	20.87	NA	407.11	NA	406.41	60	22.56	428.65

	1y	63	NA	24.43	NA	17.14	NA	535.08	NA	379.90	65	21.44	468.94
	3y	63	NA	-7.29	NA	-33.35	NA	-9.02	NA	-621.25	61	-20.74	-465.25
200-300	LD	62	15.95	20.00	13.50	17.53	375.59	484.84	344.78	455.21	61	18.02	476.55
	1W	62	NA	20.74	NA	15.25	NA	497.19	NA	381.83	61	18.89	501.92
	1M	67	NA	16.42	NA	11.24	NA	477.27	NA	361.31	66	14.27	454.67
	6M	61	NA	41.22	NA	29.28	NA	1107.6 3	NA	833.16	60	31.19	902.73
	1y	66	NA	29.78	NA	13.22	NA	906.02	NA	496.23	68	17.60	599.26
	3y	67	NA	14.57	NA	-20.83	NA	842.46	NA	-32.82	66	-18.65	-171.07
300-500	LD	71	20.16	24.13	15.66	20.02	507.24	569.93	496.67	565.66	69	25.43	581.14
	1W	72	NA	27.13	NA	22.05	NA	613.08	NA	564.89	69	27.26	607.67
	1M	72	NA	27.41	NA	22.20	NA	627.79	NA	602.35	69	28.39	612.70
	6M	68	NA	33.20	NA	24.74	NA	886.18	NA	787.52	68	31.64	809.98
	1y	67	NA	31.02	NA	22.41	NA	853.08	NA	732.47	70	32.06	793.26
	3y	71	NA	-6.76	NA	-30.97	NA	-218.59	NA	-837.03	68	-28.50	-904.87
500-800	LD	43	14.61	13.70	14.95	13.94	277.26	280.94	291.79	296.51	41	10.63	264.24

	1W	44	NA	17.20	NA	16.68	NA	275.40	NA	274.20	41	8.69	194.99
	1M	45	NA	16.14	NA	14.27	NA	210.18	NA	176.92	42	6.02	105.14
	6M	43	NA	20.29	NA	14.93	NA	585.19	NA	453.30	42	13.48	398.93
	1y	42	NA	13.09	NA	5.05	NA	447.74	NA	234.95	45	4.23	233.05
	3y	45	NA	-12.62	NA	-39.12	NA	220.66	NA	-558.57	42	-46.56	-1072.30
>800	LD	29	16.18	20.41	15.38	19.48	500.81	601.29	487.09	587.94	29	19.67	586.54
	1W	29	NA	19.02	NA	18.46	NA	578.50	NA	574.73	29	18.70	577.79
	1M	29	NA	17.16	NA	15.53	NA	468.45	NA	427.83	29	15.62	420.30
	6M	29	NA	16.30	NA	10.94	NA	511.57	NA	343.46	29	12.66	380.97
	1y	29	NA	-4.82	NA	-11.45	NA	-131.85	NA	-345.61	29	-6.31	-210.78
	3y	29	NA	28.54	NA	-7.74	NA	1426.2 9	NA	260.10	29	-26.75	-632.80

Source: Researcher's Calculation

On the listing day, the Rs. 50-100 and the Rs. 500-800 categories showed the poorest performance across all the performance metrics, while the >Rs. 800 showed the strongest performance in terms of annualized market-adjusted gains. The Rs. 10-50 category recorded the highest raw and market-adjusted return, calculated based on the opening and closing price of the IPOs on the listing day. However, in terms of the annualized market-adjusted return, it recorded the third lowest value. The >Rs. 800 recorded the highest annualized market returns, followed by the Rs. 300-500, Rs. 200-300, Rs. 100-150, and Rs. 10-50 categories, respectively. Chhabra (2011) found that the issues falling in the price range of Rs 10 outperformed the performance of other categories. Narendrasinh (2018) found that IPOs with an issue price below Rs.30 delivered better returns than those priced between Rs.30 and Rs.120. Additionally, IPOs priced above Rs.120 also yielded favorable returns, indicating that both low-priced and high-priced IPOs tended to outperform those in the mid-price range. This shows that IPOs with issue prices either below Rs.30 or above Rs.120 yielded higher returns compared to those within the Rs.30-Rs.120 range.

In the very short run, the Rs. 100-150 and Rs. 300-500 categories recorded progressive returns relative to the listing day returns, while the returns for all other categories declined in comparison to the listing day. The Rs. 300-500, >Rs. 800, Rs. 100-150, and Rs. 10-50 categories recorded the strongest Avg. AMAAR values in descending order. Chhabra (2011) found a negative association between the listing price and the return as the low-priced IPOs yielded the maximum return while the high-priced IPOs yielded the lowest return. Narendrasinh (2018) suggested that both low-priced and high-priced IPOs tended to outperform those in the mid-price range.

In the short run, the Rs. 300-500 category showed the strongest annualized market performance, followed by the Rs. 100-150 category. The Rs. 10-50 category recorded the highest MAAR values; however, the annualized MAAR values were lower than the Rs. 300-500 category in both cases. The Rs. 100-150 category also showed strong market performance and incremental returns in comparison to the one week's return. Narendrasinh (2018) found that the mid-priced IPOs were more underpriced in the short run and yielded negative returns however, the high and low-priced IPOs showed strong market performance in the short run. Chhabra (2011) found that the

IPOs of all issue price categories yielded positive returns however, the Rs. 10 category yielded the highest return.

In the medium run, the Rs. 50-100 category showed negative yield, and the 10-50 category also showed positive but low returns. The Rs. 200-300 category outperformed all the other categories across all the performance metrics. All other issue size categories, except Rs. 10-50, Rs. 50-100, and >Rs. 800, demonstrated positive increases in their returns over the six months. Narendrasinh (2018) found that IPOs with lower and mid-range prices resulted in negative returns over a six-month period. In contrast, IPOs priced above Rs.120 demonstrated positive and profitable performance during the same period.

In the long run, the >Rs. 800 category showed negative returns, and the Rs. 50-100 category recorded the second least return. In terms of Avg. AMAAR value, the Rs. 10-50 category recorded the highest values, while the 150-100 category recorded the highest Avg. RR and Avg. MAAR values. The Rs. 10-50 category outperformed all the other categories in the long run. In the very long run, the Rs. 50-100, Rs. 200-300, Rs. 300-500, Rs. 500-800, and >Rs. 800 categories showed negative returns. The Rs. 10-50 category recorded its highest return in the long run, and this category's return also outperformed all the other categories in the long run. According to Chhabra (2011), initial public offerings (IPOs) with an issue price of Rs.10 and those priced between Rs.10 and Rs.50 performed the best, whilst IPOs priced between Rs.50 and Rs.100 and over Rs.100 performed the worst in the long and very long run.

All the categories show positive annualized market-adjusted returns ranging from Rs. 200-600 on the listing day, indicating their strong market performance in comparison to the benchmark indexes. Rs. 10-50 issue price category consistently showed positive returns throughout all the runs henceforth this category is the best-performing issue price category. Chhabra (2011) revealed that IPOs with an issue price of Rs.10 demonstrated the strongest performance in terms of both raw return and market-adjusted return.

6.1.8 Classification of IPOs based on Listing Day's close price

Listing day's close price refers to the closing price of the IPOs on their listing day. This section analyses the performance of IPOs based on their listing close price. Listing close price refers to the closing price of the IPOs at the end of the listing day. Table 6.8 shows the performance of IPOs in relation to the listing close price of the IPOs.

Table 6.8 Classification of IPOs based on listing day's close price

Listing open Price (Rs.)	TP (Time Period)	Case 1										Case 2	
			Averages									Averages	
		N ₁	RR (open)	RR (Close price)	MAAR (Nifty open price)	MAAR (Nifty close price)	ARR (open price)	ARR (Close price)	AMAAR (Nifty open price)	AMAAR (Nifty Close price)	N ₂	MAAR BSE close price	AMAAR (BSE close price)
10-100	LD	111	12.57	1.26	9.59	-1.37	284.64	52.72	289.39	63.58	103	1.02	52.56
	1W	119	NA	56.02	NA	-4.18	NA	-4.41	NA	-56.80	110	-7.01	-72.44
	1M	138	NA	-5.80	NA	-9.71	NA	-70.72	NA	-93.77	126	-8.13	-117.10
	6M	127	NA	-12.66	NA	-20.80	NA	-192.78	NA	-287.13	117	-19.31	-308.34
	1y	157	NA	-32.58	NA	-39.36	NA	-580.72	NA	-618.01	144	-35.33	-593.09
	3y	200	NA	-56.70	NA	-85.17	NA	-1134.30	NA	-1670.74	190	-66.55	-1397.96
100- 200	LD	117	12.44	16.63	10.74	14.94	218.42	313.38	192.75	287.50	109	13.68	263.67
	1W	106	NA	15.30	NA	14.62	NA	288.81	NA	284.33	97	10.07	203.50
	1M	104	NA	10.42	NA	8.08	NA	243.40	NA	212.92	99	5.37	166.17
	6M	96	NA	-2.45	NA	-9.42	NA	-16.96	NA	-106.76	92	8.52	200.99
	1y	96	NA	1.87	NA	-10.02	NA	20.10	NA	-221.60	93	-4.44	-90.69
	3y	99	NA	-16.78	NA	-42.92	NA	-418.78	NA	-1006.16	95	-26.74	-782.43
200-	LD	105	19.59	24.19	17.42	22.22	387.58	489.72	367.10	474.56	104	22.81	494.21

400	1W	117	NA	28.24	NA	25.69	NA	577.42	NA	549.64	115	26.05	563.75
	1M	121	NA	33.94	NA	31.04	NA	738.01	NA	685.88	117	31.67	697.07
	6M	111	NA	54.26	NA	46.39	NA	1172.02	NA	1019.97	108	44.33	976.58
	1y	99	NA	49.97	NA	36.88	NA	1009.89	NA	724.22	97	39.33	773.68
	3y	78	NA	42.97	NA	3.38	NA	919.93	NA	-116.34	76	-3.38	-491.97
>400	LD	127	24.97	34.89	24.38	34.41	578.57	788.81	570.10	783.45	123	32.05	750.64
	1W	125	NA	39.28	NA	37.09	NA	848.71	NA	796.55	119	34.98	802.29
	1M	123	NA	41.92	NA	39.14	NA	879.61	NA	807.42	118	36.33	801.83
	6M	119	NA	48.70	NA	42.20	NA	1222.32	NA	1046.86	117	41.86	1046.83
	1y	125	NA	29.44	NA	17.42	NA	709.69	NA	479.45	120	86.85	2082.38
	3y	91	NA	226.71	NA	177.07	NA	5720.96	NA	4458.145	85	154.02	3674.57

Source: Researcher's Calculation

On the listing day, the greater than Rs. 400 category of listing close price recorded the highest MAAR and AMAAR across both cases, indicating its strong market performance. The performance of >Rs. 400 category is followed by the performance of the Rs. 200-400 category on the listing day. The Rs. 10-100 category showed the lowest and the Rs. 100-200 category showed the second lowest return values. It was observed that the listing close price is directly proportional to the listing gains.

As the IPOs transitioned to the one-week period the returns of the >400 and the Rs. 200-400 categories showed a positive increment as compared to the listing day while the return of the Rs. 10-100 and the Rs. 100-200 saw a further decline. The >Rs. 400 category outperformed the other listing close price categories. The Rs. 200-400 category also showed strong market performance. The lower listing price categories performed poorly in comparison to the higher listing price category.

In the short run similar pattern continues the >Rs. 400 showed the strongest performance, followed by the Rs. 200-400 category and the 0-100 and Rs. 100-200 showed poor returns. It was also observed that the Rs. 200-400 and the >Rs. 400 categories showed progressive performance as the returns increased in comparison to the listing and the one-month period. The lower listing price categories performed poorly in comparison to the higher listing price category.

Even in the medium run, the same pattern continued, the >Rs. 400 showed the strongest performance, followed by the Rs. 200-400 category and the Rs. 0-100 and Rs. 100-200 showed poor returns. The >Rs. 400 and the Rs. 200-400 categories rose as the IPOs transitioned from short run to medium run highlighting their progressive performance.

In the long run, the performance of the >Rs. 400 and the Rs. 200-400 categories declined as compared to the medium run and the Rs. 200-400 category came into the lead. The loss percentage for the Rs. 0-100 and Rs. 100-200 increased in the long run. The >Rs. 400 and the Rs. 200-400 categories yielded positive returns and outperformed the benchmark indexes in the long run as well.

The >Rs. 400 category recorded a high incremental gain in very long run compared to the long-run period and again took the lead by outperforming all the other IPO

categories. The Rs. 200-400 category could not sustain the very long run period and failed to deliver positive market-adjusted returns in both cases 1& 2.

Henceforth it is concluded that the >Rs. 400 listing closing price category was the strongest-performing category in all the runs.

6.1.9 Classification of IPOs based on the age of the issuing company

Table 6.9 shows the pricing performance of IPOs based on their age since incorporation of the company. Age refers to the number of years since incorporation to the listing of the IPOs on the NSE platform. Table 6.9 shows the performance of IPOs in relation to the Age of the IPOs.

Table 6.9 Classification of IPOs based on Age of the issuing company

Age (yrs.)		Case 1										Case 2	
		Averages										Averages	
	TP (Time Period)	N ₁	RR (open)	RR (Close price)	MAAR (Nifty open price)	MAAR (Nifty close price)	ARR (open price)	ARR (Close price)	AMAAR (Nifty open price)	AMAAR (Nifty Close price)	N ₂	MAAR BSE close price	AMAAR (BSE close price)
0-10	LD	128	18.74	19.61	18.09	19.24	373.40	380.72	361.90	374.24	124	17.36	364.88
	1W	139	NA	22.86	NA	22.39	NA	417.39	NA	408.27	125	15.97	341.59
	1M	140	NA	23.14	NA	20.94	NA	470.42	NA	421.17	126	15.74	375.40
	6M	138	NA	26.62	NA	21.08	NA	580.07	NA	469.77	125	21.57	509.92
	1y	141	NA	32.14	NA	21.48	NA	762.86	NA	538.53	126	25.69	662.67
	3y	136	NA	26.42	NA	-8.05	NA	722.25	NA	-8.19	124	2.72	139.27
10-15	LD	121	13.77	17.08	9.92	13.29	292.98	353.92	282.84	344.31	117	17.05	355.98
	1W	121	NA	18.42	NA	16.32	NA	363.75	NA	341.56	118	17.67	363.20
	1M	123	NA	21.74	NA	18.47	NA	467.09	NA	421.16	121	18.59	422.99
	6M	120	NA	29.01	NA	20.57	NA	666.24	NA	505.84	117	18.05	453.89
	1y	123	NA	34.18	NA	18.24	NA	740.27	NA	444.76	121	13.51	369.12
	3y	124	NA	9.75	NA	-21.68	NA	201.10	NA	-460.92	122	-15.40	-404.14
15-20	LD	87	16.88	16.84	16.18	16.26	392.35	414.37	381.44	406.94	85	16.57	411.78
	1W	83	NA	17.99	NA	15.84	NA	463.15	NA	404.93	81	17.51	471.00
	1M	86	NA	19.50	NA	16.43	NA	452.44	NA	395.09	84	15.99	440.05
	6M	86	NA	24.29	NA	18.11	NA	737.99	NA	580.26	84	21.78	671.80

	1y	86	NA	17.56	NA	10.08	NA	517.50	NA	340.25	84	14.04	439.92
	3y	83	NA	12.09	NA	-15.34	NA	853.96	NA	160.01	82	-14.60	-37.92
20-40	LD	87	23.71	28.57	21.95	27.02	496.74	613.29	476.74	599.49	84	25.43	542.83
	1W	89	NA	25.47	NA	23.99	NA	560.16	NA	551.52	84	22.73	502.66
	1M	95	NA	21.12	NA	19.39	NA	467.79	NA	447.16	90	18.25	389.04
	6M	93	NA	27.48	NA	24.10	NA	716.25	NA	656.16	89	24.45	620.55
	1y	95	NA	31.55	NA	23.50	NA	793.25	NA	618.92	90	25.59	622.27
	3y	90	NA	48.59	NA	11.36	NA	1175.45	NA	233.55	85	12.07	-47.92
40-101	LD	33	7.796	11.29	5.86	9.35	233.16	347.09	226.81	340.62	33	14.47	350.66
	1W	34	NA	5.08	NA	-5.39	NA	210.60	NA	134.19	33	7.28	242.72
	1M	31	NA	11.70	NA	9.43	NA	311.83	NA	289.62	31	9.81	277.25
	6M	31	NA	22.67	NA	13.81	NA	590.29	NA	400.23	31	16.55	485.86
	1y	31	NA	23.82	NA	8.67	NA	632.86	NA	301.35	31	13.08	390.82
	3y	33	NA	25.71	NA	-11.43	NA	727.65	NA	-258.23	33	-19.31	-781.08

Source: Researcher's Calculation

On the listing day, IPOs in the 20-40 years category outperformed all others, followed by 15-20, 0-10, 10-15, and 40-101 years in descending order of performance. The performance of mid-aged IPOs was better than the performance of the younger and the older IPOs. The performance of IPOs of all age categories outperformed the NSE NIFTY 50 and the BSE IPO index. Chauhan (2011) found a positive relationship between a company's age and its return. The IPOs in the age bracket of more than 40 years recorded the highest return, whereas the IPOs in the age bracket of up to 5 years recorded the lowest raw and market-adjusted return. Narendrasinh (2018) stated that mid-aged companies, falling in the age bracket of 21 to 50 years, showed better market performance compared to both new and older companies. Chhabra (2011) also found that mid-aged IPOs performed better than the newer and older IPOs.

In the very short run, the 20-40 years category showed the highest return, which was followed by the 15-20 and 0-10 years categories. The mid-sized IPOs outperformed the younger and the older IPOs. The 40-101 years category showed the lowest return in the very short run. Chhabra (2011) noted positive performance across all age categories however, the 5 to 9-years IPO category recorded the highest annualized raw and market-adjusted return.

In the short run, the 0-10 years category had the strongest MAAR performance and high AMAAR values, while the 20-40, 15-20, and 0-100 years categories also achieved AMAAR values of 300-400%, outperforming benchmark indexes. The 40-101-years age category showed the worst performance in the short run. Narendrasinh (2018) found that IPOs in the 41-50 age bracket showed a positive and strong performance compared to other age categories. Chhabra (2011) observed positive performance of all age-wise IPO categories in the one-month period. However, the youngest firms gave the highest return followed by the mid-aged firms.

In the medium run, the 20-40 years category again took the lead by recording the highest Avg. MAAR and Avg. AMAARs in both Cases (1 and 2). The 10-15 years category showed the second highest values, while the 15-20 category showed the poorest performance. Therefore, it is evident that in the medium run, young and mid-

aged firms outperformed the older firms. Narendrasinh (2018) found that IPOs from companies in the 41-50 age brackets recorded the highest returns, followed by those in the 51-60 age category. This indicated that mid-aged IPOs performed better over a six-month period compared to both newer and older IPOs. Chhabra (2011) observed that the IPOs aged between 5 to 9 years showed considerably better performance in comparison to the other categories.

In the long run, the 20-40 years category outperformed the younger and the older IPO categories; the 0-10 years category followed the 20-40 years category by showing the second highest return values, while the 15-20 years age category showed negative returns. The mid-aged IPOs outperformed the younger and the older IPOs. In the very long run period, the 20-40 years category outperformed all the other categories and also outperformed the NSE NIFTY 50 index in Case 1; however, in comparison to the BSE IPO index, it showed lower returns. All other categories also failed to outperform the market indexes and yielded negative returns in the very long-run period. Chhabra (2011) noted the positive performance of 0-1, 1-5, 9-13, and >13 years categories and the negative performance of 5-9 years category. Further, the mid-aged (5-9 years category) recorded the highest return as compared to the younger and the older IPOs.

Thus, it can be concluded that the 20-40 years category consistently delivered the highest returns, highlighting the outperformance of mid-aged companies compared to younger and older ones, while most age categories achieved their peak MAAR and AMAAR values in the medium run, making it the best-performing period for IPOs.

6.2. Testing of Hypotheses for IPOs listed during 1999-2019

This section examined IPO performance across different periods and benchmark indices. On the listing day, IPO returns were compared with the NSE NIFTY 50 and the BSE IPO index. The raw returns of the IPOs, calculated using the opening price on the listing day, were evaluated against the raw returns calculated based on the closing price on the same day to check the existence of intraday volatility. Further, the relative performance of IPOs against the benchmark index during different runs was also evaluated in this section. The hypothesis testing was further divided into

two Sets 1 and 2, set one tests the 435 IPOs against the NIFTY-50 index while Set 2 tests 416 IPOs against BSE IPO index.

Set 1 tested the differences in performance across various timeframes (runs) for 435 IPOs and compared these returns with the Nifty 50 index.

For which we tested the following hypothesis:-

a) Listing day

H₀₁: There does not exist any deviation between the median of the Listing day's RR of IPOs (Close Price) and the Listing day's RR of IPOs (open price)

H₀₂: The listing day's raw return values of IPOs (calculated based on the listing day's opening price) and the NSE NIFTY 50 values (calculated based on the opening price of NIFTY 50) were not significantly different

H₀₃: The NIFTY 50 return computed on listing days does not differ significantly from the raw return of IPOs on the listing day calculated on the closing price.

b) Very short run

H₀₄: the raw return of IPOs on the listing day is not significantly different from the raw return or the very short run (both calculated on the closing values)

H₀₅: the median of the Nifty 50 return during the one-week period and the raw return of the IPOs during the same period is not significantly different

c) Short run (all values based on closing price)

H₀₆: the raw return of IPOs in very short run is not significantly different from the raw return of the short run (one month)

H₀₇: the short run raw return of IPOs is not significantly different from the NIFTY 50 return of that period

d) Medium run

H₀₈: the raw return of IPOs in short run is not significantly different from the raw return of IPOs in medium run.

H₀₉: The raw return of IPOs in medium run is not significantly different from the NIFTY 50 return of that period

e) Long run

H₀₁₀: the raw return of IPOs in medium run is not significantly different from the raw return of IPOs in long run.

H₀₁₁: The raw return of the long run is not significantly different from the NIFTY 50 return of that period

f) Very long run

H₀₁₂: the raw return of the very long run is not significantly different from the raw return of IPOs in long run

H₀₁₃: the raw return of IPOs in very long run is not significantly different from the NIFTY 50 return of that period.

Set 2 focused on 416 IPOs and evaluated their performance against the BSE IPO index. The hypotheses for Set 2 are as follows:-

a) Listing Day

H₀₁₄: The raw return of IPOs on the listing day (close price) and the BSE IPO index return of that period do not have any significant difference

b) Very short run

H₀₁₅: The raw return of IPOs in very short run and the BSE IPO index return of that period do not have any significant difference

c) Short run

H₀₁₆: The raw return of IPOs in short run and the BSE IPO index return of that period do not have any significant difference

d) Medium run

H₀₁₇: The raw return of IPOs in medium run and the BSE IPO index return of that period do not have any significant difference

e) Long run

H₀₁₈: The raw return of IPOs in long run and the BSE IPO index return of that period do not have any significant difference

f) Very long run

H₀₁₉: The raw return of IPOs in very long run and the BSE IPO index return of that period do not have any significant difference

6.2.1.1 Set 1

Set 1 test if there is a significant difference between the raw return of 435 IPOs during the different runs and also evaluates the raw return of these IPOs against the Nifty 50 benchmark index during different runs. The descriptive statistics i.e. mean, Standard deviation, minimum, and maximum values for each variable are provided in Table 4.10. The summary statistics show the distribution and variability of the return of IPOs and the NIFTY 50 index during different periods.

Table 6.10- Summary Statistics

	Variables	N	Mean	Std. Deviation	Minimum	Maximum
Raw return	Listing Day open	435	17.94	29.85	-78.33	298.57
	Listing Day Close	435	20.61	41.30	-87.55	283.71
	Very Short Run (Close)	435	20.47	44.97	-89.18	273.89
	Short Run Raw Return (Close)	435	19.06	52.97	-88.25	351.75
	Medium Run (Close)	435	28.11	87.24	-88.62	570.68

Nifty 50 return	Long Run (Close)	435	30.61	125.87	-91.66	1103.04
	Very Long Run (Close)	435	23.52	222.75	-99.06	3055.79
	Listing Day open	435	1.93	16.08	-19.05	281.71
	Listing Day Close	435	1.77	16.00	-17.71	280.04
	Very Short Run	435	2.33	17.38	-22.77	295.30
	Short Run	435	3.34	18.79	-45.68	301.92
	Medium run	435	7.83	23.48	-45.89	298.76
	Long Run	435	12.70	33.61	-74.41	353.14
	Very Long run	435	34.40	43.24	-78.71	346.35

Source: Researcher's Calculation

Table 6.11- Summary of Ranks

Pair no.			N	Mean of Rank	Sum of Ranks
1	Raw Return of Listing Day (Close Price) – Raw Return of Listing Day (Open Price)	Negative Ranks	225 ^a	208.09	46820.50
		Positive Ranks	209 ^b	227.63	47574.50
		Ties	1 ^c		
		Total	435		
2	Nifty 50 return on Listing day (Open Price)- Raw Return on Listing Day (Open Price)	Negative Ranks	331 ^d	242.67	80323.00
		Positive Ranks	104 ^e	139.49	14507.00
		Ties	0 ^f		
		Total	435		
3	Nifty 50 return on Listing day (close price) - Raw Return on	Negative Ranks	287 ^g	251.89	72293.00

	Listing Day	Positive Ranks	148 ^h	152.28	22537.00
		Ties	0 ⁱ		
		Total	435		
4	Raw Return of Very Short Run (Close Price) - Raw Return on Listing Day (Close Price)	Negative Ranks	246 ^j	211.07	51923.00
		Positive Ranks	184 ^k	221.42	40742.00
		Ties	5 ^l		
		Total	435		
5	Nifty 50 return of Very Short Run - Raw Return of Very Short Run (Close Price)	Negative Ranks	270 ^m	252.90	68284.00
		Positive Ranks	165 ⁿ	160.88	26546.00
		Ties	0 ^o		
		Total	435		
6	Raw Return of Short Run (Close Price) - Raw Return of Very Short Run (Close Price)	Negative Ranks	249 ^p	218.08	54301.50
		Positive Ranks	186 ^q	217.90	40528.50
		Ties	0 ^r		
		Total	435		
7	Nifty 50 return of Short Run - Raw Return of Short Run (Close Price)	Negative Ranks	255 ^s	242.35	61798.00
		Positive Ranks	180 ^t	183.51	33032.00
		Ties	0 ^u		
		Total	435		
8	Raw Return of Medium Run (Close Price) -Raw Return of	Negative Ranks	224 ^v	201.79	45200.50

	Short Run (Close Price)	Positive Ranks	211 ^w	235.21	49629.50
		Ties	0 ^x		
		Total	435		
9	Nifty50 Return in the Medium Run- Raw Return in the Medium Run	Negative Ranks	234 ^y	234.55	54884.00
		Positive Ranks	201 ^z	198.74	39946.00
		Ties	0 ^{aa}		
		Total	435		
10	Raw return of Long Run - Raw return of Medium Run	Negative Ranks	252 ^{ab}	212.94	53662.00
		Positive Ranks	183 ^{ac}	224.96	41168.00
		Ties	0 ^{ad}		
		Total	435		
11	Nifty 50 return in the long run – Raw return of long run (close price)	Negative Ranks	187 ^{ae}	248.90	46544.00
		Positive Ranks	248 ^{af}	194.70	48286.00
		Ties	0 ^{ag}		
		Total	435		
12	Raw Return of Very Long Run (Close Price) - Raw Return of Long Run (Close Price)	Negative Ranks	284 ^{ah}	212.44	60333.00
		Positive Ranks	150 ^{ai}	227.08	34062.00
		Ties	1 ^{aj}		
		Total	435		
13	Nifty 50 return in Very Long Run - Raw Return of Very	Negative Ranks	115 ^{ak}	225.32	25912.00

	Long Run (Close Price)	Positive Ranks	320 ^{al}	215.37	68918.00
		Ties	0 ^{am}		
		Total	435		
Indicators					
1	a. Raw Return of Listing Day (Close Price) < Raw Return of Listing Day (Open Price) b. Raw Return of Listing Day (Close Price) > Raw Return of Listing Day (Open Price) c. Raw Return of Listing Day (Close Price) = Raw Return of Listing Day (Open Price)				
2	d. Nifty 50 return on Listing day (Open Price) < Raw Return on Listing Day (Open Price) e. Nifty 50 return on Listing day (Open Price) > Raw Return on Listing Day (Open Price) f. Nifty 50 return on Listing day (Open Price) = Raw Return on Listing Day (Open Price)				
3	g. Nifty 50 return on Listing day (close price) < Raw Return on Listing Day h. Nifty 50 return on Listing day (close price) > Raw Return on Listing Day i. Nifty 50 return on Listing day (close price) = Raw Return on Listing Day				
4	j. Raw Return of Very Short Run (Close Price) < Raw Return on Listing Day (Close Price) k. Raw Return of Very Short Run (Close Price) > Raw Return on Listing Day (Close Price) l. Raw Return of Very Short Run (Close Price) = Raw Return on Listing Day (Close Price)				

5	m. Nifty 50 return of Very Short Run < Raw Return of Very Short Run (Close Price) n. Nifty 50 return of Very Short Run > Raw Return of Very Short Run (Close Price) o. Nifty 50 return of Very Short Run = Raw Return of Very Short Run (Close Price)
6	p. Raw Return of Short Run (Close Price) < Raw Return of Very Short Run (Close Price) q. Raw Return of Short Run (Close Price) > Raw Return of Very Short Run (Close Price) r. Raw Return of Short Run (Close Price) = Raw Return of Very Short Run (Close Price)
7	s. Nifty 50 return of Short Run < Raw Return of Short Run (Close Price) t. Nifty 50 return of Short Run > Raw Return of Short Run (Close Price) u. Nifty 50 return of Short Run = Raw Return of Short Run (Close Price)
8	v. Raw Return of Medium Run (Close Price) < Raw Return of Short Run (Close Price) w. Raw Return of Medium Run (Close Price) > Raw Return of Short Run (Close Price) x. Raw Return of Medium Run (Close Price) = Raw Return of Short Run (Close Price)
9	y. Nifty50 Return in the Medium Run < Raw Return in the Medium Run (Close Price) z. Nifty50 Return in the Medium Run > Raw Return in the Medium Run (Close Price) aa. Nifty50 Return in the Medium Run = Raw Return in the Medium Run (Close Price)
10	ab. Raw return of Long Run < Raw return of Medium Run (Close Price) ac. Raw return of Long Run > Raw return of Medium Run (Close Price) ad. Raw return of Long Run = Raw return of Medium Run (Close Price)

11	ae. Nifty 50 return in the long run < Raw return of long run (close price) af. Nifty 50 return in the long run > Raw return of long run (close price) ag. Nifty 50 return in the long run = Raw return of long run (close price)
12	ah. Raw Return of Very Long Run (Close Price) < Raw Return of Long Run (Close Price) ai. Raw Return of Very Long Run (Close Price) > Raw Return of Long Run (Close Price) aj. Raw Return of Very Long Run (Close Price) = Raw Return of Long Run (Close Price)
13	ak. Nifty 50 return in Very Long Run < Raw Return of Very Long Run (Close Price) al. Nifty 50 return in Very Long Run > Raw Return of Very Long Run (Close Price) am. Nifty 50 return in Very Long Run = Raw Return of Very Long Run (Close Price)

Source: Researcher's Calculation

Table 6.12 shows the relationship between the variables of each pair across 435 observations. The table shows the direction of the relationship between the variables by categorizing them into positive, negative, or tie ranks. In the pair 1, 8, and 11 the sum of positive and negative ranks is close to each other indicating a neutral difference between the variables. The sum of positive and negative ranks for pairs 2, 3, 4, 5, 6, 7, 9, 10, 12, and 13 were not close to each other, indicating that the returns of these variables are significantly different from each other.

For pair 2 (H_{02}), the sum of negative ranks was enormously higher than the sum of positive ranks, indicating that the raw return of the IPOs calculated using the opening price on the listing day was higher than the return of NIFTY 50 calculated using the opening price during the same period.

For pair 3 (H_{03}), the sum of negative ranks is considerably higher than the sum of positive ranks, indicating that the raw return of IPOs on the listing day (close price) was generally higher than the NIFTY 50 return calculated using the closing price on

the same day. This highlights the relative outperformance of IPOs compared to the benchmark index based on closing prices.

For pair 4 (H_{04}), the sum of negative ranks is higher than the positive ranks, indicating the outperformance of the listing day's raw return compared to the short run's raw return.

For pair 5 (H_{05}), the sum of the negative ranks was higher than the sum of positive ranks, highlighting the outperformance of the very short run's raw return compared to the NIFTY 50 index's return during the period.

For pair 6 (H_{06}), the sum of negative ranks was higher than the sum of positive ranks, indicating that the raw return of the very short outperformed the raw return of the short run.

For pair 7 (H_{07}), the sum of negative ranks exceeded the sum of positive ranks, highlighting that the raw return of the IPOs during the Short run was higher than the return of NIFTY 50 during that period.

For pair 8 (H_{08}), the sum of positive ranks was higher than the sum of negative ranks, suggesting that the raw return of the medium run was higher than the raw return during the short run.

For pair 9 (H_{09}), the sum of negative ranks exceeded the sum of positive ranks, indicating that the Medium run's raw return outperformed the NIFTY 50 returns during the medium run.

For pair 10 (H_{010}), the sum of positive ranks was lower than the sum of positive ranks, suggesting that the raw return of the medium run outperformed the raw return of the long run.

For pair 12 (H_{012}), the sum of the negative rank was higher than the sum of positive ranks, indicating the outperformance of the return of the long run in comparison to the raw return of the very long run period.

For pair 13 (H_{013}), the sum of positive ranks was higher than the sum of the negative ranks, indicating that the raw return of the very long run was lower than the NIFTY 50 return of that period.

Table 6.12 Test Statistics^a

	H ₀₁	H ₀₂	H ₀₃	H ₀₄	H ₀₅	H ₀₆	H ₀₇	H ₀₈	H ₀₉	H ₀₁₀	H ₀₁₁	H ₀₁₂	H ₀₁₃
Z	-.14 ^b	-12.54 ^c	-9.48 ^c	-2.17 ^c	-7.954 ^c	-2.63 ^c	-5.48 ^c	-.84 ^b	-2.85 ^c	-2.38 ^c	-.33 ^b	-5.02 ^c	-8.19 ^b
Asymp. Sig. (2-tailed)	.885	.000	.000	.000	.030	.009	.000	.399	.004	.017	.740	.000	.000
a. Wilcoxon Signed Ranks Test													
b. Based on positive ranks.													
c. Based on negative ranks.													

Source: Researcher's Calculation

Table 6.11 shows the significance values for each hypothesis. The p-value (Asymp. Sig. 2-tailed) for H_{01} , H_{08} , and H_{011} is greater than 0.05, which implies that the study failed to reject the hypotheses.

For H_{01} , the listing day's raw return calculated based on the opening and closing price did not show any statistical difference as indicated by the p-value of 0.885. The close values of positive and negative sum of ranks, as depicted in Table 6.11, also explain the lack of significant difference. The close values of the sum of ranks between the raw return on listing day opening and closing prices indicate that there is not enough evidence to reject the null hypothesis, suggesting that the return is almost equal in both cases.

For H_{08} , the raw return of the short run and the medium run also did not show any significant difference as indicated by the p value of 0.399. The magnitude of difference between the sums of ranks of the two variables, as shown in Table 6.11, was minimal which supports the conclusion that the return during the two runs is statistically similar, thus there is not enough evidence to reject the null hypothesis.

For H_{011} , the raw return of IPOs in the long run and the NIFTY 50 returns did not show any significant difference which is shown by the p-value of 0.740. The sum of ranks as shown in Table 6.11 also supports the finding, documenting that the returns

of the IPOs in the long run were statistically equivalent to the returns of the NIFTY 50 index, thus there is not enough evidence to reject the null hypothesis.

On the contrary, Table 6.11 shows that the sum of positive and negative ranks for the pairs 2 (H_{02}), 3 (H_{03}), 4(H_{04}), 5(H_{05}), 6 (H_{06}), 7 (H_{07}), 8 (H_{08}), 9 (H_{09}), 10(H_{010}), 12 (H_{012}), 13(H_{013}) are not close to each other. Table 4.12 further substantiated this as the p values for all other test pairs were less than 0.05, indicating that the returns of these pairs (variables) significantly differed from each other. Therefore, these null hypotheses H_{02} , H_{03} , H_{04} , H_{05} , H_{06} , H_{07} , H_{08} , H_{09} , H_{010} , H_{012} , and H_{013} are rejected, and the alternate hypotheses i.e. there exists a significant difference between these variables is accepted.

6.2.1.2 Set 2

Set 2 test if the raw return of 416 IPOs, during different runs are significantly different from BSE IPO returns (benchmark index) during these runs. Table 6.13 shows the descriptive statistics i.e. mean, Standard deviation, minimum, and maximum values for each variable. The summary statistics show the distribution and variability of the return of IPOs and the BSE IPO index during different periods.

Table 6.13- Descriptive Statistics

		N	Mean	Std. Deviation	Minimum	Maximum
Raw return	Listing Day open	416	16.95	27.61	-54.71	298.57
	Listing Day Close	416	19.38	38.68	-68.72	283.71
	Very Short Run (Close)	416	19.03	42.39	-74.05	273.89
	Short Run Raw Return (Close)	416	17.74	51.12	-84.80	351.75
	Medium Run (Close)	416	25.56	81.65	-85.54	530.04
	Long Run (Close)	416	27.18	115.63	-91.66	993.95

	Very Long Run (Close)	416	18.57	217.53	-99.05	3055.78
BSE IPO Return	Listing Day open	416	0.54	8.383	-42.13	81.79
	Listing Day Close	416	1.02	11.89	-56.20	168.33
	Very Short Run (Close)	416	2.13	15.35	-51.67	164.34
	Short Run Raw Return (Close)	416	5.00	24.51	-61.22	90.45
	Medium Run (Close)	415	7.60	38.28	-68.99	179.07
	Long Run (Close)	416	22.07	57.715	-51.32	271.46

Source: Researcher's Calculation

Table 6.14- Summary of Ranks

Pair no.		N	Mean Rank	Sum of Ranks
14	BSE IPO index return on Listing day < Raw Return on Listing day	Negative Ranks	278 ^d	239.54
		Positive Ranks	138 ^e	145.97
		Ties	0 ^f	
		Total	416	
15	BSE IPO index return during Very short run < Raw Return during Very Short Run	Negative Ranks	259 ^j	242.63
		Positive Ranks	157 ^k	152.19
		Ties	0 ^l	
		Total	416	
16	BSE IPO index return during short run < Raw Return	Negative Ranks	250 ^p	227.82
				56956.00

	during Short run	Positive Ranks	166 ^q	179.40	29780.00
		Ties	0 ^r		
		Total	416		
17	BSE IPO index return during Medium run < Raw Return during Medium run	Negative Ranks	232 ^v	224.89	52174.00
		Positive Ranks	184 ^w	187.84	34562.00
		Ties	0 ^x		
		Total	416		
18	BSE IPO index return during Long Run < Raw Return during long run	Negative Ranks	198 ^{ab}	229.99	45538.00
		Positive Ranks	217 ^{ac}	187.94	40782.00
		Ties	0 ^{ad}		
		Total	415		
19	BSE IPO index return during Very Long Run < Raw Return during Very Long Run	Negative Ranks	128 ^{ah}	210.21	26907.00
		Positive Ranks	288 ^{ai}	207.74	59829.00
		Ties	0 ^{aj}		
		Total	416		
Indicators					
14	d. BSE IPO index return on Listing day < Raw Return on Listing day e. BSE IPO index return on Listing day >Raw Return on Listing day f. BSE IPO index return on Listing day = Raw Return on Listing day				

15	j. BSE IPO index return during Very short run < Raw Return during Very Short Run k. BSE IPO index return during Very short > Raw Return during Very Short Run l. BSE IPO index return during Very short run = Raw Return during Very Short
16	p. BSE IPO index return during short run < Raw Return during Short run q. BSE IPO index return during short run > Raw Return during Short run r. BSE IPO index return during short run = Raw Return during Short run
17	v. BSE IPO index return during Medium run < Raw Return during Medium run w. BSE IPO index return during Medium run > Raw Return during Medium run x. BSE IPO index return during Medium run = Raw Return during Medium run
18	ab. BSE IPO index return during Long Run < Raw Return during long run ac. BSE IPO index return during Long Run > Raw Return during long run ad. BSE IPO index return during the Long Run = Raw Return during a long run
19	ah. BSE IPO index return during Very Long Run < Raw Return during Very Long Run ai. BSE IPO index return during Very Long Run > Raw Return during Very Long Run aj. BSE IPO index return during Very Long Run = Raw Return during Very Long Run

Source: Researcher's Calculation

Table 6.14, shows the mean and sum of ranks of each pair, indicating the performance of variables against each other.

For pair 14 (H_{014}), the sum of negative ranks is higher than the sum of positive ranks, indicating that the listing day's raw return outperformed the return of the BSE IPO during that period.

For pair (H_{015}), the sum of negative ranks exceeded the sum of positive ranks, indicating that the raw return of the IPOs during the very short run outperformed the return of the BSE IPO index during that period.

For pair (H_{016}), the sum of negative ranks exceeded the sum of positive ranks suggesting that the raw return generated by the IPOs during the short run exceeded the return of the BSE IPO index during that period.

For pair (H_{017}), the sum of negative ranks was higher than the sum of positive ranks showing that the raw return of the IPOs exceeded the return yielded by the BSE IPO index during that period.

For pair (H_{018}), the sum of the value of the negative rank is close to the sum of the positive rank value, indicating that the raw return of the IPOs during the long run was almost equivalent to the return of the BSE IPO index during that period.

For pair (H_{019}), the sum of positive ranks was more than the sum of negative ranks indicating that the raw return of the IPOs during the very long run did not outperform the return of the BSE IPO index during that period.

Table 6.15 Test statistics^a

	H_{014}	H_{015}	H_{016}	H_{017}	H_{018}	H_{019}
Z	-9.465c	-7.936c	-5.538c	-3.589c	-.973c	-6.708b
Asymp. Sig. (2-tailed)	.000	.000	.000	.000	.331	.000
a. Wilcoxon Signed Ranks Test b. Based on positive ranks. c. Based on negative ranks.						

Source: Researcher's Calculation

Table 6.15, presents the significance values for each hypotheses. The p-value (Asymp. Sig. 2-tailed) for H_{018} , was greater than 0.05, indicating that the null hypothesis could not be rejected. This showed that there was no significant difference between the compared variables (i.e. raw return of the IPOs during the long run return of the BSE IPO index) in this case. The findings in Table 6.14 also justified this conclusion, as the sum of negative and positive ranks were relatively close, suggesting a similar return of IPOs in the long run and the return of the BSE IPO index. On the contrary, the H_{014} , H_{015} , H_{016} , H_{017} , and H_{019} showed p values less than 0.05, offering evidences for rejection of these null hypotheses and acceptance of the alternate hypotheses that there exists a significant difference between the returns of IPOs in these runs and the returns of the BSE IPO index.

Based on the results of Set 1 and 2 it can be concluded that out of 19 hypotheses, the study failed to reject four null hypotheses, while remaining fifteen null hypotheses were rejected. It was also observed that IPO returns across different periods varied significantly. The returns of the IPOs during different runs were also significantly higher than the return of the benchmark indexes on listing day, very short run, short run, and medium run, while it did not outperform the benchmark indexes in the long and very long run.

6.3 Short-run analyses of IPOs launched during 2020-2025

This section assesses the short-term performance of all IPOs listed on the NSE during the period 2020 to 2025. Table 6.16 presents the returns of 226 IPOs on the listing day, one week after listing (very short run), and one month after listing (short run).

The first case of COVID-19 in India was recorded on January 30, 2020. Therefore, the 101 IPOs launched between this date and May 5, 2023 (the day World Health Organisation declared COVID-19 is no more a pandemic), can be categorized as IPOs launched during the pandemic. The 125 IPOs launched after May 5, 2023, can be considered as post-pandemic IPOs. This section assesses the overall performance of all 226 IPOs listed on the NSE during and after the COVID-19 pandemic.

Table 6.16 – Pricing performance of IPOs launched during 2020-2025

Time period	N	Averages					
		ARR (open Price)	ARR (close price)	MAAR open NSE (Nifty open price)	MAAR close NSE (Nifty Close price)	MAAR BSE Open (BSE open price)	MAAR close BSE (BSE close price)
LD	226	1811.92	1773.16	1922.59	1777.48	1897.34	1795.34
1W	226	-	1992.89	-	1905.13	-	1895.36
1M	226	-	1890.76	-	1838.00	-	1867.47

Source: Researcher's Calculation

Table 6.16 shows the performance of 226 IPOs on the listing day, during the very short run and short run period. As evident from Table 6.16 the IPOs yielded higher average annualized raw return at the beginning of the listing day as compared to the average annualized raw return at the end of the listing day. It is also noted that the IPOs generated a positive yield on the listing day indicating that the IPOs were usually underpriced. Only 45 IPOs yielded negative listing day return out of 226 IPOs. The market performances of these IPOs were assessed by adjusting the raw return with the two selected benchmark indexes- NIFTY 50 and BSE IPO index. The IPOs yielded higher annualized average returns as compared to both the benchmark indexes (NIFTY 50 and BSE IPO index) during the listing day, very short run (one week from listing of the IPOs) and short run (one month from the listing of the IPOs). The IPOs yielded positive annualized average returns across all three periods, with the highest returns observed during the short run, indicating it as the most profitable period.

6.3.1 Testing of Hypotheses for IPOs listed during 2020-2025

For which we tested the following hypotheses:-

a) Listing day

H₀₂₀: There does not exist any deviation between the median of the Listing day's Raw Return (calculated based on the listing day's close price) and the Listing day's Raw Return (open price)

H₀₂₁: The listing day's raw return values of IPOs (calculated based on the listing day's opening price) and the NSE NIFTY 50 values (calculated based on the opening price of NIFTY 50) were not significantly different

H₀₂₂: The raw return of IPOs on the listing day (calculated based on the opening price of IPOs on the listing day) and the BSE IPO index return (open price of BSE IPO index on the listing day) of that period do not have any significant difference

H₀₂₃: The NIFTY 50 return computed on listing day's closing price does not differ significantly from the raw return of IPOs on the listing day calculated on the closing price.

H₀₂₄: The raw return of IPOs on the listing day (calculated based on the listing day's close price) and the BSE IPO index return (calculated based on the closing price of BSE IPO index on the listing days) of that period do not have any significant difference

g) Very short run

H₀₂₅: The median of the Nifty 50 return (closing price) during the one-week period and the raw return of the IPOs (closing price) during the same period is not significantly different

H₀₂₆: The raw return of IPOs in very short run (closing price) and the BSE IPO (closing price) index return of that period do not have any significant difference

H₀₂₇: The raw return of IPOs on the listing day is not significantly different from the raw return or the very short run (both calculated on the closing values)

h) Short run (all values based on closing price)

H₀₂₈: The short run raw return of IPOs is not significantly different from the NIFTY 50 return of that period

H₀₂₉: The raw return of IPOs in short run and the BSE IPO index return of that period do not have any significant difference

H₀₃₀: The raw return of IPOs in the very short run is not significantly different from the raw return of the short run (one month)

This section tests if there exist a significant difference between the raw return of 225 IPOs during the different runs and also evaluate the raw return of these IPOs against the NSE Nifty 50 and the BSE IPO index (i.e. benchmark indexes) during different runs. The descriptive statistics i.e. mean, standard deviation, minimum and maximum values for each variable are provided in the Table 6.16. The summary statistics shows the distribution and variability of return of IPOs, NSE NIFTY 50 index return and the BSE IPO index return during different periods.

Table 6.17 Descriptive statistics

		N	Mean	Std. Deviation	Minimum	Maximum
Raw return	Listing Day open	225	30.4460	81.95090	-49.46	1131.53
	Listing Day Close	225	29.9226	78.40267	-98.79	1052.17
	Very Short Run (Close)	225	32.6492	98.98107	-100.00	1373.20
	Short Run	225	30.9574	87.29256	-100.00	1184.61

	Raw Return (Close)					
BSE IPO Return	Listing Day open	225	-1.5543	12.31405	-100.00	38.55
	Listing Day Close	225	-.3322	4.40187	-18.76	38.27
	Very Short Run (Close)	225	.3536	5.89317	-37.01	41.22
	Short Run Raw Return (Close)	225	.5876	9.37805	-35.36	59.56
Nifty 50 return	Listing Day open	225	-1.1581	11.92307	-100.00	31.60
	Listing Day Close	225	.1354	3.27792	-18.38	33.16
	Very Short Run (Close)	225	.6422	4.37308	-32.47	31.85
	Short Run Raw Return (Close)	225	1.2789	5.58062	-20.80	41.50

Source: Researcher's Calculation

Table 6.17 shows that the very short run recorded the highest mean raw return with maximum standard deviation. The variability of raw return of IPOs was extremely high as compared to the return of the benchmark indexes. This also highlights that the return of the benchmark index was stable as compared to the return of the IPOs launched during 2020-2025. However the mean return of the IPOs were extremely high when compared to the select benchmark indexes, indicating that although the IPOs yielded higher return during the period but also attracted greater risk due to their increased volatility.

Table 6.18 Summary of Ranks

Pair no.			N	Mean Rank	Sum of Ranks
1	Raw Return of Listing Day (Close Price) – Raw Return of Listing Day (Open Price)	Negative Ranks	122 ^a	107.40	13103.00
		Positive Ranks	103 ^b	119.63	12322.00
		Ties	0 ^c		
		Total	225		
2	Nifty 50 return on Listing day (Open Price)- Raw Return on Listing Day (Open Price)	Negative Ranks	170 ^d	130.21	22136.00
		Positive Ranks	55 ^e	59.80	3289.00
		Ties	0 ^f		
		Total	225		
3	BSE IPO index return on Listing day (Open Price) - Raw Return on Listing day (Open Price)	Negative Ranks	166 ^g	134.30	22294.50
		Positive Ranks	59 ^h	53.06	3130.50
		Ties	0 ⁱ		
		Total	225		
4	Nifty 50 return on Listing day (close price) - Raw Return on Listing Day (close price)	Negative Ranks	163 ^j	133.97	21837.00
		Positive Ranks	62 ^k	57.87	3588.00
		Ties	0 ^l		
		Total	225		
5	BSE IPO index return on Listing	Negative Ranks	165 ^m	133.80	22077.00

	day (close price) - Raw Return on Listing day	Positive Ranks	60 ⁿ	55.80	3348.00
		Ties	0 ^o		
		Total	225		
6	Nifty 50 return of very short run (close price) – Raw return of IPOs during the very short run (close price)	Negative Ranks	162 ^p	132.04	21391.00
		Positive Ranks	63 ^q	64.03	4034.00
		Ties	0 ^r		
		Total	225		
7	BSE IPO index return of very short run (close price)- Raw return of IPOs during the very short run (close price)	Negative Ranks	163 ^s	132.31	21567.00
		Positive Ranks	62 ^t	62.23	3858.00
		Ties	0 ^u		
		Total	225		
8	Nifty 50 return of short run (close price) – Raw return of IPOs during the short run (close price)	Negative Ranks	157 ^v	131.55	20653.00
		Positive Ranks	68 ^w	70.18	4772.00
		Ties	0 ^x		
		Total	225		
9	BSE IPO index return during short run - Raw Return of IPOs during Short run	Negative Ranks	159 ^y	132.59	21082.00
		Positive Ranks	66 ^z	65.80	4343.00
		Ties	0 ^{aa}		
		Total	225		

10	Raw Return of Very Short Run (Close Price) - Raw Return on Listing Day (Close Price)	Negative Ranks	127 ^{ab}	108.72	13807.00
		Positive Ranks	98 ^{ac}	118.55	11618.00
		Ties	0 ^{ad}		
		Total	225		
11	Raw Return of IPOs during Short Run (Close Price) - Raw Return of IPOs during Very Short Run (Close Price)	Negative Ranks	128 ^{ae}	110.01	14081.00
		Positive Ranks	96 ^{af}	115.82	11119.00
		Ties	1 ^{ag}		
		Total	225		
Indicators					
1	a. Raw Return of Listing Day (Close Price) < Raw Return of Listing Day (Open Price)				
	b. Raw Return of Listing Day (Close Price) > Raw Return of Listing Day (Open Price)				
	c. Raw Return of Listing Day (Close Price) = Raw Return of Listing Day (Open Price)				
2	d. Nifty 50 return on Listing day (Open Price)< Raw Return on Listing Day (Open Price)				
	e. Nifty 50 return on Listing day (Open Price)> Raw Return on Listing Day (Open Price)				
	f. Nifty 50 return on Listing day (Open Price)= Raw Return on Listing Day (Open Price)				
3	g. BSE IPO index return on Listing day (Open Price) < Raw Return on Listing day(Open Price)				
	h. BSE IPO index return on Listing day (Open Price) > Raw Return on Listing day(Open Price)				

	i. BSE IPO index return on Listing day (Open Price) = Raw Return on Listing day(Open Price)
4	j. Nifty 50 return on Listing day (close price) < Raw Return on Listing Day (close price)
	k. Nifty 50 return on Listing day (close price) > Raw Return on Listing Day (close price)
	l. Nifty 50 return on Listing day (close price) = Raw Return on Listing Day (close price)
5	m. BSE IPO index return on Listing day (close price) < Raw Return on Listing day
	n. BSE IPO index return on Listing day (close price) > Raw Return on Listing day
	o. BSE IPO index return on Listing day (close price) =Raw Return on Listing day
6	p. Nifty 50 return of very short run (close price) < Raw return of IPOs during the very short run (close price)
	q. Nifty 50 return of very short run (close price) > Raw return of IPOs during the very short run (close price)
	r. Nifty 50 return of very short run (close price) = Raw return of IPOs during the very short run (close price)
7	s. BSE IPO index return of very short run (close price)< Raw return of IPOs during the very short run (close price)
	t. BSE IPO index return of very short run (close price) > Raw return of IPOs during the very short run (close price)
	u. BSE IPO index return of very short run (close price)= Raw return of IPOs during the very short run (close price)
8	v. Nifty 50 return of short run (close price) < Raw return of IPOs during the short run (close price)
	w. Nifty 50 return of short run (close price) > Raw return of IPOs during the short run (close price)

	x. Nifty 50 return of short run (close price) = Raw return of IPOs during the short run (close price)
9	y. BSE IPO index return during short run < Raw Return of IPOs during Short run
	z. BSE IPO index return during short run > Raw Return of IPOs during Short run
	aa. BSE IPO index return during short run = Raw Return of IPOs during Short run
10	ab. Raw Return of Very Short Run (Close Price) < Raw Return on Listing Day (Close Price)
	ac. Raw Return of Very Short Run (Close Price) > Raw Return on Listing Day (Close Price)
	ad. Raw Return of Very Short Run (Close Price) = Raw Return on Listing Day (Close Price)
11	ae. Raw Return of IPOs during Short Run (Close Price) < Raw Return of IPOs during Very Short Run (Close Price)
	af. Raw Return of IPOs during Short Run (Close Price) > Raw Return of IPOs during Very Short Run (Close Price)
	ag. Raw Return of IPOs during Short Run (Close Price) = Raw Return of IPOs during Very Short Run (Close Price)

Source: Researcher's Calculation

Table 6.18 shows the summation of the positive and negative ranks of the tested variables; if the positive and negative ranks are approximately similar then there is neutral difference between the variables.

For pair 1 (H_{020}), the aggregate of the negative ranks was close to aggregate of the positive ranks, which indicates that the raw return calculated on the listing day using the opening price was approximately similar to the raw return calculated at the end of the listing day.

For pair 2 (H_{021}), the sum of negative ranks was enormously higher than the sum of positive ranks, indicating that the raw return of the IPOs calculated using the opening

price on the listing day was higher than the return of NIFTY 50 calculated using the opening price during the same period.

For pair 3 (H_{022}), the sum of negative ranks was extremely higher than the sum of the positive ranks, indicating that the raw return of the IPOs calculated using the opening price on the listing day was higher than the return of the BSE IPO index calculated using the opening price during the same period.

For pair 4 (H_{023}), the aggregated negative ranks was higher than the aggregated positive ranks, indicating that the raw return of the IPOs on the listing day calculated using the closing price of the IPOs was higher than the NIFTY 50 return calculated using the closing price.

For pair 5 (H_{024}), the sum of negative ranks were higher as compared to the positive ranks, highlighting the better yield of IPOs during the listing day compared to the BSE IPO index return, both IPO return and the BSE IPO index returns calculated using the closing price.

For pair 6 (H_{025}), the aggregate of positive ranks was lower as compared to the aggregate of negative ranks, indicating that the NIFTY 50 index return was lower compared to the raw return of IPOs during the very short run period (one week from the listing day), both IPO return and the NIFTY 50 returns were calculated using the closing price.

For Pair 7 (H_{026}), the sum of negative ranks was significantly higher than the sum of positive ranks, indicating that IPOs outperformed the BSE IPO Index during the very short run. The returns for both IPOs and the BSE IPO Index were calculated using the closing prices.

For pair 8 (H_{028}), the negative ranks was extremely higher as compared to the sum of positive ranks, indicating the better performance of the IPOs during the short run compared to the NIFTY 50 index return, both the IPO returns as well as the NIFTY 50 returns were calculated using the closing prices.

For Pair 9 (H_{029}), the sum of negative ranks exceeded the sum of positive ranks, indicating that IPOs outperformed the BSE IPO Index during the short run. The returns for both IPOs and the BSE IPO Index were calculated using closing prices.

For Pair 10 (H_{027}), the sum of negative ranks was close to the sum of positive ranks, indicating that the raw return of IPOs, calculated using the closing price on the listing day, was comparable to the return yielded by the IPOs during the short run.

For Pair 11 (H_{030}), the sum of negative ranks was also close to the sum of positive ranks, suggesting that IPO returns, calculated using the closing prices, were similar in the short run and the very short run.

Table 6.19 Test Statistics

	H ₂₀	H ₂₁	H ₂₂	H ₂₃	H ₂₄	H ₂₅	H ₂₆	H ₂₇	H ₂₈	H ₂₉	H ₃₀
Z	-	-	-	-	-	-	-	-	-	-	-
	.399 ^b	9.640 ^b	9.802 ^b	9.334 ^b	9.580 ^b	8.878 ^b	9.058 ^b	1.120 ^b	8.123 ^b	8.562 ^b	1.525 ^b
Asymp. Sig. (2- tailed)	.690	.000	.000	.000	.000	.000	.000	.263	.000	.000	.127
a. Wilcoxon Signed Ranks Test											
b. Based on positive ranks.											
c. Based on negative ranks.											

Source: Researcher's Calculation

Table 6.19 reports the significance values for the tested pairs, which served as the basis for either rejecting or failing to reject the null hypotheses from H_{020} to H_{030} . The p value for H_{020} , H_{027} and H_{030} exceeded the 0.05 significance level, suggesting that the null hypothesis for these pairs could not be rejected. On the contrary, the significance levels for H_{021} , H_{022} , H_{023} , H_{024} , H_{025} , H_{026} , H_{028} , and H_{029} were less than 0.05, giving evidences for the rejection of the null hypotheses for these pairs. The results of hypotheses testing indicate similar raw returns of IPOs between the beginning and end of the listing day, between the listing day and the very short run, and between the very short run and the short run. Additionally, IPOs yielded better return compared to benchmark indexes (i.e. NIFTY 50 and BSE IPO index) during the listing day, very short run period and the short run period, in both cases where

returns were calculated using the opening and closing prices of the respective variables.

6.4 Summary

Based on the results it can be concluded that out of 30 hypotheses, the study failed to reject seven null hypotheses, while remaining twenty-three null hypotheses were rejected. It was also observed that IPO returns across different periods varied significantly during 1999-2025. The returns of the IPOs during different runs were also significantly higher than the return of the benchmark indexes on listing day, very short run, and short run during the years 1999-2025. During the study period from 1999 to 2019, the IPO returns on the listing day, very short run, short run, and medium run outperformed the returns of the selected benchmark indexes, while they did not outperform the benchmark indexes in the long and very long run.

References

- Bantwa, A. R. (2022). Price Performance of Initial Public Offerings (IPOs) With Special Focus on Underpricing: A Comparative Study of securities Listed on Indian (BSE) And Chinese (SSEC) Stock Exchanges (Unpublished Doctoral Thesis). *Gujarat Technological University, Ahmadabad*.
- Chhabra, K. (2011). Pricing performance of IPOs in India (*Unpublished doctoral thesis*). *Punjabi University Patiala, Commerce. Patiala: Shodhganga*.
- Chauhan, A. K. (2010). The analysis of the initial and post-issue performance of initial public offerings (IPOs) in the Indian stock market. In *Kumaun University, Nainital*.
- Ghosh, S. (2005). Underpricing of initial public offerings: The Indian experience. *Emerging Markets Finance and Trade*, 41(6), 45-57.
- Gupta, M.K. (2016). Performance of Initial Public Offering (IPOs) In Indian Capital Market (unpublished doctoral thesis). *UdaiPratap (Autonomous) College, Varanasi*
- KILARAHATTI, S., & V, J. B. (2022). An in-depth analysis of Trend, Pattern, and Progress of IPOs: An Evidence from India. *International Journal of Creative Research Thoughts (IJCRT)*, 10(1), 405–407. <https://www.ijcrt.org>
- Kiran, R., & Chopram Phil, R. I. (2011). Price Performance of IPOs in the Indian Stock Market. *Euro Economica*, 30 (4), 73-97.
- Narendrasinh, R. B. (2018). An Analytical Study On Performance Of Initial Public Offerings And Issue Mechanism In India (Unpublished doctoral thesis). *Sardar Patel University*.
- Pandey, K. C., (2011). Initial Public Offerings (IPOs) and the Price Behaviour (Unpublished doctoral thesis) *C.S.J.M. University, Kanpur*.

- Parab, B.R.,(2019). *Initial Public Offering (IPO) Performance Evaluation (Unpublished doctoral thesis)*. Jamnalal Bajaj Institute of Management Studies, Mumbai
- Sehgal, S., & Singh, B. (2008). *Determinants of Initial and Long-Run Performance of IPOs in Indian Stock Market*. *Asia Pacific Business Review*, 4(4), 24–37. doi:10.1177/097324700800400403
- Sehgal, S., & Sinha, B. K. (2013). Valuation of IPOs in India- An empirical study. *Business and Economic Research*, 3(2), 183.
- Shah, M. B. (2019). *Impact Of Ipo Grading On Performance Of Stock Of Selected Companies In India* (Unpublished doctoral thesis). Department of Business Studies, Sardar Patel University
- Singh, S., & Singh, B. (2008). Oversubscription and IPO underpricing: evidence from India. *The ICFAI Journal of Applied Finance*, 14(12), 65-73

CHAPTER 7

FACTORS AFFECTING THE PRICING PERFORMANCE OF IPOs IN INDIA

This chapter examines the effect of selected factors on the performance of IPOs across different periods, including (i) the listing day, (ii) the very short run, (iii) the short run, (iv) the medium run, (v) the long run, and the (vi) very long run. The factors selected for this study are (a) oversubscription, (b) lead time, (c) lot size, (d) face value, (e) issue size, (f) issue price, (g) the age of the IPO since incorporation, (h) the Nifty 50 index return, and (i) the BSE IPO index return. For the analyses, two datasets were used: the first dataset included 401 IPOs, while the second dataset comprised 392 IPOs. The difference in the number of IPOs was due to the unavailability of certain data. The first dataset was used for the analysis of IPOs against the NSE NIFTY 50 index, whereas the second dataset, consisting of 392 IPOs, was used for the analysis of IPOs with the BSE IPO index.

The normality of the data was assessed using the Shapiro-Wilk test and the Kolmogorov-Smirnov test. The significance value for all the variables was below 0.05, due to which the assumption that the data followed a normal distribution stands rejected. The data for this study was actual returns of the IPOs, which have high volatility and often deviate from normality. Furthermore, the relationship between the variables was examined to check for multicollinearity using the variance inflation factor (VIF); however, the VIF values were below 2, which assured the nonexistence of multicollinearity between the factors.

Since the returns of the IPOs are sometimes extremely high and at times negative, the presence of outliers is common.

Robust regression is a method intended to handle data that does not satisfy the assumption of being normally distributed by underweighting the outliers to minimize the influence of outliers on the estimation of regression coefficients (Hahn, 2024; Fox & Weisberg, 2019; John Hopkins, n.d.). Henceforth, a robust regression method was chosen for analysis.

7.1 Descriptive statistics of the variables

This section shows the descriptive statistics of datasets 1 and 2, as summarized in Tables 7.1 and 7.2, respectively. The descriptive statistics show the central tendencies, variability, and range of the variables selected for this study.

Table 7.1 Descriptive statistics of the ‘Dataset-1’

Variables	Mean	Std. error (SE)	Median	Std. Deviation	Minimum	Maximum
Listing day RR	19.66	1.93	9.93	38.36	-68.72	240.96
Listing day MAAR (NIFTY 50)	19.15	1.91	8.84	38.10	-79.39	241.90
Listing day NIFTY 50 return (closing price)	0.50	0.32	0.58	6.28	-16.035	60.16
Very short run RR	19.32	2.12	9.76	42.17	-74.05	273.89
Very short run MAAR (NIFTY50)	18.11	2.093	8.29	41.70	-83.94	272.18
Very short run NIFTY 50 return (Closing price)	1.20	0.48	1.27	9.68	-18.64	139.20
Short run RR	17.93	2.56	8.58	51.10	-84.79	351.75
Short run MAAR (NIFTY 50)	22.30	6.85	6.53	136.54	-112.04	2543.43
Short run NIFTY 50 return (Closing price)	1.99	0.58	2.41	11.56	-45.68	140.13
Medium run RR	26.58	4.14	7.42	82.49	-85.54	530.04
Medium run MAAR (NIFTY 50)	20.58	3.93	3.86	78.31	-142.69	509.82
Medium run NIFTY 50 return (Closing price)	6.15	0.90	6.30	17.94	-45.89	166.85
Long run RR	26.32	5.66	-1.40	112.80	-91.66	993.95
Long run MAAR return (NIFTY 50)	16.65	5.23	-11.15	104.23	-174.04	940.69

Long run NIFTY 50 return (Closing price)	9.67	1.41	11.61	28.05	-74.41	166.91
Very long run RR	17.39	10.49	-34.36	209.08	-99.05	3055.79
Very long run MAAR (NIFTY-50 return closing price)	-12.86	9.88	-62.47	196.98	-212.00	2860.22
Very long run NIFTY-50 return (Closing price)	30.27	1.73	22.94	34.53	-78.71	210.35
Oversubscription rate of IPOs (no. of times)	23.59	1.691	6.750	33.70	0.090	183.03
Issue Price of IPOs (Rs.)	289.78	13.89	190.00	276.82	11.00	1766.00
Face Value of IPOs (Rs.)	8.85	0.13	10.00	2.73	1.00	10.00
Lead Time of IPOs (days)	26.48	6.36	18.00	126.82	7.00	2094.00
Age (since incorporation) (in years)	17.66	0.73	14.15	14.56	0.54	100.06
Issue Size of IPOs (Cr.)	742.08	84.34	246.07	1680.45	15.55	15199.4 4
Lot Size of IPOs (Shares)	66.26	4.84	41.00	96.50	6.00	1200.00

Source: Author's computation using SPSS software

Table 7.1 shows the descriptive statistics of raw returns, market-adjusted returns, oversubscription rate, issue price, face value, lead time, age (since incorporation), issue size, and lot size of 401 IPOs, along with the NSE NIFTY-50 index's return across different runs. The mean of raw return on the listing day was reported at 19.66%, while the median value of raw return on the listing day was only 9.93, which indicates the presence of outliers in the data. The std. error of the listing day's raw return stood at 1.93, indicating a precise estimate. The minimum value of raw return on the listing day was -68.72, and the maximum value was 240.96, which showed the volatility of the raw return on the listing day. Similarly, the MAAR on the listing day also showed a high mean, a relatively lower median, and a low SE, with SD and extreme minimum and maximum values highlighting the considerable variance in IPO performance relative to the NIFTY 50 index. The mean and median

of the NIFTY 50 index on the listing day of the IPOs were only 0.50 and 0.58, respectively, indicating the poor performance of the NIFTY 50 during the listing day period. The minimum and the maximum values of the NIFTY 50 index showed comparatively lower variation than the listing day's raw return and the MAAR values.

In the very short run, the mean raw return of IPOs was 19.32%, however, the median was only 9.76. The mean raw return of the IPOs in the 'very short run' slightly declined, while the SD, minimum, and maximum range increased, reflecting enhanced volatility as compared to the listing day. In the very short run, the MAAR values showed a mean of 18.11% and median return of 8.29%, which indicated the strong performance of IPOs compared to the NIFTY 50 index. The NIFTY 50 return during the very short run was only 1.20%, with a median value of 1.27, which was slightly higher than the values of the NIFTY 50 on the listing day. The returns of the IPOs were relatively higher than the NIFTY 50 index during the very short run period.

During the short run, the raw return of the IPOs showed a mean value of 17.93% and a median of 8.58%, while the MAAR return mean value was 22.30 and the median was 6.53, reflecting the strong performance of the IPOs during the short run period. The mean NIFTY 50 return was 1.99, and the median was 2.41, which was lower than the return of the IPOs, indicating the superior performance of IPOs compared to the NIFTY 50 return in the short run.

The raw return of the IPOs in the medium run was higher as compared to the listing day, the very short run, and the short run. The mean and median value of the NIFTY 50 index during the medium run was higher as compared to the listing day, the very short run, and the short run. However, the raw return and the MAAR of the IPOs was relatively higher compared to the NIFTY 50 index's return during the medium run, indicating the outperformance of IPOs as compared to the NIFTY 50 index during the medium run.

In the long-run period, the mean value of the raw return of the IPOs was positive and high, but the median was negative, indicating that although the average return was

positive, the majority of IPOs yielded negative returns. The high standard deviation, as well as the extreme minimum and maximum values, also reflected the wide range of variations in returns. The median value of the NIFTY 50 index was positive, suggesting that the performance of the index was stable and positive.

In the very long run, the mean return of the IPOs was 17.39%, and the median was -34.36, suggesting a high number of underperforming IPOs compared to the overperforming IPOs. This difference between the mean and median values is further explained by the high standard deviation (SD) as well as extreme minimum and maximum values. The negative mean and median value of MAAR also reflects the underperformance of the IPOs as compared to the NIFTY 50 benchmark index. In the very long run, the NIFTY index recorded high mean and median values, indicating the strong performance of the index.

The mean value of the oversubscription rate of IPOs stood at 23.59, while the mean value was only 6.75, indicating that most of the IPOs experienced a modest oversubscription rate while few IPOs were highly oversubscribed. The mean value of the issue price was 289.77, while the median was 190; the minimum issue price of the IPOs was 11, and the maximum issue price of the IPO was 1766, indicating a wide range. The average face value of the IPOs was 8.85, and the median was 10, which showed that the maximum IPOs had a face value of Rs. 10. The average lead time of IPOs was 26.48 days, with the minimum lead time being 7 days and the maximum lead time being 2094 days. The average age of the companies launching their IPOs was 17.66 years, with a wide range of 0.54 to 100 years. The median age of the companies going public was 14.15, indicating that mostly the companies were younger. The mean value of the issue size was Rs. 742.08 crore, and the median age was Rs. 246.07 Crore, indicating that the IPOs raised less capital in comparison to the extreme maximum outlier. The median lot size was 41, indicating that most of the IPOs had smaller lot sizes as compared to the maximum lot size.

Table 7.2 Descriptive Statistics of the ‘Dataset-2’

Variables	Mean	Std. error	Median	Std. Deviation	Minimum	Maximum
Listing day RR	18.23	1.84	9.38	36.28	-68.72	240.96
Listing day MAAR (BSE IPO Index)	18.13	1.80	8.48	35.58	-75.36	246.55
Listing day- BSE IPO Index return (closing price)	0.10	0.38	0.28	7.46	-42.13	61.13
Very short run RR	17.55	2.03	8.86	40.06	-74.05	273.89
Very short run MAAR (BSE IPO Index)	16.82	2.07	9.02	40.92	-171.14	275.25
Very short run - BSE IPO Index return (Closing price)	0.73	0.62	0.83	12.17	-56.18	168.33
Short run RR	15.56	2.39	7.83	47.09	-84.79	351.75
Short run MAAR (BSE IPO Index)	24.86	10.96	7.93	216.14	-186.58	4174.28
Short run - BSE IPO Index return Closing price)	1.387	0.73	1.57	14.39	-51.67	164.33
Medium run RR	24.81	4.13	5.00	81.55	-85.54	530.04
Medium run MAAR (BSE IPO Index)	20.39	3.88	4.92	76.55	-156.43	502.94
Medium run BSE IPO Index return (Closing price)	4.53	1.26	5.21	24.88	-61.22	90.44
Long run RR	24.69	5.65	-1.76	111.53	-91.66	993.94

Long run MAAR return (BSE IPO Index)	18.90	5.24	-4.64	103.54	-229.76	955.29
Long run- BSE IPO Index return (Closing price)	5.79	1.92	3.08	37.83	-68.99	179.07
Very long run RR	15.05	10.60	-35.04	209.20	-99.05	3055.78
Very long run MAAR (BSE IPO Index)	-5.58	9.89	-41.28	195.19	-276.97	2870.15
Very long run - BSE IPO Index return (Closing price)	20.63	2.83	4.57	55.75	-51.32	271.46
Oversubscription rate of IPOs (times)	23.61	1.72	6.70	33.98	0.09	183.03
Issue Price of IPOs (Rs.)	294.35	14.11	195.00	278.25	11.00	1766.00
Face Value of IPOs (Rs.)	8.91	0.14	10.00	2.68	1.00	10.00
Lead Time of IPOs (days)	26.59	6.49	18.00	128.12	7.00	2094.00
Age of IPOs since incorporation (years)	17.73	0.74	14.15	14.65	0.54	100.06
Issue Size of IPOs (Cr.)	756.80	85.98	248.07	1695.84	15.55	15199.44
lot Size of IPOs (Shares)	65.33	4.92	40.00	97.05	5.00	1200.00

Source: Author's computation using SPSS software

Table 7.2 shows the descriptive statistics of raw returns, market-adjusted returns, oversubscription rate, issue price, face value, lead time, age (since incorporation), issue size, and lot size of 392 IPOs, along with the BSE IPO index's return across

different runs. The mean value of raw return on the listing day was 18.23%, while the median value of raw return on the listing day was only 9.38, reflecting the presence of outliers in the data. The std. error of the listing day's raw return stood at 1.84, indicating a precise estimate. The minimum value of raw return on the listing day was -68.72, and the maximum value was 240.96, which reflected the volatility of the raw return on the listing day. Likewise, the MAAR on the listing day also recorded a high mean, a relatively lower median value, and a low standard error showing the preciseness of the estimates, along with a high standard deviation and extreme min. and max. values reflecting significant variance in the performance of IPOs compared to the BSE IPO index. The mean and the median values of the BSE IPO index's return were 0.10 and 0.28, respectively, indicating the minimum returns of the BSE IPO index during the listing day period. The standard deviation of the BSE IPO index was 7.46, and the lower variation between its min. and maximum value indicated stability of its returns.

In the very short run, the mean raw return of the IPOs was 17.55%, while the median was 8.86, reflecting that the majority of IPOs yielded raw returns around 8-9% and some IPOs yielded exceptionally high returns. As compared to the listing day, the mean raw return of the IPOs showed a slight decline while the SD, extreme minimum, and maximum values broadened, which indicated an increase in volatility during the very short run. The mean of the MAAR value during the very short run was 16.81, and the median was 9.02%, which showed stronger performance of IPOs as compared to the BSE IPO index return of that period. The mean of the BSE IPO index's return during the very short run was 0.73%, and the median was 0.83%, which were comparatively higher than the values of the BSE IPO index during the listing day period. The IPOs yielded better returns in comparison to the BSE IPO index during the very short run.

In the short run, the raw return of IPOs showed a mean of 15.56% and the median was 7.83%, while the MAAR return's mean value was 28.85% and median was 7.93%, reflecting the strong performance of the IPOs. The mean and the median values of the BSE IPO index were 1.38% and 1.57%, respectively, which were

relatively lower than the return of the IPOs, reflecting the superior performance of the IPOs during the short run.

The mean raw return of the IPOs in the medium run was higher compared to the listing day and the very short run but slightly lower than the short run. However, the median value of the raw return during the medium run was lower than that of the listing day, the very short run, and the short run, highlighting the underperformance of a significant number of IPOs. The mean return of the BSE IPO index was 4.53%, and the median was 5.20%. Compared to the mean values of raw return and the MAAR, the BSE IPO Index's mean was lower. However, the median return of the BSE IPO index was slightly higher than the median values of the raw and the MAAR of IPOs during the medium run.

During the long run, the mean value of the raw return was 24.69%, and the median was -1.76%. In the long run, the mean value of the raw return of the IPOs was positive and high, but the median was negative, indicating that although the average return was positive, the majority of IPOs yielded negative returns. Similarly, the positive mean and the negative median value of the MAAR value also suggest the higher average returns of the IPOs compared to the BSE IPO index. However, the negative median value reflects that the majority of IPOs yielded lower market-adjusted returns. The mean and the median value of the BSE IPO index were positive, suggesting that the performance of the index was stable and positive.

In the very long run, the raw return of IPOs also showed a discrepancy between the mean and median values, indicating a high average raw return of the IPOs, while the negative median value reflected that most of the IPOs underperformed. The disparity in the raw return of the IPOs was further explained by the high standard deviation value as well as the extreme minimum and maximum values. The negative mean and median values of the MAAR showed the underperformance of the IPOs compared to the BSE IPO index during the very long run. On the contrary, the BSE IPO index's mean and median values were positive, indicating the stable performance of the index during the period.

The mean oversubscription rate of the IPOs was recorded at 23.61 times, with a median of 6.70, indicating that although the average subscription rate was high, more IPOs experienced lower demand. The high SD and the extreme minimum and maximum values indicated the variability of investor demand across different IPOs.

The average issue price of the IPOs was Rs. 294.35, the median was 195, the SD was 287.25, the minimum value was 11, and the maximum value was 1766. The median value of issue price suggests that the most no. of IPOs had issue prices on the lower side; the high SD as well as the extreme minimum and maximum values showed the wide variations in pricing of the IPOs.

The mean face value of the IPOs was Rs. 8.9, and the median was 10, reflecting that the majority of the IPOs had a face value close to Rs. 10. The small SD shows less variation in the face value across different IPOs. The average lead time of the IPOs was around 26.59 days, with a median of 18 days. The median value suggests that most IPOs were listed on the stock exchange within a period of 18 days, while some IPOs took an extremely long time to be listed after announcement. The average age of the companies bringing IPOs was 17.73 years, and the median age was 14.15 years, indicating that the majority of companies going public were younger. The average issue size of IPOs was Rs. 756.80 crore, and the median was Rs. 248.07 crore. This showed that while the average issue size is large, the majority of IPOs had smaller issue sizes. The variations in the issue size had a wide range reflected by the extreme minimum and maximum values of Rs. 15.55 crore and Rs. 15,199.44 crore, respectively. The average lot size was recorded at 65.33 shares, and the median lot size of IPOs was 40.00 shares. This reflected that the majority of IPOs had a lot size around 40 shares, but the mean value is higher due to some IPOs having larger lot sizes. The variations in the lot sizes of the IPO were reflected by the extreme minimum and maximum values.

7.2 Relationship between the selected factors and the pricing performance of the IPOs

This section highlights the impact of the selected variables on the pricing performance of the IPOs. The factors selected for the study were oversubscription

rate of the IPOs, issue price, face value, lead-time, age (since incorporation), issue size, lot size, the NIFTY 50 index's return, and BSE IPO index's return. The effect of these variables on the raw return of the IPOs as well as the MAAR of the IPOs was assessed in this section across different time periods (i.e. Listing day, very short run, short run, medium run, long run and very long run). The regression analyses presented in the subsections of 7.2.1, 7.2.2, 7.2.3, 7.2.4, 7.2.5, 7.2.6 as follows.

7.2.1 Listing day's regression analysis

The listing day raw (RR) and the market adjusted abnormal returns (MAAR) of the IPOs were analyzed against the selected variables to assess the influence of factors on the pricing performance of the IPOs.

7.2.1.1 Relationship between Determinants (including NIFTY 50 return) and Listing Day Raw Returns of IPOs

Model 1-

Listing day Raw Return of IPOs = $\alpha + \beta_1 \times \text{Oversubscription} + \beta_2 \times \text{Issue Price} + \beta_3 \times \text{Face Value} + \beta_4 \times \text{Lead Time} + \beta_5 \times \text{Age Year} + \beta_6 \times \text{Issue Size} + \beta_7 \times \text{Lot Size} + \beta_8 \times \text{Nifty 50 return} + \epsilon$

This equation represents the relationship between the dependent variable (Listing day Raw Return) and the independent variables (oversubscription, issue price, face value, lead-time, age year, issue size, lot size, and Nifty 50 return) based on the estimates obtained from the robust regression model.

In this model

- Listing day Raw Return represented the dependent variable.
- α (intercept), β_1 (oversubscription), β_2 (Issue Price), β_3 (Face value), β_4 (Lead time), β_5 (Age in year), β_6 (Issue Size), β_7 (Lot Size), β_8 (NIFTY 50 return) were the coefficients to be estimated.
- Oversubscription, issue price, face value, lead-time, age year, issue size, lot size, NIFTY-50 return were the predictor variables

The model's robust residual standard error (ϵ) was 19.52, and the multiple R^2 was 0.4372 (adjusted $R^2 = 0.4256$). The Intercept (α) was 19.62, which indicated the estimated value of the dependent variable when all the predictors are zero.

Key Findings:

- Oversubscription ($\beta_1=0.51$, $p<0.001$): each unit increase in oversubscription leads to 0.51 unit increase in the listing day's raw return, keeping other variables constant.
- Issue Price ($\beta_2 = -0.0087$, $p<0.05$): Issue price showed negative associated with listing day's Raw Return.
- Face value ($\beta_3 = -1.01$, $p<0.05$): Face value was negatively associated with listing day Raw Return.
- Lead-time ($\beta_4=-0.28$, $p<0.001$): Longer lead times are associated with lower listing day raw return
- Listing day NIFTY 50 ($\beta_8=1.66$, $p<0.001$): High Nifty index return values showed strongly associated with increased listing day's raw return.

Non-significant predictors included:

- Age ($\beta_5 = -0.02$, $p=0.72$)
- Issue size ($\beta_6 = -0.0004$, $p=0.54$)
- Lot size ($\beta_7 = -0.0166$, $p=0.12$).

Residual Analysis

- Residuals of model 1 ranged from -87.48 to 566.84 with a median of -0.29.
- Outliers: 11 observations were reported as outliers (robust weights <0.00025). The robust regression model used the MM-estimator to account for the presence of outliers and high leverage points.
- Robustness weights: Majority of observations had weights near 1, indicating limited influence of outliers on the overall model fit.

The results of robust regression model 1 highlighted that the oversubscription rate, Issue price, lead-time, face value, and the NIFTY 50 index's return were significant

predictors of listing day's return. Ghosh (2005) and Shelly and Singh (2008), Sehgal & Sinha (2013) also mentioned the effect of listing delay on the return of the IPOs and concluded that the IPOs having higher lead time showed higher underpricing.

7.2.1.2 Relationship between Determinants and Listing Day Market-Adjusted Abnormal Returns of IPOs (Based on NIFTY 50)

Model 2

Listing day MAAR of IPOs = $\alpha + \beta_1 \times \text{Oversubscription} + \beta_2 \times \text{Issue Price} + \beta_3 \times \text{Face Value} + \beta_4 \times \text{Lead Time} + \beta_5 \times \text{Age Year} + \beta_6 \times \text{Issue Size} + \beta_7 \times \text{Lot Size} + \epsilon$

This equation represented the relationship between the dependent variable (Market-Adjusted Abnormal Returns) and the independent variables (oversubscription, issue price, face value, lead-time, age year, issue size, lot size) based on the estimates obtained from the robust regression model.

In this model

- Listing day MAAR of IPOs represented the dependent variable.
- α (intercept), β_1 (oversubscription), β_2 (Issue Price), β_3 (Face value), β_4 (Lead time), β_5 (Age year), β_6 (Issue Size), β_7 (Lot Size) are the coefficients to be estimated.
- oversubscription, issue price, face value, lead-time, age year, issue size, lot size are the predictor variables

In Model 2 robust residual standard error (ϵ) was 19.43, the R^2 value was 0.3702 (adjusted $R^2=0.3589$). The Intercept (α) was 15.2, which indicated the estimated value of the dependent variable when all the predictors are zero

Residual Analysis

- Residual Range: Residuals ranged from -84.86 to 194.87, with a median of -0.74.
- Outliers: 9 observations were identified as outliers (robust weights <0.00025).

- Robustness Weights: Most observations had robustness weights near 1, indicating a minimized influence of outliers on the overall fit. The weights ranged from 0.017 to 0.999, with a median of 0.950.

Significant factors

- Oversubscription ($\beta_1=0.51$, $p < 0.001$): A one-unit increase in oversubscription was associated with a 0.51-unit increase in listing day's MAAR value, holding all other variables constant.
- Issue Price ($\beta_2= -0.0069$, $p = 0.065$): A marginally significant negative relationship existed between issue price and Listing day's MAAR value (significant at 0.1 level).
- Face value ($\beta_3=-1.11$, $p=0.024$): Higher face values negatively impacted listing day's MAAR value
- Lead-time ($\beta_4=-0.019$, $p = 0.049$): Longer lead times were associated with a lower listing day's MAAR value

Non-significant predictors:

- Age ($\beta_5=-0.003$, $p=0.96$)
- Issue size ($\beta_6=-0.0004$, $p=0.60$)
- Lot size ($\beta_7=-0.0146$, $p=0.14$)

The results of Model 2, showed that oversubscription rate, lead-time, and face value of the IPOs were significant predictors of listing day's MAAR return. The oversubscription rate had the highest influence among the significant predictors. The other factors such as Age of companies going public, issue size of the IPOs, lot size of IPOs did not show any significant impact on the listing day's MAAR value (raw return of IPOs adjusted with the NIFTY 50 index).

7.2.1.3 Relationship between Determinants (Including BSE IPO Index Return) and Listing Day Raw Returns of IPOs

Model 3

Listing day Raw Return of IPOs = $\alpha + \beta_1 \times \text{Oversubscription} + \beta_2 \times \text{Issue Price} + \beta_3 \times \text{Face Value} + \beta_4 \times \text{Lead Time} + \beta_5 \times \text{Age Year} + \beta_6 \times \text{Issue Size} + \beta_7 \times \text{Lot Size} + \beta_8 \times \text{BSE IPO Index's return} + \epsilon$

The equation represented the relationship between the dependent variable (Raw return) and the independent variables (oversubscription, issue price, face value, lead-time, age year, issue size, lot size, and BSE IPO Index's return) based on the estimates obtained from the robust regression model.

In this model

- Listing day Raw Return of IPOs represented the dependent variable.
- α (intercept), β_1 (oversubscription), β_2 (Issue Price), β_3 (Face value), β_4 (Lead time), β_5 (Age year), β_6 (Issue Size), β_7 (Lot Size), β_8 (BSE IPO return) are the coefficients to be estimated.
- oversubscription, issue price, face value, lead-time, age year, issue size, lot size, BSE IPO Index's return are the predictor variables

In Model 3 robust residual standard error (ϵ) was 19.48, the R^2 value was 0.4431 (adjusted $R^2=0.431$). The Intercept (α) was 2.07, which indicated the estimated value of the dependent variable when all the predictors are zero

Residual Analysis

- Residual Range: Residuals range from -936.46 to 179.58, with a median of -0.56.
- Outliers: 9 observations identified as outliers with weights <0.00026 .
- Robustness Weights: Ranged from 0.010 to 0.999 and had a median of 0.950, which highlighted strong robustness of most observations.

Significant Predictors

- Oversubscription ($\beta_1=0.50$, $p<0.001$): Oversubscription remains the strongest driver of LD_RR, with a significant and positive impact. A one-unit increase in oversubscription predicts a 0.50-unit increase in listing day Raw Return of IPOs
- Listing day BSE IPO return ($\beta_8=1.33$, $p<0.001$): The BSE IPO Index's return on the listing day is a highly significant factor, indicating that a higher closing price leads to a substantial increase in listing day Raw Return of IPOs.
- Lead-time ($\beta_4=0.44$, $p=0.071$): a longer lead-time had a positive impact on listing day Raw Return of IPOs, but was significant at 0.1 level and not on 0.05 level.

Non-significant Predictors

- Issue Price ($\beta_2=-0.0018$, $p=0.625$)
- Age ($\beta_5=0.0013$, $p=0.982$, $p=0.982$)
- Issue size ($\beta_6=-0.00007$, $p=0.924$)
- Lot size ($\beta_7=0.0047$, $p=0.642$)
- Face Value ($\beta_3=-0.69$, $p=0.121$)

In model 3 only the oversubscription rate and the listing day's BSE IPO index's return proved to be significant and positively associated with the listing day raw return of the IPOs. Lead-time was also marginally significant at 0.1 level and explained some variance of the dependent variable.

7.2.2.4 Relationship between Determinants and Listing Day Market-Adjusted Abnormal Returns of IPOs (Using BSE IPO Index as Benchmark)

Model 4

Listing day MAAR of IPOs = $\alpha + \beta_1 \times \text{Oversubscription} + \beta_2 \times \text{Issue Price} + \beta_3 \times \text{Face Value} + \beta_4 \times \text{Lead Time} + \beta_5 \times \text{Age Year} + \beta_6 \times \text{Issue Size} + \beta_7 \times \text{Lot Size} + \epsilon$

This equation represented the relationship between the dependent variable (Raw return) and the independent variables (oversubscription, issue price, face value, lead-time, age year, issue size, lot size) based on the estimates obtained from the robust regression model.

In this model

- Listing day MAAR of IPOs was the dependent variable.
- α (intercept), β_1 (oversubscription), β_2 (Issue Price), β_3 (Face value), β_4 (Lead time), β_5 (Age year), β_6 (Issue Size), β_7 (Lot Size) are the coefficients to be estimated.
- oversubscription, issue price, face value, lead-time, age year, issue size, lot size are the predictor variables

In Model 4 robust residual standard error (ϵ) was 19.4, the R^2 value was 0.3719 (adjusted $R^2=0.3604$). The Intercept (α) was 1.09, which indicated the estimated value of the dependent variable when all the predictors are zero

Residual Analysis

- Residual Range: Residuals ranged from -910.61 to 178.34, with a median of -0.08.
- Outliers: 9 observations were identified as outliers with weights <0.00026
- Robustness Weights: Weights ranged from 0.014 to 0.999, with a median of 0.950, indicating that most observations had limited influence on the model.

Significant predictors:

- Oversubscription ($\beta_1=0.49$, $p < 0.001$): A one-unit increase in oversubscription is associated with a 0.49 unit increase in Listing day's MAAR of IPOs, holding all other variables constant.
- Lead-time ($\beta_4=0.43$, $p=0.078$): Longer lead times show a positive association with listing day MAAR of IPOs but are only marginally significant.
- Face Value ($\beta_3=-0.79$, $p=0.08$): Higher face values are associated with a negative impact on listing day MAAR of IPOs but are marginally significant.

Non-significant predictors:

- Issue Price ($\beta_2 = -0.0017$, $p = 0.665$)
- Age ($\beta_5 = 0.0046$, $p = 0.938$)
- Issue size ($\beta_6 = -0.00014$, $p = 0.859$)
- Lot size ($\beta_7 = 0.0048$, $p = 0.645$)

In model 4, the oversubscription rate was the only predictor, which had a significance value of below 0.05, the lead-time and the face value were significant at 0.1 level. The oversubscription rate had the strongest predictor while the lead-time and the face value had marginal effect on the listing day's market adjusted return of the IPOs.

7.2.2 Regression Analysis of IPO Returns in the Very Short Run

7.2.2.1 Relationship of Determinants (Including NIFTY 50 index's return) with the Run Raw Returns of IPOs during the Very Short run

Model 5-

Very short run Raw Return of IPOs = $\alpha + \beta_1 \times \text{Oversubscription} + \beta_2 \times \text{Issue Price} + \beta_3 \times \text{Face Value} + \beta_4 \times \text{Lead Time} + \beta_5 \times \text{Age Year} + \beta_6 \times \text{Issue Size} + \beta_7 \times \text{Lot Size} + \beta_8 \times \text{Nifty 50 return} + \epsilon$

This equation represented the relationship between the dependent variable (raw return) and the independent variables (oversubscription, issue price, face value, lead-time, age year, issue size, lot size, and Nifty 50 return) based on the estimates obtained from the robust regression model.

In this model

- Very short run Raw Return of IPOs represented the dependent variable.
- α (intercept), β_1 (oversubscription), β_2 (Issue Price), β_3 (Face value), β_4 (Lead time), β_5 (Age year), β_6 (Issue Size), β_7 (Lot Size), β_8 (NIFTY 50 return) are the coefficients to be estimated.

- oversubscription, issue price, face value, lead-time, age year, issue size, lot size, NIFTY 50 return are the predictor variables

In Model 5 robust residual standard error (ϵ) was 23.55, the R^2 value was 0.3545 (adjusted $R^2=0.3412$).

Residual Analysis:

- Residual Range: Residuals ranged from -150.43 to 539.22, with a median of -1.32.
- Outliers: 12 observations were identified as outliers with weights < 0.00025 .
- Robustness Weights: Ranged from 0.028 to 0.999 and had a median of 0.949, indicating strong robustness of most observations.

Significant Predictor:

- Oversubscription ($\beta_1=0.53, p<0.001$): Oversubscription continued to be a significant positive predictor of Very short run Raw Return of IPOs, with a 0.53-unit increase in returns for each unit increase in oversubscription.
- Lead-time ($\beta_4=-0.26, p<0.001$): A longer lead time negatively impacted Very short run Raw Return of IPOs, with a one-unit increase in lead time predicting a 0.26-unit decreased in returns.
- NIFTY50 return ($\beta_8 = 1.47, p < 0.001$): The NIFTY50 index return on the listing day had a strong positive effect, with a 1.47 unit increase in ‘Very short run Raw Return of IPOs’ for every unit increase in the NIFTY50 return.
- Issue Price ($\beta_2 = -0.0077, p = 0.0688$): The issue price has a negative but marginally significant effect on Very short run Raw Return of IPOs, suggesting that a higher issue price had marginal negative effect on the return of IPOs.

Non-significant Predictors:

- Age ($\beta_5 = -0.063, p = 0.380$)
- Issue size ($\beta_6 = -0.00035, p = 0.6217$)
- Lot size ($\beta_7 = -0.0136, p = 0.3521$)

- Face Value ($\beta_3 = -0.88$, $p = 0.1524$)

Oversubscription and one week's NIFTY 50 return were the most significant predictors of Very short run Raw Return of IPOs, with both showing strong positive effects. This suggested that investor demand and market conditions on the listing day (as reflected by NIFTY50 returns) are important drivers of returns. Lead-time negatively influenced Very short run Raw Return of IPOs, suggesting that a longer period between the issue and the listing may be detrimental to the stock's performance. Issue Price showed a marginal negative association, however it was not a strong predictor. Other variables like age of companies bringing IPO, issue size, lot size, and face Value did not show any significant effects in this robust regression model.

7.2.2.2 Relationship of Determinants with the Market-Adjusted Abnormal Returns of IPOs (Using NIFTY 50) during the Very Short Run

Model 6

Very short run MAAR of IPOs = $\alpha + \beta_1 \times \text{Oversubscription} + \beta_2 \times \text{Issue Price} + \beta_3 \times \text{Face Value} + \beta_4 \times \text{Lead Time} + \beta_5 \times \text{Age Year} + \beta_6 \times \text{Issue Size} + \beta_7 \times \text{Lot Size} + \epsilon$

This equation represents the relationship between the dependent variable (Market-Adjusted Abnormal Returns) and the independent variables (oversubscription, issue price, face value, lead-time, age year, issue size, lot size) based on the estimates obtained from the robust regression model.

In this model

- Very short run MAAR of IPOs represented the dependent variable.
- α (intercept), β_1 (oversubscription), β_2 (Issue Price), β_3 (Face value), β_4 (Lead time), β_5 (Age year), β_6 (Issue Size), β_7 (Lot Size) are the coefficients to be estimated.
- oversubscription, issue price, face value, lead-time, age year, issue size, lot size were the predictor variables

In Model 6 robust residual standard error (ϵ) was 23.49, the R^2 value was 0.3076 (adjusted $R^2=0.2951$). The Intercept (α) was 16.75, which indicated the estimated value of the dependent variable when all the predictors are zero

Residual Analysis:

- Residual Range: Residuals ranged from -85.54 to 428.03, with a median of -0.94.
- Outliers: 11 observations were identified as outliers with weights < 0.00025 .
- Robustness Weights: Ranged from 0.015 to 0.999, with a median of 0.946, indicating strong robustness of most observations.

Significant Predictors:

- Oversubscription ($\beta_1=0.52$, $p<0.001$): Oversubscription remains the strongest driver of Very short run MAAR of IPOs, with a significant and positive impact. A one-unit increase in oversubscription predicts a 0.52-unit increase in Very short run MAAR of IPOs.
- Lead-time ($\beta_4=-0.21$, $p<0.001$): Longer lead times have a significant negative impact on Very short run MAAR of IPOs. A one-unit increase in lead-time predicts a 0.21-unit decrease in Very short run MAAR of IPOs.
- Issue Price ($\beta_2=-0.0071$, $p=0.0928$): The price at which the issue is offered shows a negative but marginally significant impact on Very short run MAAR of IPOs.

Non-significant Predictors:

- Age ($\beta_5 = -0.061$, $p = 0.4037$)
- Issue size ($\beta_2 = -0.00043$, $p = 0.5715$)
- Lot size ($\beta_7 = -0.012$, $p = 0.3974$)
- Face Value ($\beta_3 = -1.01$, $p = 0.1070$)

This robust regression model highlighted the significant impact of oversubscription and lead-time on Very short run MAAR of IPOs. Oversubscription remains the key driver of returns, while lead-time negatively influenced the performance. The

remaining predictors (e.g., Age, Issue size, Lot size, Face Value) did not show significant effects on Very short run MAAR of IPOs in this robust regression model.

7.2.2.3 Relationship of Determinants (Including BSE IPO Index's Return) with Raw Returns of IPOs during the Very Short Run

Model 7

Very short run Raw Return of IPOs = $\alpha + \beta_1 \times \text{Oversubscription} + \beta_2 \times \text{Issue Price} + \beta_3 \times \text{Face Value} + \beta_4 \times \text{Lead Time} + \beta_5 \times \text{Age Year} + \beta_6 \times \text{Issue Size} + \beta_7 \times \text{Lot Size} + \beta_8 \times \text{BSE IPO Index's return} + \epsilon$

This equation represents the relationship between the dependent variable (raw return of IPOs in very short run) and the independent variables (oversubscription, issue price, face value, lead-time, age year, issue size, lot size, and Nifty 50 return) based on the estimates obtained from the robust regression model.

In this model

- Very short run Raw Return of IPOs represented the dependent variable.
- α (intercept), β_1 (oversubscription), β_2 (Issue Price), β_3 (Face value), β_4 (Lead time), β_5 (Age year), β_6 (Issue Size), β_7 (Lot Size) were the coefficients to be estimated.
- oversubscription, issue price, face value, lead-time, age year, issue size, lot size, NIFTY 50 return were the predictor variables

Model 7 robust residual standard error (ϵ) was 23.6, the R^2 value was 0.3623 (adjusted $R^2=0.3489$). The Intercept (α) was 13.31, which indicated the estimated value of the dependent variable when all the predictors are zero

Residual Analysis:

- Residual Range: Residuals ranged from -195.44 to 386.19, with a median of -1.17.
- Outliers: 9 observations were identified as outliers with weights < 0.00026 .

- Robustness Weights: Ranged from 0.019 to 0.999, with a median of 0.948, indicating strong robustness of most observations.

Significant Predictors:

- Oversubscription ($\beta_1 = 0.53$, $p < 0.001$): Oversubscription was a significant positive predictor of Very short run Raw Return of IPOs, with a 0.53-unit increase in returns for each unit increase in oversubscription.
- Lead-time ($\beta_4 = -0.19$, $p < 0.001$): A longer lead time negatively impacted Very short run Raw Return of IPOs, a one-unit increase in lead time predicted a 0.19-unit decrease in returns.
- BSE IPO index's return ($\beta_8 = 1.14$, $p < 0.001$): The BSE closing price on the listing day had a strong positive effect, with a 1.14-unit increase in Very short run Raw Return of IPOs for every unit increase in BSE IPO index's return.
- Issue Price ($\beta_2 = -0.0062$, $p = 0.1379$): The issue price has a negative but marginally significant effect on Very short run Raw Return of IPOs, suggesting that higher issue prices slightly reduce returns.

Non-significant Predictors:

- Age ($\beta_5 = -0.070$, $p = 0.3122$)
- Issue size ($\beta_2 = -0.00026$, $p = 0.6987$)
- Lot size ($\beta_7 = -0.0048$, $p = 0.7183$)
- Face Value ($\beta_3 = -0.72$, $p = 0.2277$)

This robust regression model indicated the importance of oversubscription and market conditions in explaining Very short run Raw Return of IPOs. Lead-time negatively affects returns, while the remaining variables did not show significant effects.

7.2.2.4 Relationship of Determinants with the Market-Adjusted Abnormal Returns of IPOs (Using BSE IPO Index's as Benchmark) during the Very Short Run

Model 8

Very short run MAAR of IPOs = $\alpha + \beta_1 \times \text{Oversubscription} + \beta_2 \times \text{Issue Price} + \beta_3 \times \text{Face Value} + \beta_4 \times \text{Lead Time} + \beta_5 \times \text{Age Year} + \beta_6 \times \text{Issue Size} + \beta_7 \times \text{Lot Size} + \epsilon$

This equation represents the relationship between the dependent variable (Market-Adjusted Abnormal Returns of IPOs in very short run i.e. one week) and the independent variables (oversubscription, issue price, face value, lead-time, age year, issue size, lot size) based on the estimates obtained from the robust regression model.

In this model

- Very short run MAAR of IPOs represented the dependent variable.
- α (intercept), β_1 (oversubscription), β_2 (Issue Price), β_3 (Face value), β_4 (Lead time), β_5 (Age year), β_6 (Issue Size), β_7 (Lot Size) were the coefficients to be estimated.
- oversubscription, issue price, face value, lead-time, age year, issue size, lot size were the predictor variables

Model 8 robust residual standard error (ϵ) was 23.5, the R^2 value was 0.3194 (adjusted $R^2=0.3069$). The Intercept (α) was 13.50, which indicated the estimated value of the dependent variable when all the predictors are zero

Residual Analysis:

- Residual Range: Residuals ranged from -172.18 to 361.67, with a median of -0.82.
- Outliers: 9 observations were identified as outliers with weights < 0.00026 .
- Robustness Weights: Ranged from 0.0097 to 0.999, with a median of 0.947, indicating strong robustness of most observations

Significant Predictors:

- Oversubscription ($\beta_1 = 0.53$, $p < 0.001$): Oversubscription remained a significant positive predictor of Very short run MAAR of IPOs, meaning higher demand for shares is associated with higher returns.
- Lead-time ($\beta_4 = -0.175$, $p < 0.001$): A longer lead-time between the issue and listing is negatively associated with Very short run MAAR of IPOs, indicating that more time between these events may reduce returns.
- Issue Price ($\beta_2 = -0.0060$, $p = 0.1531$): The Issue Price has a small negative effect on Very short run MAAR of IPOs, but it is not statistically significant at the 0.05 level.

Non-significant Predictors:

- Age ($\beta_5 = -0.069$, $p = 0.3195$)
- Issue size ($\beta_6 = -0.00028$, $p = 0.6868$)
- Lot size ($\beta_7 = -0.0044$, $p = 0.7466$)
- Face Value ($\beta_3 = -0.768$, $p = 0.1989$)

The model indicated that oversubscription and lead-time were the most important factors in determining Very short run MAAR of IPOs. However, many other factors like issue price, age, and lot size had no significant effect on the returns.

7.2.3 Regression Analysis of IPO Returns in Short Run

7.2.3.1 Relationship of the determinants (including the NIFTY 50 return as a factor) with the raw return of the IPOs during the Short Run

Model 9

Short run Raw Return of IPOs = $\alpha + \beta_1 \times \text{Oversubscription} + \beta_2 \times \text{Issue Price} + \beta_3 \times \text{Face Value} + \beta_4 \times \text{Lead Time} + \beta_5 \times \text{Age Year} + \beta_6 \times \text{Issue Size} + \beta_7 \times \text{Lot Size} + \beta_8 \times \text{NIFTY 50 return} + \epsilon$

This equation represents the relationship between the dependent variable (raw return) and the independent variables (oversubscription, issue price, face value, lead-time,

age year, issue size, lot size, and Nifty 50 return) based on the estimates obtained from the robust regression model.

In this model

- Short run Raw Return of IPOs represented the dependent variable.
- α (intercept), β_1 (oversubscription), β_2 (Issue Price), β_3 (Face value), β_4 (Lead time), β_5 (Age year), β_6 (Issue Size), β_7 (Lot Size), β_8 (NIFTY 50 return) are the coefficients to be estimated.
- oversubscription, issue price, face value, lead-time, age year, issue size, lot size, NIFTY 50 return are the predictor variables

Model 9 robust residual standard error (ϵ) was 29.43, the R^2 value was 0.32 (adjusted $R^2=0.3059$). The Intercept (α) was 16.95, which indicated the estimated value of the dependent variable when all the predictors are zero

Residual Analysis:

- Residual Range: Residuals ranged from -85.20 to 498.04, with a median of 0.70.
- Outliers: 9 observations identified as outliers with weights < 0.00025 .
- Robustness Weights: Ranged from 0.0139 to 0.999, with a median of 0.948, indicating that most observations were weighted highly, but there were a few outliers.
- Intercept ($\alpha = 16.95$, $p = 0.133$): The Intercept is not statistically significant, which is common in regression models where it represents the baseline return when all predictors are zero.

Significant predictors

- Oversubscription ($\beta_1 = 0.54$, $p < 0.001$): Oversubscription was a significant positive predictor of Short run Raw Return of IPOs, indicating that higher demand for shares correlates with higher returns.

- Lead-time ($\beta_4 = -0.256$, $p < 0.001$): A longer lead-time negatively affected the short run Raw Return of IPOs, suggesting that longer periods between issue and listing leads to lower IPO returns.
- NIFTY 50 index's short run return ($\beta_8 = 0.91$, $p < 0.001$): NIFTY 50 index's short run return, had a strong positive impact on the short run Raw Return of IPOs, suggesting that IPOs correlated with the performance of the NIFTY50 index tend to show higher returns.

Non-significant Predictors:

- Issue Price ($\beta_2 = -0.0059$, $p = 0.275$)
- Age ($\beta_5 = -0.032$, $p = 0.761$)
- Issue size ($\beta_6 = -0.00066$, $p = 0.460$)
- Lot size ($\beta_7 = -0.0072$, $p = 0.668$)
- Face Value ($\beta_3 = -1.42$, $p = 0.141$)

This model suggests that oversubscription, lead-time, and NIFTY 50 index's short run return are the main determinants of IPO returns during short run. Oversubscription remains the most significant factor, followed by NIFTY 50 index's short run return and the negative impact of a longer lead-time.

7.2.3.2 Relationship of the determinants with the market adjusted abnormal return of the IPOs (using NIFTY 50) during the Short Run

Model 10

Short run MAAR of IPOs = $\alpha + \beta_1 \times \text{Oversubscription} + \beta_2 \times \text{Issue Price} + \beta_3 \times \text{Face Value} + \beta_4 \times \text{Lead Time} + \beta_5 \times \text{Age Year} + \beta_6 \times \text{Issue Size} + \beta_7 \times \text{Lot Size} + \epsilon$

This equation represents the relationship between the dependent variable (Market-Adjusted Abnormal Returns) and the independent variables (oversubscription, issue price, face value, lead-time, age year, issue size, lot size) based on the estimates obtained from the robust regression model.

In this model

- Short run MAAR of IPOs represented the dependent variable.
- α (intercept), β_1 (oversubscription), β_2 (Issue Price), β_3 (Face value), β_4 (Lead time), β_5 (Age year), β_6 (Issue Size), β_7 (Lot Size) were the coefficients to be estimated.
- Oversubscription, issue price, face value lead-time, age year, issue size, lot size, NIFTY 50 return were the predictor variables

Model 10 robust residual standard error (ϵ) was 29.76, the R^2 value was 0.257 (adjusted $R^2=0.2436$). The Intercept (α) was 17.25, which indicated the estimated value of the dependent variable when all the predictors are zero

Residual Analysis:

- Residual Range: Residuals ranged from -85.61 to 2519.89, with a median of 0.90.
- Outliers: 10 observations were identified as outliers with weights < 0.00025 .
- Robustness Weights: Ranged from 0.0205 to 0.999, with a median of 0.946, indicating that most observations were weighted highly, but there were a few outliers.

Significant Predictors:

- Oversubscription ($\beta_1 = 0.54$, $p < 0.001$): Oversubscription continued to be a significant positive predictor of Short run MAAR of IPOs, indicating that IPOs with higher demand for shares performed better in the Short run.
- Lead-time ($\beta_4 = -0.2677$, $p < 0.001$): A longer lead-time negatively affected the MAAR of IPOs during short run, suggesting that IPOs with longer lead times showed poor performance relative to the NIFTY50 index.

Non-significant Predictors:

- Issue Price ($\beta_2 = -0.0063$, $p = 0.252$)
- Age ($\beta_5 = -0.0287$, $p = 0.782$)

- Issue size ($\beta_6 = -0.00065$, $p = 0.462$)
- Lot size ($\beta_7 = -0.0078$, $p = 0.640$)
- Face Value ($\beta_3 = -1.43$, $p = 0.136$)

The model suggested that oversubscription and lead-time were the most significant factors, which influenced Short run MAAR of IPOs. The positive effect of oversubscription and the negative effect of lead-time are crucial for IPO performance relative to the NIFTY50.

7.2.3.3 Relationship of the determinants (including the BSE IPO index's return as a factor) with the raw return of the IPOs during the Short Run

Model 11

Short run Raw Return of IPOs = $\alpha + \beta_1 \times \text{Oversubscription} + \beta_2 \times \text{Issue Price} + \beta_3 \times \text{Face Value} + \beta_4 \times \text{Lead Time} + \beta_5 \times \text{Age Year} + \beta_6 \times \text{Issue Size} + \beta_7 \times \text{Lot Size} + \beta_8 \times \text{BSE IPO Index's return} + \epsilon$

This equation represented the relationship between the dependent variable (raw return) and the independent variables (oversubscription, issue price, face value, lead-time, age year, issue size, lot size, and BSE IPO Index's return) based on the estimates obtained from the robust regression model.

In this model

- Short run Raw Return of IPOs represented the dependent variable.
- α (intercept), β_1 (oversubscription), β_2 (Issue Price), β_3 (Face value), β_4 (Lead time), β_5 (Age year), β_6 (Issue Size), β_7 (Lot Size), β_8 (BSE IPO Index's return) are the coefficients to be estimated.
- Oversubscription, issue price, face value, lead-time, age year, issue size, lot size, BSE IPO Index's return were the predictor variables

Model 11 robust residual standard error (ϵ) was 29.74, the R^2 value was 0.3063 (adjusted $R^2 = 0.2917$). The Intercept (α) was 15.16, which indicated the estimated value of the dependent variable when all the predictors are zero

Residual Analysis:

- Residual Range: Residuals ranged from -237.77 to 454.46, with a median of 0.59.
- Outliers: 6 observations were identified as outliers with weights < 0.00026 .
- Robustness Weights: Ranged from 0.0074 to 0.999, with a median of 0.9536, suggesting that most observations had high weights and the outliers had low weights.

Significant Predictors:

- Oversubscription ($\beta_1 = 0.563$, $p = 7.21e-10$): Oversubscription has a strong positive relationship with Short run Raw Return of IPOs, indicating that IPOs with higher oversubscription tend to have better short-term returns over the one-month period.
- Lead-time ($\beta_4 = -0.237$, $p = 1.32e-08$): Lead-time showed significant negative effect, suggesting that IPOs with longer lead-time tend to have lower one-month raw return.
- BSE IPO index's return in Short run ($\beta_8 = 1.292$, $p = 2.35e-06$): BSE IPO index's return of Short run was positively and significantly related to Short run Raw Return of IPOs, suggesting that IPOs with a stronger BSE market performance have higher short-term returns.

Non-significant Predictors:

- Issue Price ($\beta_2 = -0.00616$, $p = 0.260$)
- Age ($\beta_5 = -0.0624$, $p = 0.526$)
- Issue size ($\beta_6 = -0.000774$, $p = 0.380$)
- Lot size ($\beta_7 = -0.00945$, $p = 0.439$)
- Face Value ($\beta_3 = -1.059$, $p = 0.254$)

The key drivers of Short run Raw Return of IPOs were Oversubscription, Lead-time, and BSE IPO index's one-month return. IPOs with higher oversubscription experienced higher returns, while those with longer lead times tend to underperform.

Other factors like issue price, age, and face value do not have a significant impact on short-term IPO raw returns.

7.2.3.4 Relationship of the determinants with the market adjusted abnormal return of the IPOs (using BSE Index as benchmark) during the Short Run

Model 12

Short run MAAR of IPOs = $\alpha + \beta_1 \times \text{Oversubscription} + \beta_2 \times \text{Issue Price} + \beta_3 \times \text{Face Value} + \beta_4 \times \text{Lead Time} + \beta_5 \times \text{Age Year} + \beta_6 \times \text{Issue Size} + \beta_7 \times \text{Lot Size} + \epsilon$

This equation represents the relationship between the dependent variable (Market-Adjusted Abnormal Returns) and the independent variables (oversubscription, issue price, face value, lead-time, age year, issue size, lot size) based on the estimates obtained from the robust regression model.

In this model

- Short run MAAR of IPOs was the dependent variable.
- α (intercept), β_1 (oversubscription), β_2 (Issue Price), β_3 (Face value), β_4 (Lead time), β_5 (Age year), β_6 (Issue Size), β_7 (Lot Size) were the coefficients to be estimated
- Oversubscription, issue price, face value, lead-time, age year, issue size, lot size were the predictor variables

Model 12 robust residual standard error (ϵ) was 29.11, the R^2 value was 0.2822 (adjusted $R^2=0.2691$). The Intercept (α) was 8.77, which indicated the estimated value of the dependent variable when all the predictors are zero

Residual Analysis:

- Residual Range: Residuals ranged from -184.19 to 4149.22, with a median of -0.9954.
- Outliers: 6 observations identified as outliers with weights < 0.00026 .

- Robustness Weights: Ranged from 0.0122 to 0.999, with a median of 0.9516, indicating that most observations have high weights, and the outliers had very low weights.

Significant Predictors:

- Oversubscription ($\beta_1 = 0.557$, $p = 1.02e-09$): Oversubscription had a strong positive relationship with Short run MAAR of IPOs, indicating that IPOs with higher oversubscription yielded better one-month BSE adjusted returns .
- Lead-time ($\beta_4 = -0.0803$, $p < 2e-16$): Lead-time had a significantly negative effect, indicating that IPOs with longer lead times before listing tend to have lower adjusted returns over the one-month period.

Non-significant Predictors:

- Issue Price ($\beta_2 = -0.00405$, $p = 0.442$)
- Age ($\beta_5 = -0.0641$, $p = 0.517$)
- Issue size ($\beta_6 = -0.000177$, $p = 0.839$)
- Lot size ($\beta_7 = -0.00957$, $p = 0.453$)
- Face Value ($\beta_3 = -0.836$, $p = 0.348$)

The key drivers of Short run MAAR of IPOs were Oversubscription and Lead-time. IPOs with higher oversubscription rates and shorter lead times tended to have better returns. Issue Price, Age, Issue size, Lot size, and Face Value did not show any significant impact the one-month IPO returns adjusted with BSE IPO index.

7.2.4 Regression Analysis of IPO Returns during Medium Run

7.2.4.1 Relationship of the determinants (including the NIFTY 50 return as a factor) with the raw return of the IPOs during the Medium Run

Model 13

Medium run Raw Return of IPOs = $\alpha + \beta_1 \times \text{Oversubscription} + \beta_2 \times \text{Issue Price} + \beta_3 \times \text{Face Value} + \beta_4 \times \text{Lead Time} + \beta_5 \times \text{Age Year} + \beta_6 \times \text{Issue Size} + \beta_7 \times \text{Lot Size} + \beta_8 \times \text{NIFTY 50 return} + \epsilon$

This equation represented the relationship between the dependent variable (Medium run Raw Return of IPOs) and the independent variables (oversubscription, issue price, face value, lead-time, age year, issue size, lot size, and Nifty 50 return) based on the estimates obtained from the robust regression model.

In this model

- Medium run Raw Return of IPOs represented the dependent variable.
- α (intercept), β_1 (oversubscription), β_2 (Issue Price), β_3 (Face value), β_4 (Lead time), β_5 (Age year), β_6 (Issue Size), β_7 (Lot Size), β_8 (BSE IPO Index's return) are the coefficients to be estimated
- oversubscription, issue price, lead-time, face value, age year, issue size, lot size, NIFTY 50 Index's return are the predictor variables

Model 13 robust residual standard error (ϵ) was 48.12, the R^2 value was 0.287 (adjusted $R^2=0.2723$). The Intercept (α) was 11.06, which indicated the estimated value of the dependent variable when all the predictors are zero

Residual Analysis:

- Residual Range: Residuals ranged from -84.84 to 901.73, with a median of -2.245.
- Outliers: 10 observations were identified as outliers with weights < 0.00025 .
- Robustness Weights: Ranged from 0.00075 to 0.999, with a median of 0.953, indicating that most observations were highly weighted.
- Intercept ($\beta=11.07$, $p=0.344$): The Intercept was not statistically significant, representing the baseline return when all predictors are zero.

Significant Predictors:

- Oversubscription ($\beta_1 = 0.59$, $p < 0.001$): Oversubscription continued to have a positive effect on Medium run Raw Return of IPOs, suggesting that IPOs with higher oversubscription tend to have better six-month raw returns.

- Lead-time ($\beta_4 = -0.4505$, $p < 0.001$): Lead-time has a significant negative effect on Medium run Raw Return of IPOs, indicating that a longer lead time before listing results in a worse performance over six months.
- Six months NIFTY 50 return ($\beta_8 = 1.23$, $p < 0.001$): The Six months NIFTY 50 variable was a strong predictor, with a positive relationship to Medium run Raw Return of IPOs, indicating that based on the return of the NIFTY 50 index the return of the IPOs could be predicted.

Non-significant Predictors:

- Issue Price ($\beta_2 = -0.0055$, $p = 0.506$)
- Age ($\beta_5 = 0.1972$, $p = 0.229$)
- Issue size ($\beta_6 = 0.00026$, $p = 0.873$)
- Lot size ($\beta_7 = -0.0176$, $p = 0.469$)
- Face Value ($\beta_3 = -1.43$, $p = 0.148$)

Oversubscription, Lead-time, and Six months NIFTY 50 return were the most influential factors in the model. Oversubscription continued to drive higher returns, while longer Lead-time negatively affected the IPO performance. The higher BSE IPO index return during the medium run is positively associated with the Medium run Raw Return of IPOs, indicating that based on the performance of the BSE IPO index the performance of the IPOs could be estimated.

7.2.4.2 Relationship of the determinants with the market adjusted abnormal return of the IPOs (using NIFTY 50) during the Medium Run

Model 14

Medium run MAAR of IPOs = $\alpha + \beta_1 \times \text{Oversubscription} + \beta_2 \times \text{Issue Price} + \beta_3 \times \text{Face Value} + \beta_4 \times \text{Lead Time} + \beta_5 \times \text{Age Year} + \beta_6 \times \text{Issue Size} + \beta_7 \times \text{Lot Size} + \epsilon$

This equation represents the relationship between the dependent variable (Market-Adjusted Abnormal Returns) and the independent variables (oversubscription, issue price, face value, lead-time, age year, issue size, lot size) based on the estimates obtained from the robust regression model.

In this model

- Medium run MAAR of IPOs represented the dependent variable.
- α (intercept), β_1 (oversubscription), β_2 (Issue Price), β_3 (Face value), β_4 (Lead time), β_5 (Age year), β_6 (Issue Size), β_7 (Lot Size), β_8 (NIFTY 50 Index's return) were the coefficients to be estimated
- Oversubscription, issue price, face value, lead-time, age year, issue size, lot size were the predictor variables

Model 14 robust residual standard error (ϵ) was 48.58, the R^2 value was 0.1578 (adjusted $R^2=0.1427$). Intercept ($\alpha = 29.36$, $p = 0.0718$): The Intercept was marginally significant, representing the baseline return when all predictors are zero

Residual Analysis:

- Residual Range: Residuals ranged from -95.23 to 2345.81, with a median of -1.551.
- Outliers: 12 observations were identified as outliers with weights < 0.00025 .
- Robustness Weights: Ranged from 0.0016 to 0.999, with a median of 0.949, indicating that most of the observations were assigned high weights.

Significant Predictors:

- Oversubscription ($\beta_1 = 0.595$, $p < 0.001$): Oversubscription remains a positive and highly significant predictor of Medium run MAAR of IPOs, suggesting that IPOs with higher oversubscription tend to have better six-month performance relative to the Nifty index.
- Lead-time ($\beta_4 = -1.146$, $p = 0.0373$): Lead-time has a significant negative effect on Medium run MAAR of IPOs, suggesting that a longer period before the IPO listing leads to a worse performance relative to the Nifty index.
- Face Value ($\beta_3 = -1.73$, $p = 0.0837$): Face Value shows a marginal negative relationship, implying that higher face values could be associated with worse performance relative to Medium run MAAR of IPOs.

Non-significant Predictors:

- Issue Price ($\beta_2 = -0.0099$, $p = 0.2677$)
- Age ($\beta_5 = 0.1406$, $p = 0.4106$)
- Issue size ($\beta_6 = 0.00014$, $p = 0.9310$)
- Lot size ($\beta_7 = -0.0217$, $p = 0.3684$)

The highly significant factors, which affected the Medium run MAAR of IPOs were Oversubscription and Lead-time, while Face Value showed a marginally negative effect. The model indicated that higher demand for an IPO (measured by oversubscription) generally results in better performance, while longer lead times negatively affect the IPOs' relative performance to the Nifty index during medium run.

7.2.4.3 Relationship of the determinants (including the BSE IPO index's return as a factor) with the raw return of the IPOs during the Medium Run

Model 15

Medium run Raw Return of IPOs = $\alpha + \beta_1 \times \text{Oversubscription} + \beta_2 \times \text{Issue Price} + \beta_3 \times \text{Lead Time} + \beta_4 \times \text{Age Year} + \beta_5 \times \text{Issue Size} + \beta_6 \times \text{Lot Size} + \beta_7 \times \text{BSE IPO Index's return} + \epsilon$

Model 15, explains the association between the dependent (i.e. raw return) and the independent variables (oversubscription, issue price, lead-time, age year, issue size, lot size, and BSE IPO Index's return) based on the estimates obtained from the robust regression model.

In this model

- Medium run Raw Return of IPOs represented the dependent variable.
- α (intercept), β_1 (oversubscription), β_2 (Issue Price), β_3 (Face value), β_4 (Lead time), β_5 (Age year), β_6 (Issue Size), β_7 (Lot Size), β_8 (BSE IPO Index's return) are the coefficients to be estimated

- Oversubscription, issue price, face value, lead-time, age year, issue size, lot size, BSE IPO Index's return were the predictor variables

Model 15 robust residual standard error (ϵ) was 45.47, the R^2 value was 0.3022 (adjusted $R^2=0.2875$). The adjusted R^2 value showed the level of variation in the dependent variable which could be attributed to the predicting factors. Intercept ($\alpha=9.8$): The Intercept was marginally significant, representing the baseline return when all predictors are zero

Residual Analysis:

- Residual Range: Residuals ranged from -96.25 to 838.72, with a median of -0.98.
- Outliers: 10 observations were identified as outliers with weights < 0.00026 .
- Robustness Weights: Ranged from 0.00697 to 0.999, with a median of 0.9525, indicating that most observations had high weights, while a few outliers had very low weights.

Significant Predictors:

- Oversubscription ($\beta = 0.541$, $p = 8.61e-07$): Oversubscription showed a significant positive relationship with Medium run Raw Return of IPOs, suggesting that IPOs with higher oversubscription rates tended to have higher six-month raw returns.
- Lead-time ($\beta = -0.425$, $p = 7.78e-13$): Lead-time is significantly negative, meaning that IPOs with longer lead times before listing tend to have lower six-month raw returns.
- BSE IPO index's return (during medium) ($\beta = 0.944$, $p = 7.23e-15$): BSE IPO index's return (during six month period) had a strong positive relationship with Medium run Raw Return of IPOs, suggesting that IPOs' returns are highly correlated with the market returns over the six-month period.
- Lot size ($\beta = -0.0289$, $p = 0.0797$): Lot size was marginally significant at $p < 0.1$ significance level, showing a small negative effect on six-month's raw

returns of IPOs, indicating that larger lot sizes may slightly reduce IPO performance in the medium run.

Non-significant Predictors:

- Issue Price ($\beta = -0.0047$, $p = 0.5456$)
- Age ($\beta = 0.233$, $p = 0.1202$)
- Issue size ($\beta = 0.000447$, $p = 0.7712$)
- Face Value ($\beta = -1.038$, $p = 0.3005$)

In Model 15, oversubscription, lead time and the BSE IPO index's return was found to be significant predictors of raw return of IPOs during the medium run. Higher oversubscription rate of IPOs is associated with higher raw return of IPOs. Using the BSE IPO index's return the performance of IPOs can be predicted, as higher return of BSE IPO index reflects favorable market conditions that positively affects the IPO returns. On contrary, the longer lead times negatively affects the IPO performance and other variables like issue price, age, and lot size have did not show any significant effect on the performance of the IPOs.

7.2.4.4 Relationship of the determinants with the market adjusted abnormal return of the IPOs (using BSE Index as benchmark) during the Medium Run

Model 16

Medium run MAAR of IPOs = $\alpha + \beta_1 \times \text{Oversubscription} + \beta_2 \times \text{Issue Price} + \beta_3 \times \text{Face Value} + \beta_4 \times \text{Lead Time} + \beta_5 \times \text{Age Year} + \beta_6 \times \text{Issue Size} + \beta_7 \times \text{Lot Size} + \epsilon$

Model 16 shows the association between the dependent variable (raw return) and the independent variables (oversubscription, issue price, face value, lead-time, age year, issue size, lot size, and BSE IPO Index's return) based on the estimates obtained from the robust regression model.

In this model

- Medium run MAAR of IPOs represented the dependent variable.
- α (intercept), β_1 (oversubscription), β_2 (Issue Price), β_3 (Face value), β_4 (Lead time), β_5 (Age year), β_6 (Issue Size), β_7 (Lot Size), β_8 (BSE IPO Index's return) were the coefficients to be estimated
- Oversubscription, issue price, face value, lead-time, age year, issue size, lot size were the predictor variables

Model 16 robust residual standard error (ϵ) was 45.57, the R^2 value was 0.1534 and the adjusted R^2 was 0.1379. The adjusted R^2 value indicated that 13% of variability in the Medium run MAAR of IPOs was explained by the factors included in the model. Intercept $\alpha = 22.99$, showed the baseline value of the dependent variable when predictors are set to zero.

Residual Analysis:

- Residual Range: Residuals ranged from -99.27 to 2199.04, with a median of -0.39.
- Outliers: 11 observations identified as outliers with weights < 0.00026 .
- Robustness Weights: The weights ranged from 0.00726 to 0.9989, with a median of 0.9501, indicating that the majority of observations had high weights, while a few outliers had low weights.

Significant Predictors:

- Oversubscription ($\beta = 0.536$, $p = 0.000000574$): Oversubscription remained a significant positive predictor of Medium run MAAR of IPOs, indicating that IPOs with high oversubscription rates had higher market-adjusted returns over the six-month period.
- Lead-time ($\beta = -1.081$, $p = 0.0344$): Lead-time showed a significant negative effect, suggesting that IPOs with longer lead-time showed poor market-adjusted performance in the medium run.

- Lot size ($\beta = -0.0373$, $p = 0.0231$): Lot size also showed significant negative effect on the, with a small negative effect on market-adjusted returns, indicating that larger lot sizes slightly reduce IPO performance.
- Age ($\beta = 0.200$, $p = 0.1865$): While not statistically significant at the 0.05 level, age showed positive but weak relationship with medium run MAAR of IPOs.

Non-significant Predictors:

- Issue Price ($\beta = -0.0089$, $p = 0.2897$)
- Issue size ($\beta = 0.0003$, $p = 0.8358$)
- Face Value ($\beta = -0.992$, $p = 0.3103$)

Key predictors of Medium run MAAR of IPOs (six-month market-adjusted raw return) included Oversubscription, Lead-time, and Lot size. IPOs with higher oversubscription rates performed better, while those with longer lead times or larger lot sizes underperformed. The other factors examined did not show any significant influence on the MAAR of IPOs during Medium run.

7.2.5 Regression analysis of IPOs during the long run

7.2.5.1 Relationship of the determinants (including the NIFTY 50 return as a factor) with the raw return of the IPOs during the long run

Model 17

Long run Raw Return of IPOs = $\alpha + \beta_1 \times \text{Oversubscription} + \beta_2 \times \text{Issue Price} + \beta_3 \times \text{Face Value} + \beta_4 \times \text{Face value} + \beta_5 \times \text{Lead Time} + \beta_6 \times \text{Age Year} + \beta_7 \times \text{Issue Size} + \beta_8 \times \text{Lot Size} + \beta_9 \times \text{NIFTY 50 return} + \epsilon$

This equation shows the association among the dependent variable (raw return) and the independent factors (oversubscription, issue price, face value, lead-time, age year, issue size, lot size, and Nifty 50 return) based on the estimates obtained from the robust regression model.

In this model

- Long run Raw Return of IPOs represents the dependent variable.
- α (intercept), β_1 (oversubscription), β_2 (Issue Price), β_3 (Face value), β_4 (Lead time), β_5 (Age year), β_6 (Issue Size), β_7 (Lot Size), β_8 (NIFTY 50 Index's return) are the coefficients to be estimated
- oversubscription, issue price, face value, lead-time, age year, issue size, lot size, NIFTY 50 return are the predictor variables

Model 17 robust residual standard error (ϵ) was 54.24, the R^2 value was 0.3259 (adjusted $R^2=0.312$). The adjusted R^2 value showed that 31.2% of variability in the Raw Return of IPOs in the long run was explained by the predictors. Intercept $\alpha = 44.63$, showed the baseline value of the dependent variable when predictors are set to zero.

Residual Analysis:

- Residual Range: Residuals ranged from -126.16 to 4750.42, with a median of -0.6566.
- Outliers: 20 observations identified as outliers with weights < 0.00025 .
- Robustness Weights: Ranged from 0.0019 to 0.999, with a median of 0.949, indicating most observations have high weights, while the outliers had low weights.

Significant Predictors:

- Oversubscription ($\beta_1 = 0.545$, $p = 0.000794$): Oversubscription remained a positive and highly significant predictor of Raw Return of IPOs even in the long run period, suggesting that IPOs with higher oversubscription delivered better one-year raw return.
- Issue Price ($\beta_2 = -0.0309$, $p = 0.0117$): Issue Price showed a negative relationship with long run raw return of IPOs, indicating that higher issue prices were associated with lower relative returns over during the long run.

- Lead-times ($\beta_4 = -2.32$, $p = 0.000325$): Lead-time had a significant negative effect on Long run Raw Return of IPOs, suggesting that a longer time before the IPO listing resulted in lower relative returns during the long run.
- Face Value ($\beta_3 = -3.34$, $p = 0.0176$): Face Value showed a negative and statistically significant effect, implying that higher face values were associated with poor performance of IPOs during the long run.
- NIFTY 50 index return ($\beta_8 = 1.13$, $p < 2e-16$): The Nifty index return was a significant predictor, with a strong positive relationship, indicating that the return of the Nifty index strongly influenced the yield of the IPOs during long run.

Non-significant Predictors:

- Age ($\beta_5 = 0.2278$, $p = 0.3979$)
- Issue size ($\beta_2 = 0.00002$, $p = 0.9894$)
- Lot size ($\beta_7 = -0.0133$, $p = 0.6301$)

The most important factors affecting Long run Raw Return of IPOs were Oversubscription, Issue Price, Lead-times, Face Value, and NIFTY 50-index return. The model suggested that IPOs with higher demand (oversubscription) outperformed, while those with higher issue prices, longer lead times, and higher face values underperformed in the long run. The high nifty 50 returns reflected the favorable market condition leading to increased return of the IPOs.

7.2.5.2 Relationship of the determinants with the market adjusted abnormal return of the IPOs (using NIFTY 50) during the long run

Model 18

Long run MAAR of IPOs = $\alpha + \beta_1 \times \text{Oversubscription} + \beta_2 \times \text{Issue Price} + \beta_3 \times \text{Face Value} + \beta_4 \times \text{Lead Time} + \beta_5 \times \text{Age Year} + \beta_6 \times \text{Issue Size} + \beta_7 \times \text{Lot Size} + \epsilon$

This equation represents the association between the dependent variable (Market-Adjusted Abnormal Returns) and the independent variables (oversubscription, issue

price, lead-time, age year, issue size, lot size) based on the estimates obtained from the robust regression model.

In this model

- Long run MAAR of IPOs represented the dependent variable.
- α (intercept), β_1 (oversubscription), β_2 (Issue Price), β_3 (Face value), β_4 (Lead time), β_5 (Age year), β_6 (Issue Size), β_7 (Lot Size) were the coefficients to be estimated
- Oversubscription, issue price, face value, lead-time, age year, issue size, lot size were the predictor variables

Model 18 robust residual standard error (ϵ) was 54.73, the R^2 value was 0.1414 (adjusted $R^2=0.126$). The adjusted R^2 value showed that 12.6% of variability in the MAAR of IPOs in the long run was explained by the predictors. Intercept $\alpha = 19.5$, showed the baseline value of the dependent variable when predictors are set to zero.

Residual Analysis:

- Residual Range: Residuals range from -122.91 to 4804.24, with a median of -2.46.
- Outliers: 20 observations identified as outliers with weights < 0.00025 .
- Robustness Weights: Ranged from 0.0015 to 0.9989, with a median of 0.9517, suggesting that most observations had high weights, but some outliers had very low weights.

Significant Predictors:

- Oversubscription ($\beta_1 = 0.532$, $p = 0.000672$): Oversubscription was positively and significantly associated with Long run MAAR of IPOs, indicated that IPOs with higher oversubscription rate generated higher MAAR.
- Issue Price ($\beta_2 = -0.0314$, $p = 0.0115$): Issue Price had significant negative relationship with long run MAAR of IPOs, suggesting that higher issue prices were linked to lower short-term relative returns.

- Lead-times ($\beta_4 = -2.34$, $p = 0.000272$): Lead-times was negatively related to Long run MAAR of IPOs, indicating that IPOs with longer lead times generated lower MAAR during medium run.
- Face Value ($\beta_3 = -3.62$, $p = 0.0131$): Face Value also showed negative effect on the MAAR of IPOs, indicating that IPOs having higher face value yielded lower six-month relative returns.

Non-significant Predictors:

- Age ($\beta_5 = 0.226$, $p = 0.4104$)
- Issue size ($\beta_6 = -0.000065$, $p = 0.9635$)
- Lot size ($\beta_7 = -0.0130$, $p = 0.6292$)

The key drivers of Long run MAAR of IPOs were Oversubscription, Issue Price, Lead-time, and Face Value. IPOs with higher oversubscription rate performed better, while those with higher issue price, longer lead-time, and higher face value typically showed lower MAAR.

7.2.3.3 Relationship of the determinants (including the BSE IPO index's return as a factor) with the raw return of the IPOs during the Long run

Model 19

Long run Raw Return of IPOs = $\alpha + \beta_1 \times \text{Oversubscription} + \beta_2 \times \text{Issue Price} + \beta_3 \times \text{Face Value} + \beta_4 \times \text{Lead Time} + \beta_5 \times \text{Age Year} + \beta_6 \times \text{Issue Size} + \beta_7 \times \text{Lot Size} + \beta_8 \times \text{BSE IPO Index's return} + \epsilon$

This equation represents the association of the dependent variable (raw return) with the independent variables (oversubscription, issue price, lead-time, age year, issue size, lot size, and BSE IPO Index's return) based on the estimates obtained from the robust regression model.

In this model

- Raw return represents the dependent variable.
- α (intercept), β_1 (oversubscription), β_2 (Issue Price), β_3 (Face value), β_4 (Lead time), β_5 (Age year), β_6 (Issue Size), β_7 (Lot Size), β_8 (BSE IPO Index's return) are the coefficients to be estimated
- oversubscription, issue price, face value, lead-time, age year, issue size, lot size, BSE IPO Index's return are the predictor variables

Model 19 robust residual standard error (ϵ) was 53.66, the R^2 value was 0.3356 (adjusted $R^2=0.3216$). The adjusted R^2 value showed that 32.16% of variability in the MAAR of IPOs in the long run was explained by the predictors. Intercept $\alpha = 44.63$, showed the baseline value of the dependent variable when predictors are set to zero.

Residual Analysis:

- Residual Range: Residuals ranged from -138.99 to 3610.22, with a median of -0.895.
- Outliers: 19 observations were identified as outliers with weights < 0.00026 .
- Robustness Weights: The weights ranged from 0.0008 to 0.999, with a median of 0.9449, indicating that the majority of observations had high weights, while a few outliers had very low weights.

Significant Predictors:

- Oversubscription ($\beta = 0.493$, $p=0.000241$): Oversubscription remained a significant positive predictor of Long run Raw Return of IPOs, suggesting that IPOs with higher oversubscription rates showed better raw returns during the long run.
- Issue Price ($\beta = -0.0242$, $p = 0.0375$): Issue Price showed a significant negative effect on Long run Raw Return of IPOs, indicating that higher issue prices were associated with lower one-year market-adjusted returns.

- Lead-time ($\beta = -1.776$, $p = 0.0057$): Lead-time was also a significant negative predictor, showing that IPOs with longer lead times showed lower market-adjusted returns over one year.
- BSE IPO index's return ($\beta = 0.860$, $p = 0.000$): BSE IPO index's return (one-year BSE return) was a significant positive predictor, meaning that IPOs closely followed the market trends (BSE) and BSE IPO index returns can be used to predict the return of the IPOs.
- Face Value ($\beta = -2.753$, $p = 0.05296$): Face Value was marginally significant with a negative relationship, suggesting that a higher face value may decrease one-year market-adjusted returns.

Non-significant Predictors:

- Age ($\beta = 0.270$, $p = 0.2449$)
- Issue size ($\beta = 0.0005$, $p = 0.70196$)
- Lot size ($\beta = -0.0227$, $p = 0.2328$)

The key predictors of Long run Raw Return of IPOs (one-year market-adjusted raw return) were Oversubscription, one-year BSE IPO index's return, Issue Price, and Lead-time. IPOs with higher oversubscription rates performed better, while those with higher issue prices and longer lead times tend to perform worse. The higher the BSE IPO index return the better the IPO performs. The impact of Face Value is marginally significant, and other factors like Age, Issue size, and Lot size do not significantly affect market-adjusted returns.

7.2.5.3 Relationship of the determinants with the market adjusted abnormal return of the IPOs (using BSE Index as benchmark) during the long run

Model 20

Long run MAAR of IPOs = $\alpha + \beta_1 \times \text{Oversubscription} + \beta_2 \times \text{Issue Price} + \beta_3 \times \text{Face Value} + \beta_4 \times \text{Lead Time} + \beta_5 \times \text{Age Year} + \beta_6 \times \text{Issue Size} + \beta_7 \times \text{Lot Size} + \epsilon$

This equation explains the association of the dependent variable (raw return) with the independent variables (oversubscription, issue price, lead-time, age year, issue size, lot size) based on the estimates obtained from the robust regression model.

In this model

- Long run Raw Return of IPOs represented the dependent variable.
- α (intercept), β_1 (oversubscription), β_2 (Issue Price), β_3 (Face value), β_4 (Lead time), β_5 (Age year), β_6 (Issue Size), β_7 (Lot Size) were the coefficients to be estimated
- Oversubscription, issue price, face value, lead-time, age year, issue size, lot size were the predictor variables

Model 20 robust residual standard error (ϵ) was 56.02, the R^2 value was 0.1493 (adjusted $R^2=0.1337$). The adjusted R^2 value showed that 32.16% of variability in the MAAR of IPOs in the long-run was explained by the predictors. Intercept $\alpha = 19.5$, showed the baseline value of the dependent variable when predictors are set to zero.

Residual Analysis:

- Residual Range: Residuals ranged from -144.19 to 1495.19, with a median of 0.5323.
- Outliers: 15 observations were identified as outliers with weights < 0.00026 .
- Robustness Weights: The weights ranged from 0.00097 to 0.999, with a median of 0.952, indicating that most observations had high weights, while a few outliers had very low weights.

Significant Predictors:

- Oversubscription ($\beta_1 = 0.510$, $p = 0.000$): Oversubscription was a significant positive predictor of Long run Raw Return of IPOs, suggesting that IPOs with higher oversubscription rates tend to have better market-adjusted returns over one year.

- Lead-time ($\beta_4 = -0.760$, $p < 0.000$): Lead-time was a highly significant negative predictor, indicating that longer lead-time were associated with poorer one-year market-adjusted returns.
- Face Value ($\beta_3 = -2.207$, $p = 0.102$): Face Value was marginally significant, showing an inverse relation with the Long run Raw Return of IPOs, indicating that higher face values may decrease one-year market-adjusted returns.

Non-significant Predictors:

- Issue Price ($\beta_2 = -0.0174$, $p = 0.105$)
- Age ($\beta_5 = 0.318$, $p = 0.138$)
- Issue size ($\beta_6 = 0.0008$, $p = 0.559$)
- Lot size ($\beta_7 = -0.0152$, $p = 0.394$)

The key predictors of Long run MAAR of IPOs (one-year market-adjusted raw return with BSE benchmark) were Oversubscription and Lead-time. IPOs with higher oversubscription rates and shorter lead times tend to perform better, while those with higher face values show a marginally negative effect. Other factors, such as Issue Price, Age, Issue size, and Lot size, did not show significant affect on the market-adjusted returns over the one-year period.

7.2.6 Regression analysis of IPOs during the very long run

7.2.6.1 Relationship of the determinants (including the NIFTY 50 return as a factor) with the raw return of the IPOs during the very long run

Model 21

Very long run Raw Return of IPOs = $\alpha + \beta_1 \times \text{Oversubscription} + \beta_2 \times \text{Issue Price} + \beta_3 \times \text{Face Value} + \beta_4 \times \text{Lead Time} + \beta_5 \times \text{Age Year} + \beta_6 \times \text{Issue Size} + \beta_7 \times \text{Lot Size} + \beta_8 \times \text{NIFTY 50 return} + \epsilon$

Model 21 shows the association of the dependent variable (raw return) with the independent variables (oversubscription, issue price, lead-time, age year, issue size,

lot size, and Nifty 50 return) based on the estimates obtained from the robust regression model.

In this model

- Raw return represents the dependent variable.
- α (intercept), β_1 (oversubscription), β_2 (Issue Price), β_3 (Face value), β_4 (Lead time), β_5 (Age year), β_6 (Issue Size), β_7 (Lot Size) are the coefficients to be estimated
- oversubscription, issue price, face value, lead-time, age year, issue size, lot size, NIFTY 50 return are the predictor variables

Model 21 robust residual standard error (ϵ) was 52.64, the R^2 value was 0.1979 (adjusted $R^2=0.1814$). The adjusted R^2 value showed that 18.14% of variability in the MAAR of IPOs in the long run was explained by the predictors. Intercept $\alpha = 12.38$, showed the baseline value of the dependent variable when predictors are set to zero.

Residual Analysis:

- Residual Range: Residuals ranged from -106.71 to 4691.03, with a median of -4.38.
- Outliers: 23 observations were identified as outliers with weights < 0.00025 .
- Robustness Weights: Ranged from 0.0105 to 0.9989, with a median of 0.9474, suggesting most observations had high weights but a few outliers had very low weights.

Significant Predictors:

- Oversubscription ($\beta_1 = 0.501$, $p = 0.0433$): Oversubscription was positively and significantly associated with Very long run Raw Return of IPOs, indicating that IPOs with higher oversubscription rate had better long-term performance.

- Issue Price ($\beta_2 = -0.0353$, $p = 0.00827$): Issue Price had a significant negative relationship with Very long run Raw Return of IPOs, suggesting that higher issue prices were associated with lower long-term raw returns.
- Lead-time ($\beta_4 = -2.274$, $p = 0.00362$): Lead-time was negatively related to Very long run Raw Return of IPOs, implying that IPOs with longer lead times showed underperformance over the three-year period.
- NIFTY 50 index return ($\beta_8 = 0.5915$, $p < 0.0001$): NIFTY 50 index return (long run NIFTY 50 return) was positively associated with Very long run Raw Return of IPOs, indicating that the general market performance played a significant role in determining the raw return of IPOs during the long run.

Non-significant Predictors:

- Age ($\beta_5 = 0.440$, $p = 0.105$)
- Issue size ($\beta_6 = 0.00284$, $p = 0.225$)
- Lot size ($\beta_7 = -0.0243$, $p = 0.605$)
- Face Value ($\beta_3 = -0.098$, $p = 0.933$)

The main drivers of Very long run Raw Return of IPOs were Oversubscription, Issue Price, Lead-time, and NIFTY 50 index's return during long run. Higher oversubscription and better market performance contributed to better long-term IPO returns, while higher issue prices and longer lead times negatively affected IPO performance over the three-year horizon.

7.2.6.2 Relationship of the determinants with the market adjusted abnormal return of the IPOs (using NIFTY 50) during the very long run

Model 22

Very long run MAAR of IPOs = $\alpha + \beta_1 \times \text{Oversubscription} + \beta_2 \times \text{Issue Price} + \beta_3 \times \text{Face Value} + \beta_4 \times \text{Lead Time} + \beta_5 \times \text{Age Year} + \beta_6 \times \text{Issue Size} + \beta_7 \times \text{Lot Size} + \epsilon$

Model 22 demonstrates the relationship of the dependent variable (Market-Adjusted Abnormal Returns) and the independent factors (oversubscription, issue price, lead-

time, age year, issue size, lot size) based on the estimates obtained from the robust regression model.

In this model

- Very long run MAAR of IPOs represented the dependent variable.
- α (intercept), β_1 (oversubscription), β_2 (Issue Price), β_3 (Face value), β_4 (Lead time), β_5 (Age year), β_6 (Issue Size), β_7 (Lot Size) were the coefficients to be estimated
- Oversubscription, issue price, face value, lead-time, age year, issue size, lot size were the predictor variables

Model 22 Diagnostics: Robust residual standard error: 55.54 and Multiple R²: 0.1317 Adjusted R² was 0.1161, which showed that 11.61% of variation in the dependent factor was accounted by the predictor factors. Intercept α =33.35, showed the baseline value of the dependent variable when predictors are set to zero.

Residual Analysis:

- Residual Range: Residuals ranged from -149.72 to 4138.32, with a median of -4.04.
- Outliers: 20 observations were identified as outliers with weights < 0.00025.
- Robustness Weights: Ranged from 0.0130 to 0.9988, with a median of 0.9509, suggesting most observations had high weights but a few outliers had very low weights.

Significant Predictors:

- Oversubscription ($\beta_1 = 0.561$, $p = 0.0222$): Oversubscription was positively and significantly associated with Very long run MAAR of IPOs, indicating that IPOs with higher oversubscription showed better long-term abnormal returns.
- Issue Price ($\beta_2 = -0.0355$, $p = 0.0161$): Issue Price showed a significant negative relationship with the Very long run MAAR of IPOs, suggesting that

higher issue prices were associated with lower abnormal returns over the three-year period.

- Lead-time ($\beta_4 = -2.008, p = 0.0131$): Lead-time was negatively related to Very long run MAAR of IPOs, highlighting that IPOs with longer lead times showed lower MAAR during very long run.

Non-significant Predictors:

- Age ($\beta_5 = 0.470, p = 0.109$)
- Issue size ($\beta_6 = 0.00283, p = 0.215$)
- Lot size ($\beta_7 = -0.0451, p = 0.383$)
- Face Value ($\beta_3 = 0.6816, p = 0.587$)

The main drivers of Very long run MAAR of IPOs are Oversubscription, Issue Price, and Lead-time. Higher oversubscription rate led to better abnormal returns relative to Nifty 50, while higher issue prices and longer lead times were associated with lower relative returns

7.2.6.3 Relationship of the determinants (including the BSE IPO index's return as a factor) with the raw return of the IPOs during the Very long run

Model 23

Very Long run Raw Return of IPOs = $\alpha + \beta_1 \times \text{Oversubscription} + \beta_2 \times \text{Issue Price} + \beta_3 \times \text{Face Value} + \beta_4 \times \text{Lead Time} + \beta_5 \times \text{Age Year} + \beta_6 \times \text{Issue Size} + \beta_7 \times \text{Lot Size} + \epsilon + \beta_8 \times \text{BSE IPO Index's return} + \epsilon$

This equation represents the relationship between the dependent variable (raw return) and the independent variables (oversubscription, issue price, lead-time, age year, issue size, lot size, and BSE IPO Index's return) based on the estimates obtained from the robust regression model.

In this model

- Raw return represents the dependent variable.
- α (intercept), β_1 (oversubscription), β_2 (Issue Price), β_3 (Face value), β_4 (Lead time), β_5 (Age year), β_6 (Issue Size), β_7 (Lot Size) are the coefficients to be estimated
- oversubscription, issue price, face value, lead-time, age year, issue size, lot size, BSE IPO Index's return are the predictor variables

Model 23 Diagnostics: Robust residual standard error (ϵ) was 51.21 and Multiple R^2 was 0.2244. Adjusted $R^2 = 0.2081$, indicated that 20.81% of variation in the dependent factor was accounted by the predictor of the model. Intercept ($\alpha = -56.4$) showed the baseline value of the dependent variable when predictors are set to zero.

Residual Analysis:

- Residual Range: Residuals ranged from -137.00 to 3023.26, with a median of -6.039.
- Outliers: 19 observations were identified as outliers with weights < 0.00026 .
- Robustness Weights: The weights ranged from 0.0507 to 0.9988, with a median of 0.946, indicating that most observations had relatively high weights, while a few outliers had very low weights.

Significant Predictors:

- Oversubscription ($\beta_1 = 0.578$, $p = 0.0140$): Oversubscription was a positive predictor of Very Long run Raw Return of IPOs, indicating that IPOs with higher oversubscription rates showed better market-adjusted returns over three years.
- Issue Price ($\beta_2 = -0.0323$, $p = 0.0212$): Issue Price was a significant negative predictor, suggesting that higher issue prices showed decreased raw returns over the three-year period.
- BSE IPO index's return ($\beta_8 = 0.450$, $p = 9.95e-09$): The three-year BSE IPO index's return was a significant positive predictor, which indicated that

market conditions (as represented by BSE returns) strongly influenced IPO performance.

- Lead-time ($\beta_4 = -0.0353$, $p = 0.0645$): Lead-time is marginally significant and was negatively related to Very Long run Raw Return of IPOs, with longer lead times associated with poor returns over the three-year period, suggesting the association of longer lead times with poor returns over the three-year period.
- Age ($\beta_5 = 0.390$, $p = 0.0944$): Age was marginally significant, with a positive effect on Very Long run Raw Return of IPOs, implying that older companies may have slightly better long-term performance.

Non-significant Predictors:

- Issue size ($\beta_6 = 0.0033$, $p = 0.1431$)
- Lot size ($\beta_7 = 0.0025$, $p = 0.924$)
- Face Value ($\beta_3 = 1.138$, $p = 0.3464$)

Key factors influencing Very Long run Raw Return of IPOs (three-year market-adjusted raw return) included Oversubscription, Issue Price, and BSE IPO index's return (market conditions). Oversubscription positively affected the long-term raw returns, while issue prices showed a negative impact. Additionally, Lead-time and Age showed marginal significance, while Issue size, Lot size, and Face Value of the IPOs did show any significant effect on the Very Long run Raw Return of IPOs.

7.2.6.4 Relationship of the determinants with the market adjusted abnormal return of the IPOs (using BSE Index as benchmark) during the very long run

Model 24

Very Long run MAAR of IPOs = $\alpha + \beta_1 \times \text{Oversubscription} + \beta_2 \times \text{Issue Price} + \beta_3 \times \text{Face Value} + \beta_4 \times \text{Lead Time} + \beta_5 \times \text{Age Year} + \beta_6 \times \text{Issue Size} + \beta_7 \times \text{Lot Size} + \epsilon$

This equation highlights the association of the dependent variable (raw return) and the independent variables (oversubscription, issue price, lead-time, age year, issue size, lot size) based on the estimates obtained from the robust regression model.

In this model

- Very Long run MAAR of IPOs is the dependent variable.
- α (intercept), β_1 (oversubscription), β_2 (Issue Price), β_3 (Face value), β_4 (Lead time), β_5 (Age year), β_6 (Issue Size), β_7 (Lot Size) were the coefficients to be estimated
- oversubscription, issue price, face value lead-time, age year, issue size, lot size were the predictor variables

Model 24 Diagnostics: Robust residual standard error (ϵ) was 62.94 and Multiple R^2 was 0.1457. Adjusted $R^2 = 0.13$, indicated the percentage of variability of the dependent variable explained by the independent variables. Intercept $\alpha = -45.14$, showed the baseline value of the dependent variable when predictors are set to zero.

Residual Analysis:

- **Residual Range:** Residuals ranged from -224.223 to 2946.584, with a median of -4.286.
- **Outliers:** 12 observations were identified as outliers with weights < 0.00026 .
- **Robustness Weights:** The weights ranged from 0.00199 to 0.9989, with a median of 0.948, indicating that most observations had relatively high weights, while a few outliers had very low weights.

Significant Predictors:

- Oversubscription ($\beta = 0.68$, $p = 0.0166$): Oversubscription was a positive predictor of Very Long run MAAR of IPOs, indicating that IPOs with higher oversubscription rates had better three-year market-adjusted returns.
- Issue Price ($\beta = -0.06$, $p = 0.00865$): Issue Price was a significant negative predictor, suggesting that higher issue prices led to reduced the market-adjusted absolute returns of IPOs during very long run.
- Lot Size ($\beta = -0.096$, $p = 0.00289$): Lot size was negatively and significantly associated with three-year MAAR, suggesting that IPOs with larger lot sizes tend to have lower long-run returns.

Non-significant Predictors:

- Lead Time (-0.0543, $p = 0.2856$)
- Age of the issuing company(0.3188, $p = 0.2240$)
- Issue Size (0.0023, $p = 0.2388$)
- Face Value (1.3789, $p = 0.3763$)

Key factors that influenced the Very Long run MAAR of IPOs (three-year market-adjusted absolute return) are Oversubscription, Issue Price, and lot size of the IPOs. Oversubscription positively affected long-term returns, while higher issue prices had a negative relation. Lead-time, Age, Issue size and Face Value did not show significant effect on the very long-run market-adjusted IPO returns.

7.3 Results and discussion

During the listing day both the predictor, indexes (i.e. NIFTY-50 in Model and BSE IPO index in model 3) were found to be significant predictor of the Raw return of the IPOs. The MAAR when calculated after adjusting with the NIFTY-50 index (Model 2) and the BSE IPO (Model 4) index showed oversubscription, lot size and face value were the main drivers during the listing day.

In the very short run, the common factors affecting the raw return as revealed by Model 5 and 7 were oversubscription, listing price, issue price, NIFTY-50 and the BSE IPO index returns. Additionally in the very short run, the factors, which showed significant effect on the MAAR values (calculated using NIFTY-50 index in Model 6 and using BSE IPO index in Model 8) were oversubscription, listing price and the issue price of the IPOs.

In the short run, the raw return was significantly predicted by the oversubscription, listing price, NIFTY-50 and the BSE IPO index. While the market adjusted abnormal return of the IPOs, adjusted using NIFTY-50 in Model 9 and using BSE IPO index in Model 11, showed oversubscription and listing price as the significant predictors.

During the medium run the oversubscription, lead-time, NIFTY-50 (Model 13) and the BSE IPO index (Model 15) were the significant predictor of the raw return of the

IPOs. While the common predictors of the MAAR returns (calculated using NIFTY-50 index in Model 14 and using BSE IPO index in Model 16) during the medium run, were oversubscription and lead-time of the IPOs.

The common predictors of raw return of IPOs during the long run in Models 17 & 19 were oversubscription, lead-time, Issue price and their respective indexes. On contrary, the common predictors of the MAAR during the long run in Model 18 and 20 were oversubscription, face value and listing price.

The MAAR during the very long run calculated using the NIFTY-50 and the BSE IPO index in models 21 and 23 respectively, showed oversubscription, issue price, lead-time, and their benchmark index returns as common predictors. The MAAR of long run, calculated using the NIFTY-50 and the BSE IPO index in models 22 and 24 respectively, revealed oversubscription, issue price and lot size of the IPOs

Ghosh (2005) and Shelly and Singh (2008), Sehgal & Sinha (2013) also mentioned the effect of listing delay on the return of the IPOs and concluded that the IPOs having higher lead time showed higher underpricing. Kiran (2011) found that variables such as rate of Subscription, offer size of IPOs, lead-time and age of the issuing company, influenced the listing day returns of the company.

Fadila & Zilal Hamzah (2015) employed multiple regression analysis to investigate the potential impact of various factors, including interest rate of Bank Indonesia, inflation, exchange rate, underwriter reputation, age and size of enterprises, and percentage of shares, on the degree of underpricing. The results of their study revealed that every independent variable in their study had a substantial impact on the extent of underpricing of the IPOs Selvamathi et al.(2019) also concluded that the positive BHRR(buy and hold raw return) is correlated with both "lead time" and "grade" for all three long-run periods, according to his research. Additionally, a stronger correlation was reported between "grade" and BHRR than between BHRR and lead-time of the IPOs. One-year BHRR and "issue size" have a strong correlation. One crucial element affecting the IPO return is the lead period or listing delay. Therefore, the IPO issuing businesses must refrain from extending the listing date and ensure shorter lead-time. The study also mentioned that investors should

consider the IPO's size when making investments, as it is a significant long-term predictor of IPO returns. Westin & Wiklund (2016) in his literature assumed raw return as the dependent variable, while the firm's age, family ownership, market capitalization, leverage, share structure, and first-day turnover were assumed as independent variables. The study revealed that under-pricing was negatively correlated with the offer size of the IPO, whereas the first return was favorably correlated with turnover. Additionally, the under-pricing was negatively impacted by leverage. Svoboda & Heise (n.d.) also examined six independent variables (industry, list, firm age, market value, pre-secured shares, IPO year) and the degree of under-pricing, which was regarded as the dependent variable. The paper acknowledged the prevalence of IPO under-pricing in Swedish markets and two of the six factors examined to assess the concept of IPO under-pricing were determined to be relevant. Tian (2012) demonstrated the relationship between issue size, business age, systematic risk, underwriter reputation, P/E ratio, debt ratio, ROA, and the pricing performance of initial public offerings (IPOs) listed on the London Stock Exchange. Issue size, systemic risk, and debt ratio were determined to have a substantial impact on the IPO's pricing performance. Their study revealed that larger issue size contributed to a lower degree of underpricing. Loughran et al., (2004) documented the existence of cross-sectional patterns between first-day returns and age, explaining the fact that younger companies are riskier and henceforth investors must be rewarded for this risk. Yazdani, (2015) studied the effect of IPO size and industry, market volatility, and underwriter performance on the under-pricing of IPOs in Malaysia. Wong et al., (2017) also highlighted the positive relation between the IPO size, market volatility, underwriter status, and the IPO price reciprocal and under-pricing in Malaysia. Rahman & Yung, (1999) in their paper reported the correlation between the initial under-pricing and the ex-ante uncertainty proxy variables, size of the issue, and standard deviation of twenty-day aftermarket returns, as substantial and positive.

References

- Fadila, A., & Zilal Hamzah, M. (2015). Determinants Factor Analysis of Underpricing on Initial Public Offering At Indonesia Stock Exchange Pardomuan Sihombing. *Business and Entrepreneurial Review* (Vol. 15, Issue 1).
- Fox, J., & Weisberg, S. (2013). *Robust Regression*. 1–16. Studocu. <https://www.studocu.com/en-ca/document/york-university/regression-analysis/lesson-9-extra-notes-regression/111163127>
- Ghosh, S. (2005). Underpricing of initial public offerings: The Indian experience. *Emerging Markets Finance and Trade*, 41(6), 45-57.
- Hahn, T. (2024). *Estimating IPO Underpricing*. 33
- Kiran, R., & Chopram Phil, R. I. (2011). Price Performance of IPOS in Indian Stock Market. *Euro Economica* , 30 (4), 73-97.
- Loughran, T., Ritter, J., Chen, C., Deangelo, H., Dunbar, C., Houge, T., Lerner, J., Senbet, L., Seward, J., Barry, C., Field, L., Gompers, P., Ljungqvist, A., Smart, S., Woo, L.-A., & Zutter, C. (2004). Why Has IPO Underpricing Changed Over Time? *Financial Management • Autumn*. <http://bear.cba.ufl.edu/ritter/rank.htm>.
- Rahman, H., & Yung, K. (1999). Insurance IPOs — A Test of the Underpricing Theories. In *Source: Journal of Insurance Issues* (Vol. 22, Issue 1). <https://about.jstor.org/terms>
- Robust and Resistant Regression (pp. 150–155). (n.d.). John Hopkins Bloomberg school of Public Health, Biostatistics center. biostat.jhsph.edu/~iruczins/teaching/ji/Ch13.pdf
- Sehgal, S., & Sinha, B. K. (2013). Valuation of IPOs in India-An empirical study. *Business and Economic Research*, 3(2), 183.

- Singh, S., & Singh, B. (2008). Oversubscription and IPO underpricing: evidence from India. *The ICFAI Journal of Applied Finance*, 14(12), 65-73
- Svoboda, A., & Heise, R. (2023). What factors affect the underpricing of Swedish IPOs? A quantitative study of returns on Swedish stock exchange markets. Linnaeus University
- Tian, Y. (2012). An Examination Factors Influencing Under-Pricing Of Ipos On The London Stock Exchange Written For MFIN 6692.
- Westin, E., & Wiklund, S. (2016). IPO Underpricing and Ownership Structure Comparison of Family Firms and Non-Family Firms. Department of Business Studies Uppsala University
- Wong, E. S., WB, R. W., & Ting, L. S. (2017). Initial public offering (IPO) underpricing in Malaysian settings. *Journal of Economic & Financial Studies*, 5(02), 14. <https://doi.org/10.18533/jefs.v5i02.276>
- Yazdani, L. (2015). An Assessment of the Performance of Initial Public Offerings (IPOs) in Malaysia. In *Research Journal of Finance and Accounting* www.iiste.org ISSN (Vol. 6, Issue 3). Online. www.iiste.org

CHAPTER 8

PRICING PERFORMANCE OF FPOs

“When an already listed company makes either a fresh issue of shares or convertible securities to the public or an offer for sale to the public, it is called an FPO” (SEBI 2016). Follow on public offerings (FPO) refers to the issuance of new shares by an already trading company (Abraham & Harrington 2011). FPO is also known as Seasoned Equity Offerings (SEOs) or Secondary Equity Offerings. When once the companies have already gone public, i.e. brought IPO but requires more capital, they raise it through the means of SEO or FPO. This chapter shows the pricing performance of the FPOs during different runs.

To evaluate the market performance of these FPOs, their returns were adjusted against two selected benchmark indices i.e. NIFTY-50 and BSE IPO index. The difference between the FPO returns and these benchmarks, as well as the variation in returns across different timeframes was assessed using the Wilcoxon signed-rank test.

To assess the pricing performance of FPO the chapter has been divided into two sections i.e. 8.1 and 8.2. Section 8.1, Raw Return (RR), NIFTY-50, BSE IPO Index returns, and Market Adjusted Abnormal Return (MAAR) are reported and analyzed. In the second section (8.2), the significance of these returns relative to the selected benchmarks, as well as the variation in returns across different timeframes, is assessed using the Wilcoxon signed-rank test.

8.1 Analysis of pricing performance of FPO across different runs

The pricing performance of FPOs were analysed across various timeframes: - very short, short, medium, long and very long term.

8.1.1 Descriptive statistics of return of FPOs

The Table 8.1 shows the descriptive statistics of the Raw and the market adjusted returns across different runs.

Table 8.1 Descriptive statistics

	Time period	Mean	Std. error (SE)	Median	Std. Deviation (SD)	Minimum	Maximum
Raw return	Very short run	26.3742	13.15641	10.7850	67.08481	-.60	348.36
	Short run	21.4242	13.97292	3.5750	71.24820	-26.97	348.92
	Medium run	25.1581	14.13618	4.8700	72.08068	-37.22	321.43
	Long run	16.8438	17.68337	-4.6700	90.16785	-56.14	357.45
	Very long run	16.8873	29.88874	-10.7250	152.40326	-89.05	699.51
MAAR ₁ (adj. using NIFTY 50 index's return)	Very short run	12.7942	2.80110	9.8000	14.28288	-2.01	59.23
	Short run	20.8088	13.97240	5.1700	71.24554	-25.82	350.42
	Medium run	12.0873	14.42686	-4.8450	73.56287	55.41	327.34
	Long run	-7.174	18.3556	-28.095	93.5955	-85.6	374.7
	Very long run	-19.8346	30.77056	-52.870	156.89969	-142.04	697.81
MAAR ₂ (adj. using BSE IPO index's return)	Very short run	25.6162	13.17993	9.7000	67.20474	-3.74	347.66
	Short run	22.9312	14.21345	1.0300	72.47468	-9.51	355.04
	Medium run	16.2219	14.98074	-1.8450	76.38708	-52.71	340.47
	Long run	1.8181	18.28812	-19.9900	93.25148	-81.26	386.60
	Very long run	-5.8696	30.86565	-31.5900	157.38455	129.69	737.62

Source: Author's computation

Table 8.1 revealed the descriptive statistics of the variables. The FPOs generated highest average raw return during the very short run period which showed a sharp decline as the FPOs transitioned towards the longer runs (long and very long run). The variation of the raw returns tended to increase as the FPOs progressed towards

the longer runs, which is indicated by the gradual increase of Standard Deviation (SD).

The average market adjusted abnormal return (adjusted using the NIFTY-50) was highest during the short run and approximately close during the very short and the medium run. The $MAAR_1$ calculated using the NIFTY-50 recorded negative average returns during the long and the very long run, indicating the underperformance of the FPOs compared to the NIFTY-50 benchmark index. Similar to the raw return the variability of the $MAAR_1$ was relatively higher for the longer runs, suggesting enhanced risk over the longer runs compared to the shorter runs.

The market adjusted abnormal returns ($MAAR_2$, adjusted using the BSE IPO index) also followed a trend similar to the $MAAR_1$. The $MAAR_2$ for the very short run, short run and the medium run showed the strong performance of FPOs during these runs as compared to the long and the very long runs. The very short run recorded highest $MAAR_2$ value, indicating strongest relative performance of FPOs compared to the BSE IPO benchmark index. The SD values increased for the longer runs compared to the shorter runs, indicating increased volatility of returns during the longer runs.

8.1.2 Pricing performance of FPOs during the very short run

Table 8.2 showed the performance of the FPOs during the very short run period. Total 27 FPOs were floated on the NSE during 1999-2019. The period from 2019 to 2025 was excluded from this analysis, as no Follow-on Public Offers (FPOs) were listed on the National Stock Exchange (NSE) during this time, except for Yes Bank.

Table 8.2: Pricing performance of FPOs during very short run

FPOs	Year of FPO	Issue price	RR of FPOs	NIFTY-50 return for comparison	BSE IPO return for comparison	MAAR ₁ (RR-Nifty 50)	MAAR ₂ (RR-BSE IPO Index return)
Indian Petrochemicals Corporation Limited	2004	170	21.03	3.74	NA	17.29	NA
ICICI Bank Limited	2004	280	3.23	0.72	NA	2.52	NA
Punjab National Bank Ltd.	2005	390	11.19	-2.08	-2.69	13.27	13.88
IVRCL Infrastructure & Projects Limited	2005	395	15.25	-1.61	0.07	16.87	15.19
Andhra Bank Ltd.	2005	82	0.55	-5.71	-4.08	6.26	4.63
Jindal Poly Films Limited Ltd.	2005	360	25.19	2.76	0.38	22.44	24.81
Oriental Bank of Commerce Ltd.	2005	250	2.36	-0.12	-0.67	2.48	3.03
Syndicate Bank	2005	50	30	1.72	3.44	28.28	26.56
Gujarat Industries Power Company Limited	2005	68	2.43	-0.16	-0.88	2.59	3.31
Ginni Filaments	2005	22	17.04	1.13	1.99	15.92	15.05

Limited							
Allahabad Bank Ltd.	2006	90	5.94	2.82	2.87	3.12	3.08
Bank of Baroda Ltd.	2006	230	13.39	2.82	2.87	10.57	10.52
The South Indian Bank Ltd.	2006	66	4.62	0.95	0.03	3.67	4.59
Union Bank of India	2006	110	11.09	1.29	2.21	9.80	8.88
Opto Circuits (India) Limited	2006	270	55.50	-3.73	-3.89	59.23	59.39
D. S. Kulkarni Developers Limited	2006	275	45.11	3.30	0.82	41.81	44.29
Patel Engineering Limited	2006	440	24.57	-5.30	-2.85	29.88	27.43
Gangotri Textiles Limited	2006	41	10.48	-0.44	-0.47	10.93	10.96
ICICI Bank Limited	2007	940	1.64	1.56	5.39	0.09	-3.74
Bharat Earth Movers Limited	2007	1075	16.65	15.55	1.11	-0.66	14.44
UltraTech Cement Ltd.	2010	245	348.36	345.79	-1.87	-2.01	347.66
Shipping Corporation Ltd.	2010	140	-0.60	-2.26	-4.78	1.65	4.17
Tata Steel Ltd.	2011	610	4.5	-3.24	-3.51	7.74	8.01
Power Finance Corporation Limited	2011	203	5.44	-12.36	-2.93	17.80	8.37

Power Grid Corporation Of India Limited	2013	90	8.33	-1.46	-3.39	9.80	11.72
Engineers India Limited Ltd.	2014	150	2.44	1.13	2.65	1.31	-0.21

Source: Author's computation

The 25 FPOs out of the total 26 FPOs, recorded positive gains, while only one FPO , viz., Shipping Corporation Ltd. showed negative return during the very short run. The “Ultra Tech Cement Ltd.” recorded the highest raw return during the very short run, while “The Shipping Corporation Ltd.” recorded a negative raw return. The MAAR₁ values for all the FPOs, except “Bharat Earth Movers Limited (2007)” and “UltraTech Cement Ltd. (2010)”, were positive, reflecting the profitable performance of FPOs compared to the NIFTY-50 index. The MAAR₂ values were positive for all FPOs except the “Engineers India Ltd.”, reflecting the over-performance of FPOs compared to the BSE IPO benchmark index.

8.1.3 Pricing performance of FPOs during the short run

The pricing performance of FPOs in short run is displayed in the Table 8.3. Out of 27 FPOs, 18 FPOs were launched during 2005-2006.

Table 8.3: Pricing performance of FPOs during short run

	Year of FPO	Issue price	RR of FPOs	NIFTY-50 return for comparison	BSE IPO return for comparison	MAAR ₁ (RR-Nifty 50)	MAAR ₂ (RR-BSE IPO Index return)
Indian Petrochemicals Corporation Limited	2004	170	9.17	-2.12	NA	11.30	NA
ICICI Bank Limited	2004	280	8.14	-2.39	NA	10.54	NA
Punjab National Bank Ltd.	2005	390	-0.18	-6.77	-8.01	6.59	7.83
IVRCL Infrastructure & Projects Limited	2005	395	10.08	-2.91	-1.48	13.00	11.57
Andhra Bank Ltd.	2005	82	-0.30	-1.57	-1.95	1.27	1.65
Jindal Poly Films Ltd.	2005	360	-3.21	3.94	3.43	-7.15	-6.64
Oriental Bank of Commerce Ltd.	2005	250	9.18	3.25	4.93	5.93	4.25
Syndicate Bank	2005	50	57.2	7.15	4.98	50.05	52.22
Gujarat Industries Power Company Limited	2005	68	0.51	8.61	7.70	-8.09	-7.19
Ginni Filaments Limited	2005	22	1.59	2.82	1.02	-1.23	0.57

Allahabad Bank Ltd.	2006	90	3.11	4.36	4.60	-1.25	-1.49
Bank of Baroda Ltd.	2006	230	3.95	29.78	4.60	-25.82	-0.65
The South Indian Bank Ltd.	2006	66	-2.73	7.01	6.53	-9.74	-9.26
Union Bank of India	2006	110	9.77	6.97	8.28	2.80	1.49
Opto Circuits (India) Limited	2006	270	106.79	4.36	0.09	102.44	106.70
D. S. Kulkarni Developers Limited	2006	275	-10.52	-14.94	-18.65	4.41	8.12
Patel Engineering Limited	2006	440	-26.97	-26.78	-29.32	-0.20	2.35
Gangotri Textiles Limited	2006	41	-15.12	-4.90	-10.55	-10.23	-4.57
ICICI Bank Limited	2007	940	3.20	8.64	12.71	-5.44	-9.51
Bharat Earth Movers Limited Ltd.	2007	1075	13.17	-0.03	-4.43	13.19	17.59
UltraTech Cement Ltd.	2010	245	348.92	-1.50	-6.12	350.42	355.04
Shipping Corporation Ltd.	2010	140	-5.91	2.75	-0.76	-8.66	-5.15
Tata Steel Ltd.	2011	610	4.5	-3.12	-6.25	7.62	10.75
Power Finance Corporation Limited	2011	203	-1.01	-12.41	-1.36	11.40	0.35
Power Grid	2013	90	11	-1.09	12.31	12.09	-1.31

Corporation Of India Limited Ltd.							
Engineers India Limited Ltd.	2014	150	22.70	6.91	-38.80	15.79	61.50

Source: Author's computation using MS Excel

During the short run “Punjab National Bank Ltd. (2005)”, “Andhra Bank Ltd.(2005)”, “Jindal Poly Films Ltd. (2005)”, “The South Indian Bank Ltd.(2006)”, “D. S. Kulkarni Developers Limited (2006)”, “Patel Engineering Limited (2006)”, “Gangotri Textiles Limited (2006)”, “Shipping Corporation Ltd.(2010)”, and “Power Finance Corporation Limited (2011)” showed negative raw returns. “UltraTech Cement Ltd.” and “Opto Circuits (India) Limited” recorded exceptionally high average raw returns. The relative performance of these FPOs compared to the NIFTY-50 index was positive in all cases except for “Shipping Corporation Ltd.”, “ICICI Bank Ltd.”, “Gangotri Textiles Ltd.”, “Patel Engineering Ltd.”, “The South Indian Bank Ltd.”, “Bank of Baroda Ltd.”, “Allahabad Bank Ltd.”, “Jindal Poly Films Ltd.”, “The South Indian Bank Ltd.”, “Bank of Baroda Ltd.”, “Allahabad Bank Ltd.”, “Shipping Corporation Ltd.”, “ICICI Bank Ltd.”, “Gangotri Textiles Ltd.”, “Power Grid Corporation of India Ltd.”, also showed negative market adjusted abnormal return compared to the BSE IPO index. On contrary, the remaining FPOs recorded positive MAAR₂ values indicating the superior performance of these FPOs compared to the BSE IPO index.

8.1.4 Pricing performance of FPOs during medium run

In this section, the medium run refers to six months period from the issue end day of the FPOs. Return of 27 FPOs were analysed during the medium run against the NIFTY-50 (MAAR₁) and the BSE IPO Index (MAAR₂), as presented in Table 8.4

.Table 8.4: Pricing performance of FPOs during medium run

	Year of FPO	Issue price	RR of FPOs	NIFTY-50 return for comparison	BSE IPO return for comparison	MAAR ₁ (RR- Nifty 50)	MAAR ₂ (RR- BSE IPO Index return)
Indian Petrochemicals Corporation Limited	2004	170	10.65	-11.36	NA	22.01	NA
ICICI Bank Limited	2004	280	4.08	-2.33	NA	6.42	NA
Punjab National Bank Ltd.	2005	390	7.67	13.95	6.99	-6.27	0.69
IVRCL Infrastructure & Projects Limited	2005	395	106.05	26.68	19.33	79.37	86.72
Andhra Bank Ltd.	2005	82	11.04	26.76	18.68	-15.72	-7.64
Jindal Poly Films Limited Ltd.	2005	360	-24.12	30.42	25.24	-54.55	-49.36
Oriental Bank of Commerce Ltd.	2005	250	2.64	29.54	26.40	-26.90	-23.76
Syndicate Bank	2005	50	93	32.03	27.01	60.97	65.99
Gujarat Industries Power Company Limited	2005	68	7.94	50.68	34.39	-42.74	-26.45
Ginni Filaments Limited	2005	22	-23.86	4.23	-8.90	-28.09	-14.96

Allahabad Bank Ltd.	2006	90	-37.22	1.10	-14.58	-38.32	-22.64
Bank of Baroda Ltd.	2006	230	-23.08	1.10	-14.58	-24.18	-8.51
The South Indian Bank Ltd.	2006	66	-2.12	9.63	-5.42	-11.75	3.29
Union Bank of India	2006	110	5.54	10.89	-4.01	-5.34	9.55
Opto Circuits (India) Limited	2006	270	71.83	1.67	-7.69	70.16	79.52
D. S. Kulkarni Developers Limited	2006	275	4.20	3.71	-2.40	0.49	6.60
Patel Engineering Limited	2006	440	-1.96	2.38	-0.05	-4.35	-1.92
Gangotri Textiles Limited	2006	41	-34.88	20.53	17.83	-55.41	-52.71
ICICI Bank Limited	2007	940	23.76	35.26	58.99	-11.49	-35.22
Bharat Earth Movers Limited Ltd.	2007	1075	57.10	40.87	62.85	16.23	-5.75
UltraTech Cement Ltd.	2010	245	321.43	-5.91	-19.04	327.34	340.47
Shipping Corporation Ltd.	2010	140	-24.85	-6.69	-7.60	-18.17	-17.26
Tata Steel Ltd.	2011	610	-5.66	-2.27	-3.89	-3.39	-1.77
Power Finance Corporation Limited	2011	203	-17.02	-16.60	-13.16	-0.42	-3.86
Power Grid	2013	90	38.05	18.25	34.79	19.81	3.27

Corporation Of India Limited Ltd.							
Engineers India Limited Ltd.	2014	150	83.90	25.34	-13.58	58.56	97.48

Source: Author's computation using MS Excel

Even in the short run the “UltraTech Cement Ltd.” recorded the highest average raw return, followed by the “IVRCL Infrastructure & Projects Limited.” On contrary, The “Power Finance Corporation Limited”, “Tata Steel Ltd.”, “Shipping Corporation Ltd.”, “Gangotri Textiles Limited”, “Patel Engineering Limited”, the “South Indian Bank Ltd.”, “Bank of Baroda Ltd.”, “Allahabad Bank Ltd.”, “Ginni Filaments Limited”, “Jindal Poly Films Limited Ltd.” recorded negative raw returns. The MAAR₁ values of 14 FPOs were negative highlighting the poor performance of the FPOs compared to the NIFTY 50 index, while 13 FPOs showed negative MAAR₂ values highlighting the poor performance of FPOs against the BSE IPO index.

8.1.5 Pricing performance of FPOs during long run

One year duration from the issue end day of the FPOs was assumed as long-run period. Table 8.5 shows the performance of 27 FPOs listed from 1999 to 2019 on the NSE.

Table 8.5: Pricing performance of FPOs during long run

	Year of FPO	Issue price	RR of FPOs	NIFTY-50 return for comparison	BSE IPO return for comparison	MAAR ₁ (RR-Nifty 50)	MAAR ₂ (RR-BSE IPO Index return)
Indian Petrochemicals Corporation Limited	2004	170	5.61	16.83	NA	-11.21	NA
ICICI Bank Limited	2004	280	45.96	11.04	NA	34.92	NA
Punjab National Bank Ltd.	2005	390	17.61	48.68	33.70	-31.07	-16.09
IVRCL Infrastructure & Projects Limited	2005	395	244.13	60.24	46.33	183.88	197.79
Andhra Bank Ltd.	2005	82	-1.46	66.92	45.88	-68.38	-47.34
Jindal Poly Films Limited Ltd.	2005	360	-54.11	31.48	6.88	-85.59	-60.99
Oriental Bank of Commerce Ltd.	2005	250	-33.74	36.48	16.05	-70.22	-49.79
Syndicate Bank	2005	50	-0.9	43.79	14.90	-44.69	-15.80
Gujarat Industries Power Company Limited	2005	68	-12.35	52.45	29.15	-64.80	-41.51

Ginni Filaments Limited	2005	22	-25.68	40.49	26.43	-66.17	-52.12
Allahabad Bank Ltd.	2006	90	-1.38	41.42	34.08	-42.81	-35.47
Bank of Baroda Ltd.	2006	230	48.71	33.91	18.82	14.80	29.89
The South Indian Bank Ltd.	2006	66	-3.41	34.94	20.48	-38.35	-23.89
Union Bank of India	2006	110	-5.93	39.26	23.64	-45.20	-29.57
Opto Circuits (India) Limited	2006	270	11.33	6.87	-2.63	4.47	13.97
D. S. Kulkarni Developers Limited	2006	275	-13.85	14.21	12.63	-28.07	-26.48
Patel Engineering Limited	2006	440	-14.81	9.64	13.39	-24.45	-28.20
Gangotri Textiles Limited	2006	41	-43.29	32.72	37.97	-76.01	-81.26
ICICI Bank Limited	2007	940	-23.33	0.34	-9.31	-23.67	-14.02
Bharat Earth Movers Limited Ltd.	2007	1075	-34.18	-6.06	-23.31	-28.12	-10.87
UltraTech Cement Ltd.	2010	245	357.45	-17.23	-29.15	374.68	386.60
Shipping Corporation Ltd.	2010	140	-56.14	-15.91	-26.31	-40.23	-29.83
Tata Steel Ltd.	2011	610	-30.86	-14.44	-22.84	-16.42	-8.02
Power Finance	2011	203	-30.34	-21.60	-20.79	-8.75	-9.55

Corporation Limited							
Power Grid Corporation Of India Limited Ltd.	2013	90	50.94	34.80	84.66	16.15	-33.72
Engineers India Limited Ltd.	2014	150	41.96	43.19	8.42	-1.22	33.54

Source: Author's computation using MS Excel

Out of the 27 FPOs majority of the FPOs recorded negative raw return and negative market adjusted returns against both the bench mark indexes. “UltraTech Cement Ltd.” and the “IVRCL Infrastructure & Projects Limited” recorded highest raw and the market adjusted returns during the long term period. As compared to the other periods during the long-term FPOs showed poorest performance.

8.1.6 Pricing performance of FPOs during very long run

In this study, the long run refers to a period of three years post the issue end date of the FPOs. Table 8.6 shows the pricing performance of the FPOs during the very long run by presenting the raw return of the FPOs three years after the issue end date, along with the market-adjusted abnormal returns (MAAR), calculated using the NIFTY-50 and the BSE IPO index.

Table 8.6: Pricing performance of FPOs during very long run

	Year of FPO	Issue price	RR of FPOs	NIFTY-50 return for comparison	BSE IPO return for comparison	MAAR ₁ (RR-Nifty 50)	MAAR ₂ (RR-BSE IPO Index return)
Indian Petrochemicals Corporation Limited	2004	170	52.44	118.96	NA	-66.52	NA
ICICI Bank Limited	2004	280	206.52	107.90	NA	98.62	NA
Punjab National Bank Ltd.	2005	390	31.05	122.86	105.94	-91.81	-74.88
IVRCL Infrastructure & Projects Limited	2005	395	-14.49	127.49	98.06	-141.98	-112.56
Andhra Bank Ltd.	2005	82	-6.09	135.95	123.60	-142.04	-129.69
Jindal Poly Films Limited Ltd.	2005	360	-40.36	31.48	6.88	-71.84	-47.24
Oriental Bank of Commerce Ltd.	2005	250	-40.50	36.48	16.05	-76.98	-56.55
Syndicate Bank	2005	50	0.80	83.29	54.89	-82.49	-54.09
Gujarat Industries Power Company Limited	2005	68	-30.66	29.45	1.75	-60.11	-32.41
Ginni Filaments	2005	22	-77.23	8.36	-11.23	-85.59	-66.00

Limited							
Allahabad Bank Ltd.	2006	90	-36.11	-1.89	-24.21	-34.22	-11.90
Bank of Baroda Ltd.	2006	230	4.80	-1.89	-24.21	6.69	29.02
The South Indian Bank Ltd.	2006	66	-30.30	-5.75	-26.77	-24.56	-3.54
Union Bank of India	2006	110	17.91	-9.85	-28.87	27.76	46.78
Opto Circuits (India) Limited	2006	270	-57.91	-7.24	-27.14	-50.66	-30.77
D. S. Kulkarni Developers Limited	2006	275	-89.05	0.54	-20.80	-89.60	-68.25
Patel Engineering Limited	2006	440	-57.76	-2.68	-16.71	-55.08	-41.05
Gangotri Textiles Limited	2006	41	-81.83	32.48	24.83	-114.31	-106.66
ICICI Bank Limited	2007	940	-4.28	25.90	-3.93	-30.18	-0.34
Bharat Earth Movers Limited Ltd.	2007	1075	-6.96	20.18	-6.88	-27.14	-0.08
UltraTech Cement Ltd.	2010	245	699.51	1.70	-38.11	697.81	737.62
Shipping Corporation Ltd.	2010	140	-73.21	3.76	-26.38	-76.97	-46.83
Tata Steel Ltd.	2011	610	-38.59	10.66	-14.27	-49.26	-24.33
Power Finance Corporation Limited	2011	203	4.55	12.05	-5.71	-7.49	10.27

Power Grid Corporation Of India Limited Ltd.	2013	90	105.66	29.85	134.27	75.81	-28.61
Engineers India Limited Ltd.	2014	150	1.16	44.72	41.68	-43.56	-40.52

Source: Author's computation using MS Excel

Out of the 27 FPOs only 9 FPOs showed positive raw return while the 15 FPOs recorded negative market returns. 21 FPOs recorded negative MAAR₁ values indicating the poor performance of these FPOs against the NIFTY-50 index. The MAAR₂ values for 20 FPOs showed negative values, indicating the poor performance of majority of FPOs in comparison to the BSE IPO index during the very long run. The UltraTech Cement Ltd and the Power Grid Corporation Of India Limited Ltd. were the highest performing IPOs in terms of all performance metrics (RR, MAAR₁ and the MAAR₂)

8.2 Testing of Hypotheses

This section examined FPO performance across different periods and benchmark indices. Further, the relative performance of FPOs against the benchmark indices during different runs was also evaluated in this section. For the purpose of this analysis 14 null hypotheses were formulated listed as follows:-

H₀₁: Nifty 50 returns and the Raw Return of FPOs do not vary significantly during the very short run.

H₀₂: BSE IPO index return and the Raw Return of FPOs do not vary significantly during the Very Short Run.

H₀₃: Raw Return of FPOs during the short run and the Raw Return of FPOs during the Very Short Run do not vary significantly.

H₀₄: Nifty 50 returns and the Raw Return of FPOs do not vary significantly during the Short Run

H₀₅: BSE IPO index return and the Raw Return of FPOs do not vary significantly during the Short run.

H₀₆: Raw Return of FPOs during the Medium Run and the Raw Return of FPOs during the short run do not vary significantly.

H₀₇: Nifty50 Return and the Raw Return of FPOs do not vary significantly during the Medium Run.

H₀₈: BSE IPO index return and the raw return of FPOs do not vary significantly during the Medium run.

H₀₉: Raw return of FPOs during the long run and the raw return of FPOs during the Medium Run do not vary significantly.

H₀₁₀: Nifty 50 returns and the raw return of FPOs do not vary significantly during the long run

H₀₁₁: BSE IPO index return and the Raw Return of FPOs do not vary significantly during the long run

H₀₁₂: Raw Return of FPOs during the very long run and the raw return of long run do not vary significantly.

H₀₁₃: Nifty 50 returns and the raw return of FPOs do not vary significantly during the Very Long Run

H₀₁₄: BSE IPO index return and the raw return of FPOs do not vary significantly during the very long run

If the null hypothesis was rejected, the alternative hypothesis was accepted, indicating that there was a significant difference between the variables being tested.

Table 8.7 shows the relationship between the variables of each pair across 27 observations. The table shows the direction of the relationship between the variables by categorizing them into positive, negative, or tie ranks.

Table 8.7 Summary of Ranks

			N	Mean Rank	Sum of Ranks
Pair 1(H ₀₁)	“Nifty 50 return” of “Very-Short run” - “Raw Return” of “Very-Short run” (at Closing Price)	“Negative Ranks”	26 ^a	13.50	351.00
		“Positive Ranks”	0 ^b	.00	.00
		“Ties”	0 ^c		
		“Total”	26		
Pair 2(H ₀₂)	“BSE IPO index return” during “Very short run” - “Raw Return” during “Very Short Run”	“Negative Ranks”	22 ^d	13.36	294.00
		“Positive Ranks”	2 ^e	3.00	6.00
		“Ties”	0 ^f		
		“Total”	24		
Pair 3(H ₀₃)	“Raw Return” of “Short Run”– “Raw Return” of “Very Short Run”	“Negative Ranks”	17 ^g	13.47	229.00
		“Positive Ranks”	8 ^h	12.00	96.00
		“Ties”	1 ⁱ		
		“Total”	26		
Pair (H ₀₄)	“Nifty 50 return” of “Short Run”–“Raw Return” of “Short Run” (Close Price)	“Negative Ranks”	16 ^j	15.69	251.00
		“Positive Ranks”	10 ^k	10.00	100.00
		“Ties”	0 ^l		
		“Total”	26		

Pair (H ₀₅)	“BSE IPO index return” during “short run”–“Raw Return” during “Short run”	“Negative Ranks”	15 ^m	13.90	208.50
		“Positive Ranks”	9 ⁿ	10.17	91.50
		“Ties”	0 ^o		
		“Total”	24		
Pair (H ₀₆)	“Raw Return” of “Medium Run” (Close Price) –“Raw Return” of “Short Run” (Close Price)	“Negative Ranks”	13 ^p	13.08	170.00
		“Positive Ranks”	13 ^q	13.92	181.00
		“Ties”	0 ^r		
		“Total”	26		
Pair (H ₀₇)	“Nifty50 Return” in the “Medium Run”- “Raw Return” in the “Medium Run”	“Negative Ranks”	10 ^s	16.70	167.00
		“Positive Ranks”	16 ^t	11.50	184.00
		“Ties”	0 ^u		
		“Total”	26		
Pair (H ₀₈)	“BSE IPO index return” during “Medium run”–“Raw Return” during “Medium run”	“Negative Ranks”	10 ^v	13.90	139.00
		“Positive Ranks”	14 ^w	11.50	161.00
		“Ties”	0 ^x		
		“Total”	24		
Pair (H ₀₉)	“Raw return” of “Long Run”– “Raw return” of “Medium Run”	“Negative Ranks”	19 ^y	12.42	236.00
		“Positive Ranks”	7 ^z	16.43	115.00
		“Ties”	0 ^{aa}		
		“Total”	26		

Pair (H ₀₁₀)	“Nifty 50 return” in the Long run” – “Raw return” of “Long run” (close price)	“Negative Ranks”	6 ^{ab}	12.83	77.00
		“Positive Ranks”	20 ^{ac}	13.70	274.00
		“Ties”	0 ^{ad}		
		“Total”	26		
Pair (H ₀₁₁)	“BSE IPO index return” during “Long Run” – “Raw Return” during “Long run”	“Negative Ranks”	5 ^{ae}	15.60	78.00
		“Positive Ranks”	19 ^{af}	11.68	222.00
		“Ties”	0 ^{ag}		
		“Total”	24		
Pair (H ₀₁₂)	“Raw Return” of “Very Long Run” (Close Price) – “Raw Return” of “Long Run” (Close Price)	“Negative Ranks”	15 ^{ah}	13.60	204.00
		“Positive Ranks”	11 ^{ai}	13.36	147.00
		“Ties”	0 ^{aj}		
		“Total”	26		
Pair (H ₀₁₃)	“Nifty 50 return” in “Very Long Run” – “Raw Return” of “Very Long Run” (Close Price)	“Negative Ranks”	5 ^{ak}	13.80	69.00
		“Positive Ranks”	21 ^{al}	13.43	282.00
		“Ties”	0 ^{am}		
		“Total”	26		
Pair (H ₀₁₄)	“BSE IPO index return” during “Very Long Run” - “Raw Return” during “Very Long Run”	“Negative Ranks”	4 ^{an}	12.25	49.00
		“Positive Ranks”	20 ^{ao}	12.55	251.00
		“Ties”	0 ^{ap}		
		“Total”	24		

	a. “Nifty 50 return” of “Very-Short term” < “Raw Return” of “Very-Short term”
	b. “Nifty 50 index’s return” during “Very-Short term” > “Raw Return” of “Very-Short term”
	c. “Nifty 50 index’s return” during “Very Short Run” = “Raw Return” of “Very-Short term”
	d. “BSE IPO index return” during Very short run < “Raw Return” during Very Short Run
	e. “BSE IPO index return” during Very short run > “Raw Return” during Very Short Run
	f. “BSE IPO index return” during Very short run = “Raw Return” during Very Short Run
	g. “Raw Return” of Short Run < “Raw Return” of “Very-Short term”
	h. “Raw Return” of Short Run > “Raw Return” of “Very-Short term”
	i. “Raw Return” of Short Run = “Raw Return” of “Very-Short term”
	j. Nifty 50 return of Short Run < “Raw Return” of “Short Run”
	k. Nifty 50 return of Short Run > “Raw Return” of “Short Run”
	l. Nifty 50 return of Short Run = “Raw Return” of “Short Run”
	m. “BSE IPO index return” during “short run” < “Raw Return” during “Short run”
	n. “BSE IPO index return” during “short run” > “Raw Return” during “Short run”
	o. “BSE IPO index return” during “short run” = “Raw Return” during “Short run”
	p. “Raw Return” of “Medium Run” < “Raw Return” of “Short Run”
	q. “Raw Return” of “Medium Run” > “Raw Return” of “Short Run”
	r. “Raw Return” of “Medium Run” = “Raw Return” of “Short Run”
	s. “Nifty50 Return” in the “Medium Run” < “Raw Return” in the “Medium Run”
	t. “Nifty50 Return” in the “Medium Run” > “Raw Return” in the “Medium Run”

	u. “Nifty50 Return” in the “Medium Run”= “Raw Return” in the “Medium Run”
	v. “BSE IPO index return” during “Medium run”<“Raw Return” during “Medium run”
	w. “BSE IPO index return” during “Medium run”>“Raw Return” during “Medium run”
	x. “BSE IPO index return” during Medium run = “Raw Return” during “Medium run”
	y. “Raw Return” of “Long Run”<“Raw Return” of “Medium Run”
	z. “Raw Return” of “Long Run”>“Raw Return” of “Medium Run”
	aa. “Raw Return” of Long Run = “Raw Return” of Medium Run
	ab. “Nifty 50 return” in the “long run”<“Raw Return” of “long run”
	ac. “Nifty 50 return” in the “long run”>“Raw Return” of “long run”
	ad. Nifty 50 return in the long run = “Raw Return” of “long run”
	ae. “BSE IPO index return” during Long Run <“Raw Return” during “long run”
	af. “BSE IPO index return” during Long Run >“Raw Return” during “long run”
	ag. “BSE IPO index return” during Long Run = “Raw Return” during “long run”
	ah. “Raw Return” of “Very Long Run”<“Raw Return” of “Long Run”
	ai. “Raw Return” of “Very Long Run”>“Raw Return” of “Long Run”
	aj. “Raw Return” of “Very Long Run” = “Raw Return” of “Long Run”
	ak. “Nifty 50 return” in “Very Long Run”<“Raw Return” of “Very Long Run”
	al. “Nifty 50 return” in “Very Long Run”>“Raw Return” of “Very Long Run”
	am. “Nifty 50 return” in Very Long Run = “Raw Return” of “Very Long Run”
	an. “BSE IPO index return” during Very Long Run <“Raw Return” during “Very Long Run”

	ao. “BSE IPO index return” during Very Long Run > “Raw Return” during “Very Long Run”
	ap. “BSE IPO index return” during Very Long Run = “Raw Return” during “Very Long Run”

Source: Author’s computation using SPSS software

Table 8.7, showed the poor performance of NSE NIFTY 50 returns in all observations in pair 1 during the very short run. Additionally, Pair 2 also highlighted the outperformance of FPOs compared to the BSE IPO index during the very short run. In Pair 3, 17 FPOs recorded higher returns in the very short run compared to the short run. In pair 4, the summation of the negative ranks exceeded the summation of positive ranks, indicating the strong performance of FPOs compared to the Nifty-50 benchmark index during the short run.

In pair 5, the raw return of the FPOs outperformed the BSE IPO index returns during short run. In Pair 6, the mean negative and positive ranks were same, highlighting the similar performance of raw return during the short and the medium run. In medium run the Nifty 50 returns were higher than the raw return of the FPOs as indicated in the pair 7. Pair 8 also reflected the strong performance of the FPOs compared to the BSE IPO index during the medium run. In most cases of pair 9, the raw return of medium run exceeded the raw return of long run, indicating stronger performance of FPOs during medium run compared to the long run. As indicated by the pair 10, during the Long Run, Nifty 50 returns outperformed the raw return FPOs, reflecting the declining return of FPOs over time compared to broader market performance. In pair 11, the BSE IPO index outperformed the raw return of FPO during the Long Run, reinforcing the trend seen in earlier periods. The mean positive and the negative ranks showed approximately similar values in pair 12, reflecting the similar performance of FPOs during the long and the very long run. In pair 13 and 14, the benchmark indexes showed higher returns compared to the FPOs. The level of significance i.e. p value for each of the tested hypothesis is recorded in Table 8.8, based on which the formulated hypotheses are accepted or rejected.

Table 8.8 Test Statistics^a

	"H ₀₁ "	"H ₀₂ "	"H ₀₃ "	"H ₀₄ "	"H ₀₅ "	"H ₀₆ "	"H ₀₇ "	"H ₀₈ "	"H ₀₉ "	"H ₀₁₀ "	"H ₀₁₁ "	"H ₀₁₂ "	"H ₀₁₃ "	"H ₀₁₄ "
Z	-4.457 ^b	-4.114 ^b	-1.789 ^b	-1.918 ^b	-1.672 ^b	-.140 ^c	-.216 ^c	-.314 ^c	-1.537 ^b	-2.502 ^c	-2.057 ^c	-.724 ^b	-2.705 ^c	-2.886 ^c
Asymp. Sig. (2- tailed)	.000	.000	.074	.055	.095	.889	.829	.753	.124	.012	.040	0.469	.007	.004
a. "Wilcoxon Signed Ranks Test"														
b." Based on positive ranks."														
c. "Based on negative ranks."														

Source: Author's computation

The null hypotheses; H₁, H₂, H₁₀, H₁₁, H₁₃, H₁₄ were rejected as the p<0.05 and the alternate hypotheses in these case were accepted which indicated the significance difference between the tested variables. On the contrary, the hypotheses H₃, H₄, H₅, H₆, H₇, H₈, H₉, and H₁₂ failed to be rejected because the p-values were greater than 0.05 in these cases, indicating that there was no significant difference between the tested variables in these cases. It was found that the return of FPOs and the benchmark indexes were significantly different during the very short run, long run and the very long run.

Results and discussion

The analysis in this chapter revealed the performance of FPOs during the varied time periods. A total of 27 FPOs were listed on the NSE platform during the study period, i.e., 1999- 2000. "Bharat Earth Movers Limited (2007)" and "UltraTech Cement Ltd. (2010)", showed the strongest raw return during the very short run period. During the short run, "UltraTech Cement Ltd. (2010)", and "Opto Circuits (India) Limited (2006)" demonstrated the highest raw return. In the "Medium-run" as well as "Long-run", "UltraTech Cement Ltd. (2010)" and "IVRCL Infrastructure & Projects Limited (2005)" showed the yielded highest returns. While "UltraTech Cement Ltd.

(2010)” and “Power Grid Corporation of India Limited” were the strongest performers in the very long run.

The mean raw return of FPOs was highest during the very short run period with a low volatility as indicated by the std. deviation value. The “Market Adjusted Abnormal Returns (MAAR₁)” was highest for the short run period, while the very short and the medium run showed similar MAAR₁ returns. The market adjusted return of FPOs using the BSE IPO index was highest during the very short run period. It was found that the very short, short and the medium run showed relatively higher returns compared to the long and the very long run.

Based on the results of hypothesis testing, the returns of the FPOs across the different runs were not found to be significantly different; however the returns of the FPOs significantly differed from the benchmark indexes (NIFTY-50 and the BSE IPO index) during the very short run, long run and the very long run. Loughran & Ritter (1995) studied US companies going public and SEOs (Seasoned Equity Offerings) during 1970-1990 and results showed that both are poor long run investment compared to the matched firms. Carpentier et.al. (2009) analysed the performance of 958 SME SEOs (seasoned equity offerings or Follow on public offerings) listed on the TSX venture exchange (TSXV) and revealed the poor performance of the SEOs post the issue. The issuers who held the shares for a period of 36 months suffered a negative return. Moskowitz and Vissing-Jorgensen (2002) also reported that the SEOs did not provide profitable yields to compensate the associated risk. Deb (2017) studied the FPOs launched during 2003 to 2015 and found the underperformance of FPOs.

References

Abraham, R. & Harrington, C., 2011. Seasoned Equity Offerings: Characteristics of Firms. *International Journal of Business, Humanities and Technology*, Vol. 1 No. 3(November), pp. 26-33.

Carpentier, C., L'Her, J.-F., & Suret, J.-M. (2012). Seasoned equity offerings by small and medium-sized enterprises. *Small Business Economics*, 38, 449–465. <https://doi.org/10.1007/s11187-010-9271-x>

Deb, S.G (2017) Long-run Performance of Seasoned Equity Offerings: New Evidence from India. *Economic and Political Weekly*, Vol. 52, No. 12 (March 25, 2017), pp. 141-148.

Moskowitz, T. J. and A. Vissing-Jorgensen (2002) . The Returns to Entrepreneurial Investment: A Private Equity Premium Puzzle? *American Economic Review* 92(4): 745-778. Available from: https://www.researchgate.net/publication/226829630_Seasoned_equity_offerings_by_small_and_medium-sized_enterprises [accessed Dec 13 2024].

SEBI.(2016). Sub section- I Issues by Indian companies in India. SEBI. https://www.sebi.gov.in/sebi_data/commondocs/subsection1_p.pdf [Accessed 13 March 2019].

Loughran, T. & Ritter, J., 1995. The New Issues Puzzle. *The Journal of Finance*, Vol. 50(1), pp.

CHAPTER 9

FINDINGS, CONCLUSION AND SUGGESTIONS

This chapter presents an overview of results and concluding insights of the study. The primary objective of the study was to assess the performance of IPOs across different timeframes. It also covers the pricing performance of the FPOs in different runs.

The chapter starts with a summary of findings of the performance of IPOs in different periods, factors affecting the pricing performance of IPOs in India and also evaluates the performance of FPOs. The chapter ends with prospects of future research and conclusion.

9.1 Performance of IPOs across Different Periods

Comparative Performance Evaluation of IPOs across different periods reveals the pricing performance of IPOs based on factors like:- industry, lead time, issue price, issue size, lot size, oversubscription, listing close price, age, and face value. To analyze the performance of IPOs different formula's were used like RR, MAAR, ARR and AMAAR .

9.1.1 Findings based on Industry-wise Performance of IPOs

On the listing day, sectors like 'Banking-finance,' 'Construction and Engineering,' 'Agri. and Agri. products,' 'Non-Banking,' 'Oil, Fuel, and Gas', 'Rating and Stock broking,' 'FMCG', 'Electrical and Electronics,' and 'Hotels, Restaurants & Resorts' showed tremendous performance compared to the 'Garments and Accessories,' 'Textile and Textile products,' and 'Software and Hardware' sectors. The results of this study aligned with the findings of Chhabra (2011) and Pandey (2010), who reported strong performance across all sectors on the listing day.

In the very short run few sectors like Miscellaneous, 'Oil, Fuel, and Gas', Banking-finance, 'Rating & stock broking', and 'Civil Construction' showed high growth whereas sectors like 'FMCG', 'Non-banking', and 'Construction & Engineering', had low growth. Gupta (2016) studied 134 Indian IPOs and found that consumer

discretionary, Food, Finance, and IT yielded positive returns while energy and telecom sectors showed negative returns. According to Shah (2019) Agriculture, Construction, Chemical, Engineering, Banking, Beverages, Manufacturing, Mining, Miscellaneous, Paper, Steel, Insurance, Software, and Investment sectors showed good performance while Engineering, Pharmaceutical, Power, Synthesis, Gems and Jewelry, Infrastructure, Real estate sectors showed poor performance.

In the short run (one month) sectors: 'Software and hardware', 'Non-metallic', Chemical, and Power showed poor performance, whereas 'Construction and Engineering', 'FMCG', 'Miscellaneous', Non-Banking, and 'Banking Finance' showed strong performance. In one month Shah (2019) highlighted the good performance of the majority of sectors, such as Construction, Software, Education, Agriculture, Banking, Beverages, Healthcare, Mining, Miscellaneous, Investment, Paper, and Steel sectors, and poor performance was observed in Engineering, IT, Manufacturing, Pharmaceutical, Power, Communication, Synthesis, Infrastructure, Real estate sectors.

In the medium run, the yield increased for these sectors- 'Internet and telecom', Pharmaceutical, 'Textile and Textile products', 'Garments and Accessories', 'Non-Metallic products', 'Metals and Metal products', 'Residential and Commercial', 'Banking and Finance', 'Non-Banking', 'Oil, Gas & Fuel', 'Miscellaneous', 'Restaurant', 'FMCG', 'Electrical & Electronics'. On the other hand, there was a decline in IT, 'Software & Hardware', 'Healthcare and Hospital', 'Printing, Media and Broadcasting', 'Entertainment', 'Power', 'Construction and Engineering', 'Civil Construction', 'Rating, and Stock broking'. Shah (2019) highlighted that Construction, Chemical, Banking, Beverages, Healthcare, Miscellaneous, Agriculture, Insurance, Software, and Investment showed excellent performance. In contrast, the Engineering, IT, Manufacturing, Mining, Paper, Power, Steel, Synthesis, Infrastructure, Real estate, FMCG, Transportation, and Automotive sectors showed poor performance in the six months. Pandey (2010) presents that most of the sectors showed positive and high returns in the six months.

In the long run period, the oil and gas sector recorded the highest return, and the sectors like Banking-finance, 'Non-Banking', 'Entertainment', 'Software and Hardware', 'Metals and Metal products', 'Textile and Textile products', 'Construction and Engineering', 'Rating and Stock broking', 'Travel, Transport and Logistics', 'Hotel, Restaurant and Resorts', 'Electrical and Electronics' sectors also showed positive returns. On the other hand 'IT', 'Pharmaceutical', 'Healthcare', 'Garments and Accessories', 'Printing, Media and Broadcasting', 'Power', 'Residential Construction', 'Diversified', 'Chemical', 'Automotive and Auto Components', and 'Agri. and Agri. Products' and 'Civil Construction' showed low and negative returns. According to Shah (2019) and Pandey (2010) Chemicals and Banking sectors showed satisfactory performance.

In the very-long run, 'Internet and Telecom Technology', 'IT', 'Non-Metallic', 'Metals and Metal products', 'Pharmaceutical', 'Healthcare and Hospital', 'Textile and Textile products', Garments, 'Printing, Media and Broadcasting', 'Power', 'Residential Construction', 'Banking Finance', 'Travel, Transport and Logistics', 'Diversified', 'FMCG', 'Automotive and auto Components', 'Agri. and Agri. Products' yielded negative returns whereas 'Construction and Engineering', 'Non-Banking', 'Oil, Gas and Fuel', 'Hotels, Resorts, Restaurants', and 'Chemicals' had positive returns. Pandey (2010) analyzed the long-run performance (third year post-IPO) of 76 IPOs launched between 1993 and 2010, finding dissatisfactory results across all sectors, with returns declining in comparison to the first year after the IPO. Parab (2019), mentioned that the apparel and accessories sector showed significantly higher returns in comparison to the Banking and finance service sector, followed by Utilities, Realty, and the Construction and Engineering sector.

9.1.2. Findings based on lot size of IPOs

On the listing day, IPOs in the 20-50 shares lot size category delivered the highest return, with a raw return (RR) of 21.67% (close value) and an average Market-Adjusted Abnormal Return (AMAAR) of 448.51% (close value), highlighting their strong demand and affordability.

Similarly, in the very short run, the 20-50 shares lot size category continued to exhibit the highest returns, reflecting sustained investor interest. Meanwhile, the 0-20 share lot size category showed a slight decline in both raw and market-adjusted returns, whereas the large lot size category demonstrated a modest improvement.

In the short run, the 20-50 shares category still showed the highest Avg. AMAAR values and the continued interest of the investors while the declining return of large lot-sized IPOs reflects the reassessment of share value by the investors.

In the medium run, all lot size categories showed their strongest performance. However, the lot size 20-50 shares again recorded the highest avg. annualized market-adjusted return.

In the long run, the lot size of >100 shares recorded the highest average annualized market-adjusted return in one year. The 25-50 category also recorded an incremental return however it was not the highest.

In the very long run, the 0-25 shares and the 25-50 shares categories showed negative returns while the 50-100 shares and >100 shares categories showed positive returns. In the very long run, the 0-25 and the 25-50 categories showed negative returns while the 50-100 and >100 shares categories showed positive returns.

9.1.3. Findings based on the Offer Size of IPOs

In the very short run, the smaller-sized IPOs show the highest raw return (calculated on close price) while the mid-sized IPOs show the highest annualized returns. In the short run, the 400-1000 recorded the highest annualized and market-adjusted returns which indicates its persistent strong performance and continued investor interest. All the other issue size categories also recorded positive performance and a slight decline in comparison to the listing day performance in terms of raw and market-adjusted returns. Narendrasinh (2018) found that IPOs (Initial Public Offerings) with an offer size ranging between Rs.101 to Rs.125 Crore had the highest initial raw return and market-adjusted return, while Rs. 51 to Rs. 75 and more than Rs. 125 Crore offer size categories underperformed in the very short and the short run.

In the medium run, the larger IPOs recorded the highest AMAAR values which indicated increased stability, liquidity, and long-term investor interests. Categories Rs. 10-100 Crore, Rs. 100-400 Crore and Rs. 400-1000 Crore all indicated high positive raw and marketed-adjusted returns which resulted in a balanced pricing strategy and continued interest of the investors. Narendrasinh (2018) highlighted that the offer size categories of Rs. 26-50 Crore and Rs. 76-100 Crore showed profitable performance in comparison to the other categories. Chhabra (2011) noted that all the offer size categories yielded positive returns in the medium and long run; however, issues with larger issue sizes yielded higher returns than smaller issues.

In the very long run, only the Rs. 10-100 Cr. issue size category showed positive performance while the annualized value for all other categories showed negative value. On comparing the performance of the large-sized IPOs to the NSE NIFTY 50 index the IPOs showed strong performance however on comparing the performance of the large IPOs with the BSE IPO index the IPOs showed poor performance. This differential performance shows that IPOs fared well in comparison to the broader market; however, the IPOs show relatively poor performance in comparison to their IPO-specific index. Narendrasinh (2018) highlighted the poor performance of all the issue size categories in the long run, however, offer size less than Rs. 25 Crore shows the poorest return. Chhabra (2011) noted that all the offer size categories yielded positive returns in the three years; however, issues with larger issue sizes yielded higher returns than smaller issues, in very long run (i.e., 03 years) as well.

9.1.4. Findings based on the Face Value of IPOs.

In the very short run, the raw return of the IPOs with face value between, Rs. 1-9 category slightly rose from the listing day but the Avg. AMAAR values showed a slight decline as compared to the listing day. The IPO category having a face value greater than Rs. 9 also showed higher returns in comparison to the benchmark indexes (NIFTY 50 and BSE IPO index) which are reflected by the positive Avg. MAAR and Avg. AMAAR values.

In the short run, the returns for both IPO categories are positive; however, compared to the listing day and the very short-run period, they have declined. Additionally, the IPOs in both categories have outperformed the benchmark indexes in both cases.

In the long run, the IPOs with face value between Rs. 1-9 showed incremental gains compared to the six-month period and outperformed the face value greater than Rs. 9 category in terms of raw and annualized market-adjusted returns. The greater than Rs. 9 face value category showed a slight decline in raw and market-adjusted returns in comparison to the bi-annual returns (medium run).

In the very long period i.e. three years, the Rs. 1-9 category continued to outperform the greater than Rs. 9 face value category, depicting the consistency in returns. The IPO category of face value greater than Rs. 9 could not sustain the returns in the very long run, which is evident from the negative Avg. MAAR and Avg. AMAAR values.

9.1.5. Findings based on the oversubscription rate of IPOs.

From the pricing performance of IPOs according to the oversubscription rate, it is evident that the more oversubscribed IPOs showed better performance in comparison to the IPOs that had a lower oversubscription ratio. IPOs falling in the higher oversubscription category recorded higher returns while the IPOs falling in the lower oversubscription category showed relatively lower returns.

In the short run period, oversubscription with 1-2 times, 2-5 times, and 5-20 times categories showed a considerable decline in their returns while over subscription with 20-50 times and >50 times categories showed incremental performance as compared to the very short run. The 20-50 times and >50 times oversubscription categories showed strong performance in comparison to the benchmark index.

In the medium run returns for all the categories of oversubscription except the 1-2 times showed positive performance in terms of raw and market-adjusted values.

In the long run, the >50 times oversubscription category showed the strongest performance, which was followed by the 20-50 times category. The 1-2 times and the

2-5 times oversubscription categories showed negative market-adjusted values and low raw return indicating the underperformance of these IPOs.

During the three year period, the 2-5 times & the >50 times categories showed positive raw and market-adjusted returns whereas the other categories recorded negative values. The >50 categories continued to lead by showing high raw and market-adjusted returns.

9.1.6. Findings based on the Lead-Time of IPOs

The IPOs having short and medium lead-time categories performed well on the listing day, however, the IPO with larger lead-time showed negative returns on the listing day. Kiran & Chopram Phil, (2011), reported strong performance of IPOs having a lead time of less than or equal to 15 days as compared to the IPOs falling in the lead time range of 15-30 days. Bantwa (2022) found that IPOs with listing delay in a range of 6 to 10 days have provided the highest rate of return in the very short run, while IPOs with lead-time of 26-30 days showed the least return.

In the short run period, the short and medium lead-time category continues to deliver higher annualized market-adjusted returns indicating the continued market demand and interest of the investors. IPOs with longer lead-time delivered negative returns. Bantwa (2022) also highlighted that the IPOs with listing delay in a range of 6 to 10 days have provided the highest rate of return in the short run, while IPOs with 26-30 days lead-time provided the highest rate of return in the short run, while the IPOs with 26-30 days lead-time showed the least return.

In the medium run, the shorter lead-time i.e. 0-15 days outperformed all the other lead-time categories while the >50 days category showed negative returns. The findings of Bantwa (2022) highlighted that IPOs with listing delay in a range of 6 to 10 days have provided the highest rate of return in the medium run, while the 26-30 days category showed the least return.

In the long run-15-20, 20-50 categories also showed positive yield. Chhabra (2011), also highlighted in a study, that the IPOs, which had lesser listing delay showed the best long-run performance.

In the very long run period, the raw return for 0-15, 15-20, and 21-50 all showed positive return however, the market adjusted return for 15-20, 21-50 showed negative returns. Bantwa (2022) also assessed the performance of 411 IPOs launched from 2007 to 2016 and highlighted that IPOs having a listing delay of 6-10 days showed the highest rate of return in the long run, IPOs having lead time greater than 15 days showed negative return and IPOs having lead time between 26-30 days showed the worst performance.

9.1.7. Findings based on the Issue Price of the IPOs.

On the listing day, IPOs with issue price in the range of Rs. 50-100 and the Rs. 500-800 categories showed the poorest performance across all the performance metrics, while IPOs with >Rs. 800 showed the strongest performance. Chhabra (2011) found that the issues falling in the price range of Rs 10 outperformed the performance of other categories. Narendrasinh (2018) found that IPOs with an issue price below Rs.30 delivered better returns than those priced between Rs.30 and Rs.120. Additionally, IPOs priced above Rs.120 also performed well, suggesting that both low-priced and high-priced IPOs tended to outperform those in the mid-price range.

In the very short run, the 100-150 and 300-500 categories recorded progressive returns as compared to the listing day returns, while the returns for all other categories declined in comparison to the listing day. Chhabra (2011) found an inverse relation between the listing price and the return as the low-priced IPOs yielded the maximum return while the high-priced IPOs yielded the lowest return. Narendrasinh (2018) suggested that both low-priced and high-priced IPOs tended to outperform those in the mid-price range. In the short run, IPOs with issue price in the range of 10-50 category recorded the highest Avg. MAAR values; however, the annualized Avg. MAAR values were lower than the Rs. 300-500 category in both cases. The Rs. 100-150 category also showed strong market performance. Chhabra (2011) found that the IPOs of all issue price categories yielded positive returns however, the Rs. 10 category yielded the highest return.

In the medium run, the 50-100 category showed negative yield, and the Rs. 10-50 category also showed positive but low returns. The Rs. 200-300 category

outperformed all the other categories. Narendrasinh (2018) found that IPOs with lower and mid-range prices resulted in negative returns over six months.

In the long run, the >Rs. 800 category showed negative returns, and the Rs. 50-100 category recorded the second least return. In terms of AMAAR value, the 10-50 category recorded the highest values, while the Rs. 150-100 category recorded the highest RR and MAAR values. In the very long run, the Rs. 50-100, Rs. 200-300, Rs. 300-500, Rs. 500-800, and >Rs. 800 categories showed negative return. Chhabra (2011), initial public offerings (IPOs) with an issue price of Rs.10 and those priced between Rs.10 and Rs.50 performed the best, whilst IPOs priced between Rs.50 and Rs.100 and over Rs.100 performed the worst in the long and very long run.

9.1.8. Findings based on listing close price of IPOs

The listing day closing price refers to the closing price of the IPO at the end of the listing day. On the listing day, >Rs. 400 category of listing close price recorded the highest Avg. MAAR and Avg. AMAAR across both cases (when compared to, indicating its strong market performance.

In the short run >Rs. 400 showed the strongest performance, followed by the Rs. 200-400 category, and the Rs. 0-100 and Rs. 100-200 showed poor returns.

In the medium run also >Rs. 400 showed the strongest performance, followed by the Rs.200-400 category and the Rs. 0-100 and Rs. 100-200 showed poor returns.

In the long run, the performance of the >Rs. 400 and the Rs. 200-400 categories declined as compared to the medium run and the Rs. 200-400 category came into the lead.

9.1.9. Findings based on the Age of companies bringing an IPO

On the listing day, IPOs in the 20-40 years category outperformed all others, followed by 15-20, 0-10, 10-15, and 40-101 years in descending order of performance. The performance of IPOs of all age categories outperformed the NSE NIFTY 50 and the BSE IPO index. Chauhan (2011) found a positive relationship between a company's age and its return.

In the very short run, the 20-40 years category showed the highest return, which was followed by the 15-20 years and 0-10 years categories. The mid-aged IPOs outperformed the younger and the older IPOs. Chhabra (2011) noted positive performance across all age categories however, the 5 to 9 years IPO category recorded the highest annualized raw and market-adjusted return.

In the short run, the 0-10 years category had the strongest Avg. MAAR performance and high Avg. AMAAR values, while the 20-40, 15-20, and 0-100 categories also achieved Avg. AMAAR values of 300-400%, outperforming benchmark indexes. Chhabra (2011) observed positive performance of all age-wise IPO categories in one month. However, the youngest firms gave the highest return followed by the mid-aged firms.

In the medium run, the 20-40 category took the lead by recording the highest Avg. MAAR and Avg. AMAARs in both Cases 1 and 2. The 10-15 category showed the second highest values, while the 15-20 category showed the lowest performance. Chhabra (2011) observed that the IPOs aged between 5 to 9 years showed considerably better performance in comparison to the other categories.

In the long run, the 20-40 years category outperformed the younger and the older IPO categories; the 0-10 years category followed the 20-40 years category by showing the second highest return values, while the 15-20 years age category showed negative returns.

In the very long run period, the 20-40 years category outperformed all the other categories and also outperformed the NSE NIFTY 50 index in Case 1; however, in comparison to the BSE IPO index, it showed lower returns. Chhabra (2011) noted the positive performance of 0-1 years, 1-5 years, 9-13 years, and >13 years categories and the negative performance of 5-9 years category.

9.2. Findings based on factors affecting the pricing Performance of IPOs in India

During the listing day both the predictor, indexes (i.e. NIFTY-50 in Model and BSE IPO index in Model 3) were found to be significant predictors of the raw return of

the IPOs. The main factors during the listing day were oversubscription, lot size, and face value. Ghosh (2005) and Shelly and Singh (2008), Sehgal & Sinha (2013) also mentioned the effect of listing delay on the return of the IPOs and concluded that the IPOs having higher lead time showed higher underpricing. According to Kiran & Phil (2011), factors like Subscription level, Issue size, Listing lead-time, and Age influenced the initial returns of the listing day of the company.

In the very short run, the common factors affecting the raw return as revealed by regression Models 5 and 7 were oversubscription, listing price, issue price, NIFTY-50, and the BSE IPO index returns. It was also found that factors that affected MAAR values (calculated using the NIFTY-50 index in Model 6 and using the BSE IPO index in Model 8) were oversubscription, listing price, and the issue price of the IPOs.

In the short run, the raw returns were significantly predicted using the oversubscription, listing price, NIFTY-50, and the BSE IPO index.

During the medium run, the oversubscription, lead-time, NIFTY-50 (Model 13), and the BSE IPO index (Model 15) were significant predictors of the raw return of the IPOs. While the common predictors of the MAAR return (calculated using the NIFTY-50 index in Model 14 and using the BSE IPO index in Model 16) during the medium run, were oversubscription and lead-time.

During the long and very long term, MAAR calculated using the benchmark indexes in models 21, 22, 23 and 24 respectively, showed oversubscription and issue price as common predictors of the raw return of IPOs.

9.3. Findings based on Pricing Performance of FPOs

In the very short run period Bharat Earth Movers Limited (2007) and UltraTech Cement Ltd. (2010), showed the strongest raw return. The mean raw return of FPOs was highest during the very short run period with low volatility as indicated by the std. Deviation value. The market-adjusted return of FPOs using the BSE IPO index was highest during the very short-run period.

In the short run, UltraTech Cement Ltd. (2010), and Opto Circuits (India) Limited (2006) demonstrated the strongest performance in terms of raw return. The market-adjusted returns ($MAAR_1$) were highest during short-run period.

During medium and long term period, UltraTech Cement Ltd. (2010) and IVRCL Infrastructure & Projects Limited (2005) showed the yielded highest returns. While UltraTech Cement Ltd. (2010) and Power Grid Corporation of India Limited were the strongest performers in the very long run.

Loughran & Ritter (1995) studied US companies going public and SEOs (Seasoned Equity Offerings) during 1970-1990 and results showed that both are poor long-run investments compared to the matched firms. Carpentier et.al. (2009) analyzed the performance of 958 SME SEOs (seasoned equity offerings or Follow-on public offerings) listed on the TSX Venture Exchange (TSXV) and revealed the poor performance of the SEOs post the issue.

9.4 Conclusion

In industry-wise performance, it was noted that miscellaneous and 'non-banking' sectors showed the strongest performance throughout all the runs. These two sectors showed progressive/incremental performance with miscellaneous having the highest and the non-banking sector having the second highest return. It was also observed that the IPOs showed the strongest performance in the medium run. In the medium run, all the lot size categories recorded their strongest performance. It was noted that the returns for all issue size categories peaked during the medium run therefore it is the best-performing IPO period. The face value Rs. 1-9 category consistently outperformed the greater than Rs. 9 categories in the run, indicating continued investor interest and market adaptability. As the IPOs transitioned from the short run to the medium run, both the IPO categories recorded remarkable enhancement in the raw as well as the market return, projecting the medium run as the best-performing period. The >50 times oversubscription category leads the performance in all runs, indicating the highly oversubscribed IPOs as the best-performing IPOs. Based on lead time the 0-15 days category showed the best performance in all the runs indicating that the IPOs of this category showed market resilience, effective pricing,

and continued investor interest. In the medium run, the return for all the lead-time categories showed incremental returns except the >50 days category therefore the medium run proves to be the most efficient IPO performance period. In issue price, the Rs. 10-50 category consistently showed positive returns throughout all the runs henceforth this category is the best-performing issue price. It was observed that listing close price >Rs. 400 category recorded a high incremental gain in comparison to the long-run period and again took the lead by outperforming all the other listing close price IPO categories. The Rs. 200-400 listing close price category could not sustain the very long run period and failed to deliver positive market-adjusted returns in both cases 1& 2(in comparison to NSE NIFTY-50 as well as BSE IPO index). Henceforth it is concluded that the >Rs. 400 listing closing price category was the strongest-performing category in all the runs. Based on the age of the IPOs it was concluded that the 20-40 years category consistently delivered the highest returns, highlighting the outperformance of mid-aged companies compared to younger and older ones, while most age categories achieved their peak Avg. MAAR and Avg. AMAAR values in the medium run, making it the best-performing period for IPOs.

Both the benchmark indexes were found to be common predictors of raw return of IPOs across all runs including listing day. It was also observed that oversubscription was the common predictor of the raw return of IPOs during very short, short, long and very long term period. Lead time played a major role as a predictor in the very long run whereas issue price was the common predictor in the very short run, long run, and very long run.

Oversubscription was found to be the common predictor when MAAR values (calculated using the NIFTY-50 index and BSE IPO index) in different models in all the runs including listing day.

The performance of FPOs during the varied times revealed that UltraTech Cement Ltd. (2010) had the strongest performance in terms of raw returns. Bharat Earth Movers Limited (2007) showed the strongest raw return during the very short run period and Power Grid Corporation of India Limited was one of the strongest performers in the very long run.

9.5 Future Scope of Study

The study can be expanded to include other financial instruments beyond IPOs and FPOs listed on the NSE platform. Future research could examine the performance of rights issues, debt issues, and preference shares, which were not part of this study.

The scope can be broadened to analyze the performance of IPOs and FPOs listed on stock exchanges other than NSE, such as the BSE (Bombay Stock Exchange) or regional stock exchanges, to provide a more comprehensive understanding of Indian capital markets.

Another area of research can be the pricing performance of the IPOs and FPOs of India when compared with the performance of the IPOs or FPOs/SEOs across different countries.

Future studies could incorporate more variables into regression models for better understanding of the factors contributing to IPO mispricing. Variables such as macroeconomic conditions, market volatility, sectoral indices, and global investor sentiment could enhance the explanatory power of the models and provide deeper insights for stakeholders, academics, and market participants.

9.6 Suggestions Based on Findings of the Study

The issue price is a critical factor in determining the outcome of IPOs. Findings reveal that IPOs within the Rs.10-Rs.50 issue price category consistently delivered positive returns across all time horizons—"very short run, short run, medium run, and long run"-making it the best-performing issue price category. This performance indicates that lower-priced IPOs often attract higher investor interest, leading to better market-adjusted returns. Therefore, it is recommended that investors focus on IPOs within the Rs.10-Rs.50 issue price range to maximize their returns across different investment periods.

The findings reveal that middle-aged IPOs (20-40 years) perform better than both younger and older IPOs. This is supported by Chauhan (2011), who identified a positive relationship between a company's age and its returns. The present study

shows that in both the very short run and medium run, the 20-40 years category recorded the highest Avg. MAAR and Avg. AMAAR values. Furthermore, during the long run, the 20-40 years category continued to outperform the younger and older IPO categories. These results suggest that IPOs from companies aged 20-40 years tend to exhibit greater stability, maturity, and growth potential, which contribute to their superior performance. Therefore, it is recommended that IPOs within the 20-40 years age bracket be prioritized for investment, as they are more likely to deliver better returns compared to younger and older IPOs.

It is evident from the findings that IPOs with higher oversubscription ratios demonstrated significantly better performance compared to IPOs with lower subscription levels. This observation is consistent with the findings of Chhabra (2011) and Chauhan (2011), which also highlighted that IPOs in the higher oversubscription category recorded superior returns, whereas those with lower oversubscription ratios showed relatively modest returns. Therefore, it is suggested that investors carefully evaluate the subscription levels of IPOs, as higher oversubscription often reflects strong investor demand and market confidence, which can serve as an indicator of potential short-term listing gains.

The findings also revealed that IPOs with a close price >Rs.400 category demonstrated the strongest performance on the initial day as well as in the short and medium term period. On the listing day, this category recorded the highest Avg. MAAR (Market Adjusted Abnormal Returns) and Avg. AMAAR (Average Market Adjusted Abnormal Returns) values, highlighting its dominance in the immediate post-listing period. Additionally, the >Rs. 400 close price category showed progressive performance in both the short run and medium run, maintaining consistent positive returns. Although a slight decline in performance was observed in the long run compared to the medium run, the >Rs. 400 category still yielded positive returns. Therefore, it is suggested that IPOs in the close price >Rs. 400 category be considered as the strongest-performing group across all time horizons, offering substantial returns to investors.

References

- Carpentier, C., L'Her, J.-F., & Suret, J.-M. (2012). Seasoned equity offerings by small and medium-sized enterprises. *Small Business Economics*, 38, 449–465. <https://doi.org/10.1007/s11187-010-9271-x>
- Chauhan, A. K. (2011). The analysis of the initial and post-issue performance of initial public offerings (*Unpublished doctoral thesis*). Kumaun University, Nainita
- Chhabra, K. (2011). *Pricing performance of IPOs in India (Unpublished doctoral thesis)*. Punjabi University Patiala, Commerce. Patiala: Shodhganga.
- Loughran, T. & Ritter, J., 1995. The New Issues Puzzle. *The Journal of Finance*, Vol. 50(1), pp.23-51.
- Ghosh, S. (2005). Underpricing of initial public offerings: The Indian experience. *Emerging Markets Finance and Trade*, 41(6), 45-57.
- Narendrasinh, R. B. (2018). An Analytical Study On Performance Of Initial Public Offerings And Issue Mechanism In India (Unpublished doctoral thesis). Sardar Patel University .
- Shah, M. B. (2019). *Impact Of IPO Grading On Performance Of Stock Of Selected Companies In India* (Unpublished doctoral thesis). Department of Business Studies, Sardar Patel University
- Singh, S., & Singh, B. (2008). Oversubscription and IPO underpricing: evidence from India. *The ICFAI Journal of Applied Finance*, 14(12), 65-73
- Pandey, K. C., (2011). Initial Public Offerings (IPOs) and the Price Behaviour (Unpublished doctoral thesis) C.S.J.M. University, Kanpur.

Bibliography

- Abraham, R. & Harrington, C., 2011. Seasoned Equity Offerings: Characteristics of Firms. *International Journal of Business, Humanities and Technology*, Vol. 1 No. 3(November), pp. 26-33.
- Ahmed, A. A., Fathy, B. A. G., & Samak, N. A.-A. (2024). The determinants of IPO initial returns in emerging markets: A quantile regression. *International Journal of Emerging Markets*, 19(1), 211–230. <https://doi.org/10.1108/IJOEM-01-2021-0112>
- Akerlof, G. A. (1970). The market for “lemons”: Quality uncertainty and the market mechanism. *Quarterly Journal of Economics*, 84(3), 488–500. <https://doi.org/10.2307/1879431>
- Ang, J. & Boyer, C., 2009. Performance Differences between IPOs in New Industry and IPOs in Established Industries. *Managerial Finance*, Vol. 35, pp. 606-623.
- Bantwa, A. R. (2022). Price Performance of Initial Public Offerings (IPOs) With Special Focus on Underpricing: A Comparative Study of securities Listed on Indian (BSE) And Chinese (SSEC) Stock Exchanges (Unpublished Doctoral Thesis). *Gujarat Technological University, Ahmadabad*.
- Baron, D. P. (1982). A model of the demand for investment banking advising and distribution services for new issues. *Journal of Finance*, 37(4), 955–976.
- Boehmer, B. B. & Fishe, R., 2006. Do institutions receive favorable allocations in IPOs with better long run returns?. *Journal of Financial and quantitative analysis*, Vol.41(04), pp. 809-828.
- Bossin, R. & Sentis, P., 2014. Long-run performance of IPOs and the role of financial analysts: some French evidence. *The European Journal of Finance*, Vol. 20(2), pp. 125-149.

- Boubakri, N., Kooli, M. & L'Her, F. J., 2005. Is there any life after going public? Evidence from Canadian Market. *The Journal of Private Equity*, Vol. 8(3), pp. 30-40.
- Brennan, M. J., & Franks, J. (1997). Underpricing, ownership, and control in initial public offerings of equity securities in the U.K. *Journal of Financial Economics*, 45(3), 391–413
- Bruton, G. D., Filatotchev, I. & Chanine, S., 2010. Governance, Ownership structure and Performance of IPO Firm: The Impact of Different Types of Private Equity
- Butler, A. W., Keefe, M. O., & Kieschnick, R. (2014). *Robust determinants of IPO underpricing and their implications for IPO research. Journal of Corporate Finance*, 27, 367–383. doi:10.1016/j.jcorpfin.2014.06.002
- Carpentier, C., L'Her, J.-F., & Suret, J.-M. (2012). Seasoned equity offerings by small and medium-sized enterprises. *Small Business Economics*, 38, 449–465. <https://doi.org/10.1007/s11187-010-9271-x>
- Chauhan, A. K. (2011). The analysis of the initial and post-issue performance of initial public offerings (*Unpublished doctoral thesis*). Kumaun University, Nainita
- Chan, K., Wang, J., & Wei, K. J. (2004). Underpricing and long-term performance of IPOs in China. *Journal of Corporate Finance*, 10(3), 409-430.
- Chen, G., Firth, M., & Kim, J. B. (2000). The post-issue market performance of initial public offerings in China's new stock markets. *Review of Quantitative Finance and Accounting*, 14(4), 319-339.
- Chhabra, K. (2011). *Pricing performance of IPOs in India (Unpublished doctoral thesis)*. Punjabi University Patiala, Commerce. Patiala: Shodhganga.

- Chhabra, S., & Kiran, R. (2022). Impact of information on winners' curse and long-run performance of initial public offerings. *International Journal of Finance & Economics*, 27(1), 975–992. <https://doi.org/10.1002/ijfe.21861>
- Chowdhary, B. & Nanda, V., 1996. Stabilization, Syndication and Pricing of IPOs. *The Journal of Financial and Quantitative Analysis*, Vol. 31(1), pp. 1125-1142.
- Das, G. (2014). *Performance of initial public offerings (IPOs) in the National Stock Exchange: A study of some selected companies in India (Unpublished doctoral thesis)*. Department of Commerce, Calcutta University, Calcutta.
- Das, G., Saha, M., & Kundu, A. (2016). Analyzing long-run performance of select initial public offerings using monthly returns: Evidence from India. *Vision: The Journal of Business Perspective*, 20(3), 237–248. <https://doi.org/10.1177/0972262916652809>
- Das, S. (2013). *Analysing the trend of market prices of initial public offerings (IPOs): A study based on some selected (Unpublished doctoral thesis)*. The University of Burdwan, Burdwan.
- Deb, S.G (2017) Long-run Performance of Seasoned Equity Offerings: New Evidence from India. *Economic and Political Weekly*, Vol. 52, No. 12 (March 25, 2017), pp. 141-148.
- Ellikkal, A., et al. “IPOs in Indian Stock Market: Analyzing Pricing and Performance of IPO Listed in 2021.” *Shanlax International Journal of Management*, vol. 10, no. 2, 2022, pp. 1–8
- Espinasse, P., n.d. *IPO Banks Pitch, Selection and Mandate*. New York: Palgrave Macmillan
- Fama, E. F. (1991). Efficient Capital Markets: II. *The Journal of Finance* , XLVI (5), 1575-1617.

- Fadila, A., & Zilal Hamzah, M. (2015). Determinants Factor Analysis Of Underpricing On Initial Public Offering At Indonesia Stock Exchange Pardomuan Sihombing. *Business and Entrepreneurial Review* (Vol. 15, Issue 1).
- Fedorova, E., Chertsov, P., & Kuzmina, A. (2023). COVID-19: The impact of the pandemic fear on IPO underpricing. *Journal of Financial Reporting and Accounting*, 21(4), 820–846. <https://doi.org/10.1108/JFRA-05-2022-0201>
- Field, L. & Karpoff, J., 2002. Takeover Defenses of IPO Firms. *The Journal of Finance*, Vol. 57(5), pp. 1857- 1889.
- Fisch, C., Meoli, M., Vismara, S., & Block, J. H. (2022). The effect of trademark breadth on IPO valuation and post-IPO performance: An empirical investigation of 1510 European IPOs. *Journal of Business Venturing*, 37, 106237. <https://doi.org/10.1016/j.jbusvent.2021.106237>
- Fox, J., & Weisberg, S. (2013). *Robust Regression*. 1–16. Studocu. <https://www.studocu.com/en-ca/document/york-university/regression-analysis/lesson-9-extra-notes-regression/111163127>
- Ganesamoorthy, L. & Shankar, H., 2014. Initial Public Offerings IPOs in India- Nature of Return and Performance. *The Indian Journal of Commerce*, Vol. 67(2), pp. 14-25
- Geddes, R., 2003. IPOs and equity offerings. First ed. New York: worth-Heineman
- Ghosh, S. (2005). Underpricing of initial public offerings: The Indian experience. *Emerging Markets Finance and Trade*, 41(6), 45-57.
- Gompers, P. A. & Lerner, J., 2003. The Really Long run Performance of Initial Public Offerings: The Pre Nasdaq evidence. *The Journal of Finance*, Vol. 58(4), pp. 1355-1392.

- Gopalaswamy, A. K., Chaturvedi, K., & Sriram, N. (2008). Long run post-issue performance of fixed price and bookbuilt IPOs: An empirical study on Indian markets. *Journal of Advances in Management Research*, 5(2), 64–76
- Griffith, P. H., Milan, T. L. & Blowers, S. C., 1999. *The Earnest and Young LLP Guide to the IPO Value Journey*. 3rd ed. New York: John Wiley and Sons, Inc..
- Gupta, M.K. (2016). Performance of Initial Public Offering (IPOs) In Indian Capital Market (unpublished doctoral thesis). *Udai Pratap (Autonomous) college, Varanasi*
- Gupta, V., Singh, S., & Yadav, S. S. (2023). Disaggregated IPO returns, economic uncertainty and the long-run performance of SME IPOs. *International Journal of Emerging Markets*, 18(10), 3847–3867. <https://doi.org/10.1108/IJOEM-09-2020-1098>
- Gupta, P., Lakhani, M. & Singh, K., 2014. Dynamics of Trading Volume and Stock Return: An Empirical study Based on CNX Nifty of National Stock Exchange. *The Indian Journal of Commerce*, Vol. 67(4), pp. 94- 103
- Hahn, T. (2024). *Estimating IPO Underpricing*. 33
- Hawaladar, I. T., Kumar, K. R. N., & Mallikarjunappa, T. (2018). Pricing and performance of IPOs: Evidence from Indian stock market. *Cogent Economics & Finance*, 6(1), 1420350. <https://doi.org/10.1080/23322039.2017.1420350>
- Huson, M. R., & Meng, C. (2025). IPO proceeds deployment and firm performance. *Journal of Financial Research*, 1, 1–26. <https://doi.org/10.1111/jfir.12458>
- Ibbotson, R. G., & Jaffe, J. F. (1975). “HOT ISSUE” MARKETS. *The Journal of Finance*, 30(4), 1027–1042. doi:10.1111/j.1540-6261.1975.tb01019.x

- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs, and ownership structure. *Journal of Financial Economics*, 3(4), 305–360. [https://doi.org/10.1016/0304-405X\(76\)90026-X](https://doi.org/10.1016/0304-405X(76)90026-X)
- John Hopkins Bloomberg (n.d.). School Robust and Resistant Regression (pp. 150–155).
- Kadolkar, A. M., Marulkar, K. V., & Shivaji University, Kolhapur. (2023). Exploring the relationship between Price band and Oversubscription with level of Underpricing: A study of selected IPO. *Journal of Emerging Technologies and Innovative Research*, 10(11). <https://www.jetir.org>
- Keasey, K., & Short, H. (1992). The Winner's Curse Model of Underpricing: A Critical Assessment. *Accounting and Business Research*, 23(89), 74–78. <https://doi.org/10.1080/00014788.1992.9729862>
- Kenourgios, D. F., Papathanasiou, S., & Melas, E. R. (2007). Initial performance of Greek IPOs, underwriter's reputation and oversubscription. *Managerial Finance*, 33(5), 332–343.
- Keloharju, M. (1993). The winner's curse, legal liability, and the long-run price performance of initial public offerings in Finland. *Journal of Financial Economics*, 34(3), 251–277.
- Kevin, S. (2009). *Security analysis and portfolio management* (7th ed.). Thiruvananthapuram: Asoke K. Ghosh, PHI Learning Private Limited.
- Kini, O., 1994. The Post-Issue Operating Performance of IPO Firms. *The Journal of Finance*, Vol. 49, 49(5), pp. 1699-1726.
- Kilarahatti, S., & V, J. B. (2022). An in-depth analysis of Trend, Pattern and Progress of IPOs: An Evidence from India. *International Journal of Creative Research Thoughts (IJCRT)*, 10(1), 405–407. <https://www.ijcrt.org>

- Kiran, R., & Chopram Phil, R. I. (2011). Price Performance of IPOs in Indian Stock Market. *Euro Economica* , 30 (4), 73-97.
- Khurshed, Arif., Pande, Alok., Singh, AjaiK (2006). Subscription patterns, offer prices and the underpricing of IPOs: Evidence from India. Working Paper Series, University of Manchester.
- Kohli, V., 2009. Do stock Markets Allocate Resources Efficiently? An Examination of Initial Public Offerings. *Economic and Political Weekly*, Vol. 44, pp. 63-72.
- Kumar, K. S. (2015). Short run and long run performance of Indian initial public offerings (IPOs) during 2007-2012. *International Journal of Research and Development-A Management Review*, 4(3), 34-41.
- Kumar, C. V. C. (2017). Factors influencing underpricing of manufacturing sector IPOs: An Indian perspective. *Academica: An International Multidisciplinary Research Journal*, 7(8), 77–88. <https://doi.org/10.5958/2249-7137.2017.00073.8>
- Kuriakose, S. (Dr.), & Athira, V. S. (2018). Validity of winner's curse hypothesis: Evidence from initial public offerings in the Indian insurance industry. *Research Review International Journal of Multidisciplinary*, Special Issue, 42. Presented at the 2nd International Conference on Commerce and Management in Changing Times (ICCMCT 2018). Retrieved from www.rrjournals.com.
- Lee, P. J., Taylor, S. L. & Walter, S. T., 1995. AustralianIpo pricing in the short and long run. *The Journal of Banking and Finance*, Vol. 20, pp. 1189-1210.
- Legierse, W. (2023). Offering method and pricing of IPOs: An analysis of stock IPOs in the Netherlands, 1918–1939. *De Economist*, 171, 207–238. <https://doi.org/10.1007/s10645-023-09422-2>
- Levis, M. (1993). The long-run performance of initial public offerings: The UK experience 1980-1988. *Financial Management*, 28-41.

- Lin, D. K., Kao, L., & Chen, A. (2010). Winner's curse in initial public offering subscriptions with investors' withdrawal options. *Asia-Pacific Journal of Financial Studies*, 39(1), 3–27. <https://doi.org/10.1111/j.2041-6156.2009.00001.x>
- Liu, H., & Chiang, Y.-M. (2022). Confucianism and IPO underpricing. *Pacific-Basin Finance Journal*, 71, 101701, 1–25. <https://doi.org/10.1016/j.pacfin.2021.101701>
- Ljungqvist, A. (2007). IPO underpricing. In *Handbook of corporate finance* (pp. 375–422). [https://doi.org/10.1016/S1873-1503\(06\)01007-5](https://doi.org/10.1016/S1873-1503(06)01007-5)
- Loughran, T. & Ritter, J., 1995. The New Issues Puzzle. *The Journal of Finance*, Vol. 50(1), pp. 23–51.
- Loughran, T., Ritter, J., Chen, C., Deangelo, H., Dunbar, C., Houge, T., Lerner, J., Senbet, L., Seward, J., Barry, C., Field, L., Gompers, P., Ljungqvist, A., Smart, S., Woo, L.-A., & Zutter, C. (2004). Why Has IPO Underpricing Changed Over Time? *Financial Management • Autumn*. <http://bear.cba.ufl.edu/ritter/rank.htm>.
- Manu, K. S., & Saini, C. (2020). Valuation Analysis of Initial Public Offer (IPO): The Case of India. *Paradigm*, 24(1), 7–21. doi:10.1177/0971890720914100
- Mazumder, S., & Saha, P. (2021). COVID-19: Fear of pandemic and short-term IPO performance. *Finance research letters*, 43 (Nov).
- Moskowitz, T. J. and A. Vissing-Jorgensen (2002). The Returns to Entrepreneurial Investment: A Private Equity Premium Puzzle? *American Economic Review* 92(4): 745–778. Available from: https://www.researchgate.net/publication/226829630_Seasoned_equity_offerings_by_small_and_medium-sized_enterprises [accessed Dec 13 2024].

- Mulchandani, P., Pandey, R., Debata, B., & Renganathan, J. (2022). Investor attention and IPO returns: Evidence from Indian markets. *Journal of Economic and Administrative Sciences*. <https://doi.org/10.1108/JEAS-03-2022-0075>
- Mørkøre, M. N., Skaiaa, S. K., & Xiouros, C. (2019, June 30). Market Efficiency and Technological Developments in the Norwegian Stock Market. Norway.
- Narendrasinh, R. B. (2018). An Analytical Study On Performance Of Initial Public Offerings And Issue Mechanism In India (Unpublished doctoral thesis). *Sardar Patel University*.
- NSE. (2018).NSE. Retrieved Feb 28, 2019, from https://www.nseindia.com/global/content/about_us/about_us.htm
- Oman, M., 2005. Underpricing and long run performance of share issue privatisation in Egyptian stock market. *Journal of Financial Research*, Vol. 28(2), pp. 215-234.
- Pandey, K. C., (2011). Initial Public Offerings (IPOs) and the Price Behaviour (Unpublished doctoral thesis) *C.S.J.M. University, Kanpur*.
- Pandya, F. H. (2016). After market pricing performance of Initial Public Offerings (IPOs). *Jindal Journal of Business Research*, 5(1), 1–16. <https://doi.org/10.1177/2278682116670077>
- Parab ,B.R. ,(2019). *Initial Public Offering (IPO) Performance Evaluation (Unpublished doctoral thesis)*. Jamnalal Bajaj Institute of Management Studies, Mumbai
- Payne, G. T., Trudell, L. T., Moore, C. B., Petrenko, O. V., & Hayes, N. T. (2023). Ambiguous signals and information asymmetry in the initial public offering process: Examining ownership concentration, process time, and underpricing. *Group & Organization Management*, 48(5), 1467–1502. <https://doi.org/10.1177/10596011221090036>

- Punithavathy, P. (2011). *Security analysis and portfolio management*. s.l.: Vikaas Publishing House Pvt. Ltd.
- Sahoo, S., & Raj, R. (2022). Disclosed qualitative factors and underpricing: An empirical evidence from Indian IPO market. *Pacific Accounting Review*, 34(5), 687–707. <https://doi.org/10.1108/PAR-06-2021-0098>
- Schultheis, J. P., Day, R. G., Lewis, R. J. & Connor, R. G., 2016. *The Initial Public Offering: A guide book for executives and boards of directors*. Eighth ed. New York: Bowne and Co., Inc.
- Sehgal, S., & Sinha, B. K. (2013). Valuation of IPOs in India-An empirical study. *Business and Economic Research*, 3(2), 183.
- Selvamathi, R., Dr, & Ananth, A. A. (2019). Article IPOS Factors Determining the pricing of IPOS by Buy and hold Raw Return in the Long run. *Journal of Development Economics and Management Research Studies (JDMS)* 01(01), 1-12, <http://www.cdes.org.in/http://www.cdes.org.in/journal/>
- SEBI. (2016). Sub section- I Issues by Indian companies in India. *SEBI*. https://www.sebi.gov.in/sebi_data/commondocs/subsection1_p.pdf [Accessed 13 March 2019].
- SEBI, (n.d.). Beginner's Guide to Capital Market - Primary Markets. <https://investor.sebi.gov.in/pdf/reference-material/primarymarkets.pdf> [Accessed 24 Oct 2024]
- Securities and Exchange Board of India. (2023, August 9). *Reduction in timeline for listing of shares in public issue from T+6 days to T+3 days [Circular No. SEBI/HO/CFD/TPD1/CIR/P/2023/140]*.

https://www.sebi.gov.in/legal/circulars/aug-2023/reduction-of-timeline-for-listing-of-shares-in-public-issue-from-existing-t-6-days-to-t-3-days_75122.html

- Sehgal, S., & Singh, B. (2008). *Determinants of Initial and Long-Run Performance of IPOs in Indian Stock Market*. *Asia Pacific Business Review*, 4(4), 24–37. doi:10.1177/097324700800400403
- Shah, M. B. (2019). *Impact Of IPO Grading On Performance Of Stock Of Selected Companies In India* (Unpublished doctoral thesis). Department of Business Studies, Sardar Patel University
- Singh, P., & Kumar, B. (2012). Short run and long run dynamics of initial public offerings: Evidence from India. *Jindal Journal of Business Research*, 1(1), 87–113. <https://doi.org/10.1177/227868211200100107>
- Singh, S., & Singh, B. (2008). Oversubscription and IPO underpricing: evidence from India. *The ICFAI Journal of Applied Finance*, 14(12), 65-73
- Stevenson, S. (2006). The abnormal performance of UK utility privatisations. *Studies in Economics and Finance*, 23(3), 164–184. <https://doi.org/10.1108/10867370610711020>
- Stoughton, N.M., Zechner, J., 1998. IPO mechanisms, monitoring and ownership structure. *Journal of Financial Economics*, 49, 45–78.
- Subrahmanyam, A. & Titman, S., 1999. The Going - Public Decision and the Development of Financial Markets. *The Journal of Finance*, Vol. 54(3), pp. 1045-1082.
- Svoboda, A., & Heise, R. (2023). *What factors affect the underpricing of Swedish IPOs? A quantitative study of returns on Swedish stock exchange markets*. Linnaeus University

- Tian, Y. (2012). An Examination Factors Influencing Under-Pricing Of Ipos On The London Stock Exchange Written For MFIN 6692.
- Tripathy, N. P. (2011). *Financial services* (5th ed.). New Delhi: PHI Learning Private Limited.
- Welch, I. (1989). Seasoned offerings, imitation costs, and the underpricing of initial public offerings. *Journal of Finance*, 44(2), 421–449.
<https://doi.org/10.1111/j.1540-6261.1989.tb05064.x>
- Welch, I. (1992). Sequential sales, learning, and cascades. *Journal of Finance*, 47(2), 695–732. <https://doi.org/10.2307/2329120> Investors and Institutional Environments.
- Westin, E., & Wiklund, S. (2016). IPO Underpricing and Ownership Structure Comparison of Family Firms and Non-Family Firms. Department of Business Studies Uppsala University
- Wong, E. S., WB, R. W., & Ting, L. S. (2017). Initial public offering (IPO) underpricing in Malaysian settings. *Journal of Economic & Financial Studies*, 5(02), 14.
<https://doi.org/10.18533/jefs.v5i02.276> *Strategic Management Journal*, Vol. 31(5), pp. 491-509.
- Raghupathy, B. M. & Thillairajan, A., 2015. Financial Value Creation: A Comparative Study of VC-Backed IPOs and Non-VC-Backed IPOs in India. *The Journal of Private Equity*, Vol. 18(3), pp. 55-71.
- Rahman, H., & Yung, K. (1999). Insurance IPOs — A Test of the Underpricing Theories. In *Source: Journal of Insurance Issues* (Vol. 22, Issue 1).
<https://about.jstor.org/terms>
- Ritter, J., 1991. The Long Run Performance of Initial Public offerings. *The Journal of Finance*, Vol. 46(1), pp. 3- 27.

Robust and Resistant Regression (pp. 150–155). (n.d.). John Hopkins Bloomberg school of Public Health, Biostatistics center. biostat.jhsph.edu/~iruczins/teaching/ji/Ch13.pdf

Rossovski, J., Lucey, B., & Helbing, P. (2025). Determinants of IPO overpricing. *British Journal of Management*, 36(2), 383–399. <https://doi.org/10.1111/1467-8551.12858>

Yazdani, L. (2015). An Assessment of the Performance of Initial Public Offerings (IPOs) in Malaysia. In *Research Journal of Finance and Accounting* www.iiste.org ISSN (Vol. 6, Issue 3). Online. www.iiste.org

BRIEF BIO-DATA

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M.Com	First Division	Kolhan University	2015
B. Com (Hons.)	First Division	Kolhan University	2013
10+2	First Division	CBSE	2010
10	First Division	CBSE	2008

List of Publications

1. **Kumari, Shubhra, Singh, Bhartendu** (2021). “Effect of the macroeconomic variables on the volume of failed IPOs: Comparative analysis of IPO markets of the US and India”. *The Journal of Oriental Research Madras* Vol. XCII, No. 04, 253-261, ISSN: 0022-3301
2. **Kumari, Shubhra, Singh, Bhartendu** (2024), “An Empirical Examination of the Short-Term Pricing Performance of Indian IPOs. *Mizoram University Journal of Humanities and Social Sciences*”. Vol. X, Issue 1 (June 2024), ISSN (P) 2395- 7352, eISSN 2581- 6780

Presentations (Conferences/Seminars/Workshops)

1. Paper titled “Pricing performance of IPOs” presented in NECMA, 4th National conference on “Contemporary issues in Commerce and management studies held at Dibrugarh university
2. Paper titled “An insight into the Journey of IPOs” presented in ‘International conference on Sustainable Business Management and Information Technology’- 31st Oct. to 1st Nov. 2019, Mizoram University- International conference
3. Paper titled “COVID 19 and the Indian stock market” presented in National webinar on COVID-19, changing dynamics around the globe organized by Sunbeam women’s college Varuna, Varanasi, May 9-10th 2020
4. Paper titled “Impact of COVID19 on the Indian Economy and the Indian Share market” presented in Webinar on Implications of COVID-19 Lock Down on Trade and Commerce Jointly Organised by Mizoram University and Sikkim University on 19 June 2020
5. Paper titled “Effect of the macroeconomic variables on the volume of failed IPOs: Comparative analysis of IPO markets of the US and India” presented in the “International conference on emerging business, management and sustainability paradigm beyond 2020” org. by NDIM (New Delhi Institute of management)

6. Paper titled “Factors affecting the underpricing of IPOs in the short run” New Era of social responsibility, sustainability and innovations held on March 4th - 6th, 2024 at Mizoram University, International conference.
7. Paper titled “Is There Any Listing Gain on Mainboard IPOs? An Empirical Evidence from The Indian Stock Market” presented at the 19th International Conference on Management & Finance, University of Colombo, Sri Lanka held on 26th November 2024.

PARTICULARS OF THE CANDIDATE

NAME OF THE CANDIDATE	: SHUBHRA KUMARI
DEGREE	: DOCTOR OF PHILOSOPHY
DEPARTMENT	: COMMERCE
TITLE OF THESIS	: PRICING PERFORMANCE OF IPOs AND FPOs IN INDIA: AN EMPIRICAL STUDY
DATE OF ADMISSION	: 01/08/2018

APPROVAL OF RESEARCH PROPOSAL

1. DRC	: 20th April, 2019
2. BOS	: 29th April, 2019
3. SCHOOL BOARD	: 7th May, 2019
MZU REGISTRATION NUMBER	: 1800033
Ph.D REGISTRATION	: MZU/Ph.D./1275 of 01.08.2018
EXTENSION (IF ANY)	: 2 years
	No. 16-2/MZU (Acad)/24/14-15
	Dated 3rd July, 2024

HEAD
DEPARTMENT OF COMMERCE

ABSTRACT

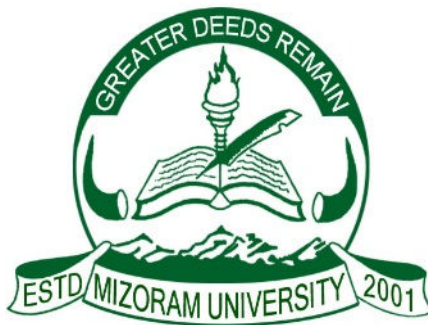
**PRICING PERFORMANCE OF IPOs AND FPOs IN INDIA: AN
EMPIRICAL STUDY**

**AN ABSTRACT SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF
PHILOSOPHY**

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MZU REGISTRATION NO.: 1800033

Ph.D. REGISTRATION NO.: MZU/Ph.D./1275 of 01.08.2018



**DEPARTMENT OF COMMERCE
SCHOOL OF ECONOMICS, MANAGEMENT AND INFORMATION
SCIENCES
MAY, 2025**

**PRICING PERFORMANCE OF IPOs AND FPOs IN INDIA: AN EMPIRICAL
STUDY**

BY
SHUBHRA KUMARI
Department of Commerce

SUPERVISOR
Prof. BHARTENDU SINGH

Submitted
In partial fulfillment of the requirement of the Degree of Doctor of Philosophy in
Commerce of Mizoram University, Aizawl

India being a developing country is flourishing in every domain and to further strengthen the economy it encourages growth of companies which in-turn encourages a strong capital market. Capital markets help investors mobilize and channel their savings into productive uses that align with national priorities. Additionally, capital markets are classified into two segments: the primary market and the secondary market. The primary market is where new securities (e.g., IPOs and FPOs) are issued to raise capital. The secondary market is where existing securities are traded, providing liquidity to investors.

An IPO is how a private company raises money by offering its shares to the public for the first time. It marks the company's move from being privately owned to becoming publicly traded. An FPO allows already-listed companies to issue additional shares to raise more capital, often for expansion or debt reduction. Other primary market instruments include rights issues, private placements, QIPs, and ESOPs.

Both markets are interdependent: the primary market helps companies raise funds, while the secondary market ensures liquidity and investor confidence. Together, they strengthen India's capital market ecosystem, fostering economic growth, industrial development, and financial inclusion, especially after the liberalization reforms of 1991.

Chapter Plan

Chapter 2- Review of literature

Chapter 3- Research methodology

Chapter 4- Pricing performance of IPOs during listing day, Very short run, short and medium run.

Chapter 5- Performance of IPOs during long run and very long run period in India

Chapter 6- Comparative performance of IPOs across different periods

Chapter 7- Factors affecting the pricing performance of IPOs in India

Chapter 8- Pricing performance of FPOs

Chapter 9- Findings, conclusion and suggestions

Bibliography

Chapter 1: Introduction

The introduction chapter outlines the background of this study and provides an overview of the Indian share market and its changing dynamics over time. This chapter begins by explaining the existing primary and secondary market of India, and then progressively shifts its focus to the 'Initial Public Offerings (IPOs)' and 'Follow-on Public Offerings (FPOs)'.

Further, it unfolds by explaining the pricing strategy of the IPOs, prerequisites of bringing an IPO or FPO and the procedural process of bringing an IPO to the market. Additionally, it delves into the common theories behind the IPO mispricing, universally observed phenomena of the financial markets.

The chapter concludes by highlighting the significance and scope of this study, providing a foundation for a detailed analysis of the pricing performance of the IPOs and FPOs across various timeframes and market conditions.

“When an unlisted company makes either a fresh issue of shares or convertible securities or offers its existing shares or convertible securities for sale or both for the first time to the public, it is called an IPO” (SEBI 2016)

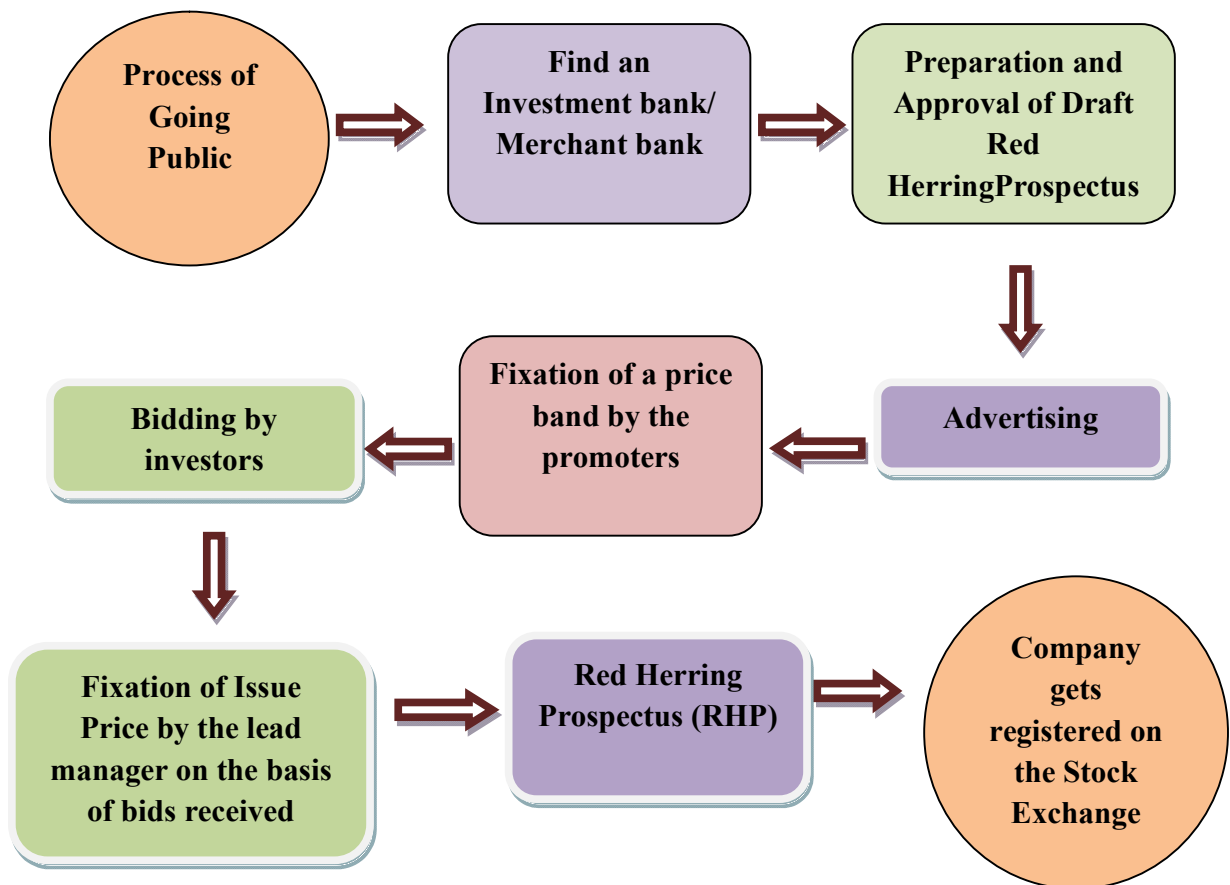
“When an already listed company makes either a fresh issue of shares or convertible securities to the public or an offer for sale to the public, it is called a FPO” (SEBI 2016).

Kevin (2009) stated that, according to SEBI guidelines, book building is defined as: “A process undertaken by which a demand for the securities proposed to be issued by a body corporate is elicited and built up and the price for such securities is assessed for the

determination of the quantum of such securities to be issued by means of a notice, circular, advertisement, document or information memoranda or offer document”

1.1 Process of Going Public

Fig.1.1 The going public process is briefly illustrated as follows:-



The major models which were highlighted by Ljungqvist (2007), Akerlof's (1970) Das, 2014; Kuriakose & Athira (2018), Keloharju (1993), Lin, Kao, & Chen (2010), Rock (1986), Chhabra & Kiran (2022), Keasey (1992), Baron (1982), Ibbotson (1975), Jensen and Meckling (1976), Brennan and Franks (1997), Stoughton and Zechner (1998) are listed as below:-.

I. Asymmetric information model

- a) Winner's Curse hypothesis- The winner's curse draws attention to the challenges faced by IPOs when knowledgeable investors are aware of the true value of the share and bid selectively for the fair- priced IPOs only. This would result in ignorant investors overpaying for the less worthy shares, which would further result in a negative average return
- b) Information Revelation theories- If the investors choose to reveal the information truthfully they are rewarded by the underwriters in form of larger allocation. However, if the investors choose to conceal the sensitive information by bidding carefully then they face a risk of being excluded from the share allotment process.
- c) Principal-Agent models- Sometimes the investment banks put their interest over the interest of the issuing firms, leading to practices like rent-seeking behavior and spinning.
- d) Under-pricing as a signal of firm's quality- The high-quality firms deliberately leave some money on the table which allows investors to gain from the rise of share prices later.

II. Institutional explanations

- a) Legal liability- Some studies have found that the higher offer price attracts a higher possibility of future lawsuits; therefore, the underpricing phenomenon acts as an insurance against such risks.
- b) Price stabilization- The price stabilization theory highlights that when it appears the IPO price is about to fall below the offer price, underwriters intervene to stabilize it.

III. Ownership and control

- a) Under-pricing as a means to retain control- underpricing helps the companies in strategically managing the allotment of shares to the outsiders by protecting their personal interests
- b) Under-pricing as a means to reduce agency costs- the underpricing can lead to reduction in agency cost by encouraging monitoring, promoting better alignment of interests between managers and shareholders

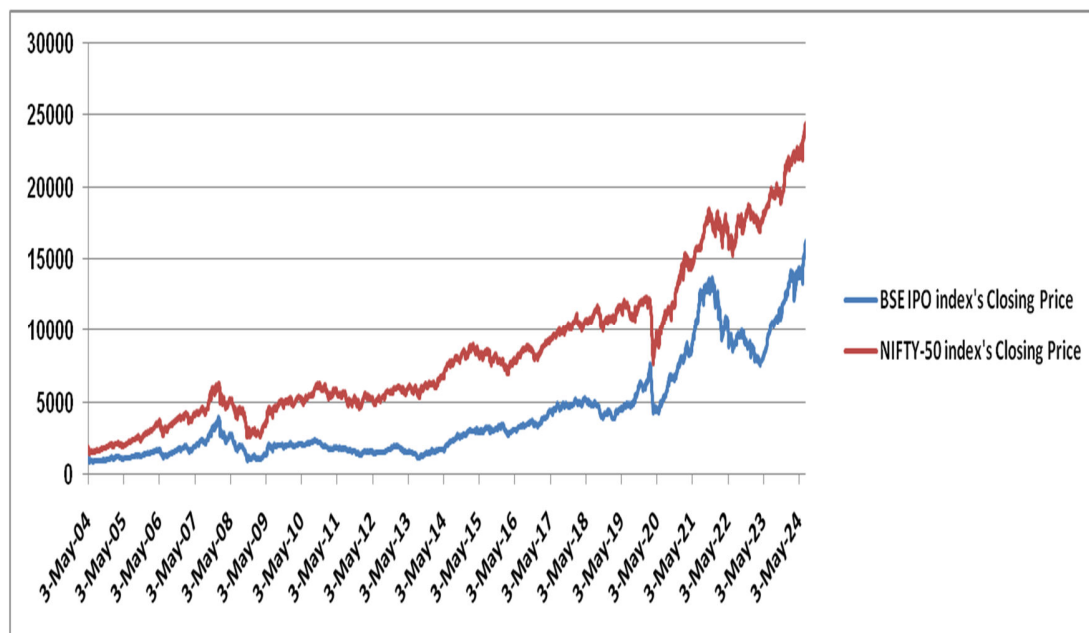
IV. Behavioral explanations

- a) Cascades- If the initial investors have a successful bid, the subsequent investor gets persuaded and invests in the shares, neglecting their personal information and vice versa.
- b) Investor sentiment - Investor sentiment refers to the behavioral explanation that IPO underpricing occurs due to the irrational optimism of some investors about the future prospects of a company.

1.2 Trend of NIFTY-50 and BSE IPO index

The closing price of the NIFTY-50 and the BSE IPO index is shown below in Fig. 1.1. At the baseline date, May 3, 2004, the closing price of the NIFTY-50 index was ₹1,766.7, while the BSE IPO index was set at its base value of ₹1,000. Both indexes exhibit an increasing trend, reflecting the strong performance of the companies represented within them. By mid-2024, the NIFTY-50 index reached an approximate peak closing value of ₹24,433.2, whereas the BSE IPO index stood at ₹16,078.

Fig 1.2: Trend of NIFTY-50 and BSE IPO index



Source: Self-plotted using excel

Significance and scope of the study

As a developing country with enormous capital requirements, India faces the risk of significant losses if capital is invested in unsuitable areas. Savings of investors can be mobilized by investing in profitable sectors through the means of IPO. This study will be helpful for understanding the pricing performance of IPOs and FPOs of Indian stock market. It will give insight to investors and other users about the behavior, trends and performance of Indian IPOs and FPOs. Present study would assist prospective investors who are often uncertain about the right moment to enter the securities market, by analyzing the performance of IPOs during short run, medium run, long run and the very long run. While numerous studies have been conducted on IPOs, there is limited research on the pricing performance of FPOs. The findings of study can serve as a guide to the upcoming companies in taking the IPO decision. Additionally, this study would enrich the existing pool of vast literatures which would help the academicians, researchers, financial analysts, companies and our country at large.

The scope of this research would be very wide as we would cover all the IPOs and FPOs listed on the National Stock Exchange since 1999 to 2025 pertaining to the availability of data.

Chapter 2- Review of literature

Total 81 relevant literatures were reviewed for the purpose of this study. The Review of literature is classified in following sub heads:- Process of IPOs, IPO performance in short run, Long run performance of IPOs and FPOs, Probable reasons for the underpricing phenomenon, Volume and Return Relation, variables influencing the pricing performance of IPOs. After an extensive literature review, a research gap was identified, and to bridge the existing knowledge gap, the objectives of this study were formulated.

2.1 Research gap

After an extensive literature review it was observed that various studies reported the under pricing or mispricing of IPOs as well as FPOs. This study analyzed the pricing performance of IPOs and FPOs (widely known as SEOs) in Indian context. Post liberalization Indian market has undergone drastic changes such as abolishment of “Capital Issues Control Act, 1947”. Prior to the abolishment of “Capital Issues Control Act”, free pricing of issue was not possible however now issues can be freely priced. It is expected that after liberalization of equity norms equity will be fairly priced but researchers have found otherwise. Post liberalization there have been vast changes in technological, legal and political environment of India that has affected the equity culture of India. Stock market appears as a good investment option as they show high promising returns compared to other traditional investment methods as fixed deposit, government schemes, bonds and gold etc. . The investment in equity is becoming a growing trend and therefore the investor’s savings should be mobilized into profitable sectors through IPOs. This study would be helpful in understanding the pricing performance of IPOs and FPOs of Indian stock market. The study aimed at giving insight to investors and other users about the behavior, trends and performance of Indian IPOs as well as FPOs. Usually researchers have studied short-run performance of IPOs in India; this study analyzed the IPO performance across various runs (i.e. “on the day of listing, during the very short-term, short-term, medium-term, long-term, as well as in the very long-term”). This research had a broad scope, as it included all IPOs and FPOs listed on the NSE. The study covered two decades, i.e., 1999-2025, that would cover both bullish and bearish periods, and no such studies were conducted earlier in India. Also, IPO performance on the day of listing, during the very-short-term, short-term, medium-term, long-run, and very-long-term were compared with the “S&P CNX NIFTY” and “BSE IPO Index”. The mispricing of FPOs or SEOs was also not been researched much. Henceforth, this research was an empirical study of pricing performance of IPOs and FPOs in India.

2.2 Objectives of the study

This study aimed to examine the pricing performance of Indian IPOs and FPOs listed on the National Stock Exchange (NSE). The study's sub-objectives are listed as follows:-

1. To review the process of IPO and FPO in India.
2. To examine the pricing performance of IPOs in very-short, short, medium, long and very-long run.
3. To examine the pricing performance of FPOs in very-short, short, medium, long and very-long run.
4. To study the trends of S&P BSE IPO Index and NSE Nifty-50 index.
5. To study the pricing performance of IPOs based on Issue Price.

2.3 Hypotheses

In accordance with the objectives outlined above, the following hypotheses had been formulated and tested in this study:

2.3.1 Hypotheses for assessing the performance of IPOs launched during 1999-2019

Set 1 tested the differences in performance across various timeframes (runs) for 435 IPOs and compared these returns with the Nifty 50 index. **Set 2** focused on 416 IPOs and evaluated their performance against the BSE IPO index.

The following hypotheses were tested in set 1:-

a) Listing day

H₀₁: There is no significant deviation between the median of the Listing day's RR (Close Price) and the Listing day's RR (open price)

H₀₂: The listing day's raw return values (calculated based on the listing day's opening price) and the NSE NIFTY 50 values (calculated based on the opening price of NIFTY 50) were not significantly different

H₀₃: The NIFTY 50 return computed on listing days is not statistically distinguishable from the raw return on the listing day calculated on the closing price.

b) Very short run

H₀₄: the raw return of the listing day is not significantly different from the raw return of the very short term (both calculated on the closing values)

H₀₅: the median of the Nifty 50 return during the one-week period and the raw return of the IPOs during the same period is not significantly different

c) Short run (all values based on closing price)

H₀₆: the raw return of the very short run is not significantly different from the raw return of the short run (one month)

H₀₇: the short run raw return is not significantly different from the NIFTY 50 return of that period

d) Medium run

H₀₈: the raw return of the short run is not significantly different from the raw return of the medium run.

H₀₉: The raw return of the medium run is not significantly different from the NIFTY 50 return of that period

e) Long-run

H₀₁₀: the raw return of the medium run is not significantly different from the raw return of the long-run.

H₀₁₁: The raw return of the long-run is not significantly different from the NIFTY 50 return of that period

f) Very long-run

H₀₁₂: the raw return of the very long-run is not significantly different from the raw return of the long-run

H₀₁₃: the raw return of the very long-run is not significantly different from the NIFTY 50 return of that period.

The following hypotheses were tested in set 2:-

a) Listing Day

H₀₁₄: The raw return on the listing day (close price) and the BSE IPO index return of that period show no statistically significant variation.

b) Very short run

H₀₁₅: The raw return of the very short run and the BSE IPO index return of that period show no statistically significant variation.

c) Short run

H₀₁₆: The raw return of the short run and the BSE IPO index return of that period show no statistically significant variation.

d) Medium run

H₀₁₇: The raw return of the medium run and the BSE IPO index return of that period show no statistically significant variation.

e) Long-run

H₀₁₈: The raw return of the long-run and the BSE IPO index return of that period show no statistically significant variation.

f) Very long-run

H₀₁₉: The raw return of the very long-run and the BSE IPO index return of that period show no statistically significant variation.

2.32 Hypotheses for assessing the performance of IPOs launched during 2019-2025

For which we tested the following hypothesis:-

a) Listing day

H₀₂₀: There is no statistically significant variation between the median of the Listing day's RR (calculated using the listing day's close Price) and the Listing day's RR (open price)

H₀₂₁: The listing day's raw return values (calculated using the listing day's opening price) and the NSE NIFTY 50 values (calculated based on the opening price of NIFTY 50) show no statistically significant variation.

H₀₂₂: The raw return on the listing day (calculated based on the opening price of IPOs on the listing day) and the BSE IPO index return (open price of BSE IPO index on the listing day) of that period show no statistically significant variation.

H₀₂₃: The NIFTY 50 return computed on listing day's closing price does not vary significantly from the raw return on the listing day calculated on the closing price.

H₀₂₄: The raw return on the listing day (calculated based on the listing day's close price) and the BSE IPO index return (calculated based on the closing price of BSE IPO index on the listing days) of that period show no statistically significant variation.

b) Very short run

H₀₂₅: the median of the Nifty 50 return (closing price) during the one-week period and the raw return of the IPOs (closing price) during the same period is not significantly different

H₀₂₆: The raw return of the very short run (closing price) and the BSE IPO (closing price) index return of that period show no statistically significant variation.

H₀₂₇: the raw return of the listing day is not significantly different from the raw return or the very short term (both calculated on the closing values)

c) Short run (all values based on closing price)

H₀₂₈: the short run raw return is not significantly different from the NIFTY 50 return of that period

H₀₂₉: The raw return of the short term and the BSE IPO index return of that period show no statistically significant variation.

H₀₃₀: the raw return of the very short run is not significantly different from the raw return of the short run (one month)

2.3.4 Hypotheses for assessing the performance of FPOs

For the analyzing the pricing performance of FPOs following null hypotheses were formulated:-

- a) H₀₁: There is no statistically significant variation between the Nifty 50 return and the Raw Return of FPOs during the very short run.
- b) H₀₂: There is no statistically significant variation between the BSE IPO index return and the Raw Return of FPOs during the Very Short Run.
- c) H₀₃: There no statistically significant variation between the Raw Return of FPOs during the short run and the Raw Return of FPOS during the Very Short Run.
- d) H₀₄: There is no statistically significant variation between the Nifty 50 return and the Raw Return of FPOs during the Short Run
- e) H₀₅: There is no statistically significant variation between the BSE IPO index return and the Raw Return of FPOs during the Short run.
- f) H₀₅: There is no statistically significant variation between the Raw Return of FPOs during the Medium Run and the Raw Return of FPOs during the short run.
- g) H₀₇: There is no statistically significant variation between the Nifty50 Return and the Raw Return of FPOs during the Medium Run.

- h) H₀₈: There is no statistically significant variation between the BSE IPO index return and the Raw Return of FPOs during the Medium run.
- i) H₀₈: There is no statistically significant variation between the Raw return of FPOs during the Long-run and the Raw return of FPOS during the Medium Run.
- j) H₀₁₀: There is no statistically significant variation between the Nifty 50 return and the Raw return of FPOs during the long-run
- k) H₀₁₁: There is no statistically significant variation between the BSE IPO index return and the Raw Return of FPOs during the long-run
- l) H₀₁₂: There is no statistically significant variation between the Raw Return of FPOs during the Very Long-run and the Raw Return of Long-run.
- m) H₀₁₃: There is no statistically significant variation between the Nifty 50 return and the Raw Return of FPOs during the Very Long-run
- n) H₀₁₄: There is no statistically significant variation between the BSE IPO index return and the Raw Return of FPOs during the Very Long-run

Chapter 3 Research Methodology

Table 1: Data sourcing

Data	Source
IPO and FPO	NSE official website
Details related to various attributes of the IPO like issue date, listing date issue size, issue price, etc.	IPO prospectus obtained from NSE official website and Chittorgarh website
BSE IPO index data	BSE official website
NSE NIFTY 50 index data	NSE official website

3.1 Sample for the study

This study examined all IPOs and FPOs that were listed on the National Stock Exchange (NSE) during the period from 1999 to 2025.

3.2 IPO price performance assessment

The analysis was divided into the following sub-periods:

- Listing day return: This included the duration from the IPO's issue closing date to its listing on the exchange.
- Very Short Run Period: Spanning one week from the IPO listing date.
- Short-Run Period: Spanning one month from the IPO listing date.
- Medium-Run Period: Spanning six months from the IPO listing date.
- Long-Run Period: Spanning one year from the IPO listing date.
- Very Long Run Period: Spanning three years from the IPO listing date.

3.3 Formulas used for analyses of IPOs

a) Raw return /Absolute return (RR) = $(p_t - p_{t-1})/p_{t-1}$

Where, p_t = price in time t (present price)

p_{t-1} = allotment price

b) Market- adjusted abnormal returns (MAAR)/ Relative return =

$$\{(p_t - p_{t-1})/p_{t-1}\} - \{(P_t - P_{t-1})/P_{t-1}\}$$

c) Annualized raw returns (ARR) = $RR \times \frac{365}{\text{Lead time of the respective IPO}}$

d) Annualized Market Adjusted Abnormal return (ARR) = $MAAR \times \frac{365}{\text{Lead time of the IPO}}$

e) Average $RR_t = \frac{1}{N} \sum_{i=1}^N RR_{it}$

$$f) \text{ Average } MAAR_t = \frac{1}{N} \sum_{i=1}^N MAAR_{it}$$

$$(g) \text{ Average Annualized } RR_t = \frac{1}{N} \sum_{i=1}^N ARR_{it}$$

$$(h) \text{ Average Annualized } MAAR_t = \frac{1}{N} \sum_{i=1}^N AMAAR_{it}$$

In formula (g) ARR referred to the Annualized raw return, t referred to the time period, N denotes the no. of IPOs. In formula (h) the AMAAR referred to the annualized market adjusted returns calculated using the NIFTY-50 and the BSE IPO index returns.

$$(i) \text{ Wealth relative } (WR_{it}) = (1 + \frac{1}{N} \sum_{i=t}^N RR_{it}) \div (1 + \frac{1}{N} \sum_{i=t}^N RR_{mt})$$

Where, RR_{it} represented the raw return of the IPOs where as the RR_{mt} denoted the raw return of the market indexes selected for the study i.e. NIFTY-50 and the BSE IPO index. N referred to the total no. of IPOs during the specific period i.e. long run or the very long run.

3.3 Factors influencing the yield of IPOs

An important objective of this research was to examine the influence of selected variables on the pricing performance of IPOs. The factors selected for this purpose were:- Oversubscription rate Issue price, Face value, Lead-time, Age (since incorporation), Issue size, Lot size, NIFTY 50 index's return, BSE IPO index's return. Various studies have also examined these factors, and their significance differs across different research (Khurshed, et al. (2008); Sehgal&Sinha, 2013; Manu &Saini, 2020; Bantwa, 2022). The effect of these variables on the raw return of the IPOs as well as the MAAR of the IPOs was assessed in this section across different time periods (i.e. listing day, very-short term, short term, medium term, long term and very long term).

Normality of the data was tested using the “Shapiro-Wilk test” and the “Kolmogorov-Smirnov test”. The value of significance for all the variables was below 0.05, due to which the assumption that the data followed a normal distribution stands rejected.

Furthermore, the association among the variables was examined to check for multicollinearity using the “variance inflation factor (VIF)”; however, the “VIF” values were less than 2, which assured the absence of multicollinearity between the factors. Robust regression is a method intended to evaluate the data when it does satisfy the assumption of being normally distributed by underweighting the outliers to minimize the influence of outliers on the estimation of regression coefficients (Hahn, 2024; Fox & Weisberg, 2019; John Hopkins, n.d.). Henceforth, a robust regression method was chosen for analysis.

3.4 Formulas used for the performance evaluation of FPOs

The Raw Return (RR), NIFTY-50, S&P BSE IPO Index returns, and Market Adjusted Abnormal Return (MAAR) were calculated using the following formulas:-

$$\text{a) Raw return /Absolute return (RR)} = (p_t - p_{t-1})/p_{t-1}$$

Where, p_t = price in time t (present price)

p_{t-1} = allotment price

To evaluate the market performance of these FPOs, their returns were adjusted against two selected benchmark indices. The market adjusted returns of the IPOs were calculated using the following formula:-

$$\text{b) Market- adjusted abnormal returns (MAAR)/ Relative return} =$$

$$\{(p_t - p_{t-1})/p_{t-1}\} - \{(P_t - P_{t-1})/P_{t-1}\}$$

The significance of the returns compared to these benchmarks, as well as the variation in returns across different timeframes, was assessed using the Wilcoxon signed-rank test.

3.5 Limitations of the study

The limitations of the study are outlined below:-

This study was only restricted to the IPO and FPOs listed on the National stock exchange (NSE) and did not cover the other issues like rights issue, debt issue, and preference shares.

This study only analyzed the IPOs and FPOs which were listed on the NSE platform and did not analyze the IPOs and FPOs listed on other stock exchanges.

The study is also limited to the pricing performance of the IPOs and FPOs of India and did not compare the performance of the IPOs or FPOs/SEOs across different countries.

Chapter 9- Findings, conclusion and suggestions (based on chapters 4,5,6,7 and 8)

9.1 Findings based on Industry-wise Performance of IPOs

On the listing day- best performing industry sectors- Banking-finance,' 'Construction and engineering,' 'Agri. and agri. products,' 'Non-banking,' 'Oil, fuel, and gas,' 'Rating and stock broking,' FMCG, 'Electrical and electronics,' and 'Hotels, restaurants & resorts'

Very short run- sectors like Miscellaneous, Oil, gas, and fuel', Banking-finance, 'Rating & stock broking', and 'Civil construction' showed high growth

Short run- 'Construction and engineering', FMCG, Miscellaneous, Non-banking, and Banking finance showed strong performance

In the medium run, the yield increased for these sectors- 'Internet and telecom', Pharmaceutical, 'Textile and textile products', 'Garments and accessories', Non-metallic products, 'Metals and metal products', 'Residential and commercial', 'Banking and finance', 'Non-banking', 'oil, gas & fuel', Miscellaneous, Restaurant, FMCG, 'Electrical & electronics'.

In the long run period, the oil and gas sector recorded the highest return, and the sectors like Banking-finance, 'Non- banking', Entertainment, 'Software and hardware', 'Metals and metal products', 'Textile and textile products', 'Construction and engineering', 'Rating

and stock broking', 'Travel, transport and logistics', 'Hotel, restaurant and resorts', 'Electrical and electronics' sectors also showed positive returns

Very long run- 'Construction and engineering', Non-banking, 'Oil, gas and fuel', 'Hotels, resorts, restaurants', and chemicals had positive returns.

9.2 Findings based on lot size of IPOs

On the listing day, very short run and short run, the IPOs falling in the 20-50 shares lot size. All lot size categories showed their strongest performance in the short-run period. During the long-term period, IPOs falling in the lot size >100 recorded the highest annualized market-adjusted return in one year. While during the very long run, the 0-25 and the 25-50 IPO lot size categories showed negative returns while the 50-100 and >100 showed positive returns.

9.3 Findings according to the offer size of the IPOs

On the listing day, IPOs having a smaller issue size recorded the highest open and close raw return values and strong annualized raw returns; the 40-1000 Cr. issue size category recorded the highest annualized values, although its raw return was not as high as the 10-100 Cr. category.

During the very short run period, the smaller-sized IPOs show the highest raw return (calculated on close price) while the mid-sized IPOs show the highest annualized returns.

In the short run, the 400-1000 recorded the highest annualized and market-adjusted returns which indicates its persistent strong performance and continued investor interest.

In the medium run, the larger IPOs record the highest AMAAR values indicating increased stability, liquidity, and long-term investor interests.

In the very long run, only the Rs. 10-100 Cr. issue size category showed positive performance while the annualized value for all other categories showed negative values.

9.4 Findings- depending on the face value of the IPOs.

The IPOs having a face value of Rs. 1-9 showed relatively higher raw and annualized market-adjusted returns on the listing day. During the short-term period, the raw return of the Rs. 1-9 category slightly rose from the listing day but the AMAAR values were slightly lower than the listing day. The findings revealed that, during the short term period, the return for both the IPO category was positive, but lower when compared to the listing day and the very short run period. During the medium term period, the performance of both the categories hyped and this run recorded the strongest performance of both the categories. In the one-year period i.e. the long run, the IPO category of the Rs. 1-9 category showed incremental gains in comparison to the six-month period and outperformed the greater than 9 category in terms of raw and the annualized market-adjusted returns. In the very long period i.e. three years, the 1-9 category continued to outperform the greater than 9 Rs. face value category, depicting the consistency in returns, effective pricing strategy, market adaptability, and continued investor interest.

9.5 Findings depending on the oversubscription rate of the IPOs.

The >50 times oversubscription category leads the performance in all runs, indicating the highly oversubscribed IPOs as the best-performing IPOs. The return for every oversubscription category was highest during the six-month period (medium-term). Chhabra (2011) found the IPOs falling in the 10-20 times oversubscription category yielding the highest return in comparison to the 1-10, 20-40, and >40 categories in all the runs.

9.6 Findings according to the lead-time of the IPOs

The 0-15 category showed the best performance in all the runs indicating that the IPOs of this category showed market resilience, effective pricing, and continued investor interest. In the medium run, the return for all the categories showed incremental returns except the >50 category therefore the medium run proves to be the most efficient IPO performance period.

9.7 Findings according to the Issue price of the IPOs.

All the categories show positive annualized market-adjusted returns ranging from 200-600% on the listing day, indicating their strong market performance in comparison to the benchmark indexes

9.8 Findings according to the listing day's closing price of the IPOs

The IPO category having listing closing price higher than Rs.400 showed strong performance during the listing day, in the very-term period, short term, medium term and the very long term. In the long run period the average returns of this category declined as compared to medium run, however the returns were still positive in comparison to the other listing price IPO categories. During the very long-run all the categories showed negative returns however the IPOs of this category showed high incremental gain. Hence, it can be stated that the >400 listing closing price category was the strongest-performing category across all runs.

9.9 Findings based on the age of companies bringing an IPO

The 20-40 years category consistently delivered the highest returns during all runs, highlighting the outperformance of mid-aged companies compared to younger and older ones, while most age categories achieved their peak MAAR and AMAAR values in the medium run, making it the best-performing period for IPOs.

9.10 Findings based on factors influencing the pricing Performance of IPOs in the Indian context

During the listing day, both the predictor indexes (i.e. NIFTY-50 in Model 2 and BSE IPO index in model 3) were found to be significant predictor of the raw-return of the IPOs. The MAAR when calculated after adjusting with the NIFTY-50 index (Model 2) and the BSE IPO (Model 4) index showed oversubscription, lot size and face value were the main drivers during the listing day.

In the very short run, the common factors influencing the raw return, as revealed by Model 5 and 7 were oversubscription, listing price, issue price, NIFTY-50 and the BSE

IPO index returns. Additionally in the very short run, the factors, which showed significant effect on the MAAR values (calculated using NIFTY-50 index in Model 6 and using BSE IPO index in Model 8) were oversubscription, listing-price and the offer price of the IPOs.

The significant predictors of the raw-return of IPOs during the short run were the oversubscription rate, the listing price, the returns of the NIFTY-50 index, and the returns of the BSE IPO index. Meanwhile, for the market-adjusted abnormal return of IPOs, adjusted using the NIFTY-50 in Model 9 and the BSE IPO index, the oversubscription rate and the listing price emerged as the significant predictors.

During the medium run the oversubscription, lead-time, NIFTY-50 (Model 13) and the BSE IPO index (Model 15) were the significant predictor of the raw return of the IPOs. While the common predictors of the MAAR returns (calculated using NIFTY-50 index in Model 14 and using BSE IPO index in Model 16) during the medium run, were oversubscription and lead-time of the IPOs.

The common predictors of raw return of IPOs during the long run in Models 17&19 were oversubscription, lead-time, Issue price and their respective indexes. On contrary, the common predictors of the MAAR during the long run in Model 18 and 20 were oversubscription, face value and listing price.

The MAAR during the very long run calculated using the NIFTY-50 and the BSE IPO index in models 21 and 23 respectively, showed oversubscription, issue price, lead-time, and their benchmark index returns as common predictors. The MAAR of long run, calculated using the NIFTY-50 and the BSE IPO index in models 22 and 24 respectively, revealed oversubscription, issue price and lot size of the IPOs

9.11 Test results of hypotheses formulated to assess the pricing performance of IPOs listed during 1999-2019

Set 1 tested the differences in performance across various timeframes (runs) for 435 IPOs and compared these returns with the Nifty 50 index. **Set 2** focused on 416 IPOs and evaluated their performance against the BSE IPO index.

Set 1-

	H ₀₁	H ₀₂	H ₀₃	H ₀₄	H ₀₅	H ₀₆	H ₀₇	H ₀₈	H ₀₉	H ₀₁₀	H ₀₁₁	H ₀₁₂	H ₀₁₃
Z	-.144 ^b	-12.543 ^c	-9.483 ^c	-2.168 ^c	-7.954 ^c	-2.625 ^c	-5.482 ^c	-.844 ^b	-2.847 ^c	-2.381 ^c	-.332 ^b	-5.024 ^c	-8.196 ^b
Asymp. Sig. (2-tailed)	.885	.000	.000	.000	.030	.009	.000	.399	.004	.017	.740	.000	.000
a. Wilcoxon Signed Ranks Test b. Based on positive ranks. c. Based on negative ranks.													

Source: Author's computation using SPSS

Set 2

	H ₀₁₄	H ₀₁₅	H ₀₁₆	H ₀₁₇	H ₀₁₈	H ₀₁₉
Z	-9.465c	-7.936c	-5.538c	-3.589c	-.973c	-6.708b
Asymp. Sig. (2-tailed)	.000	.000	.000	.000	.331	.000
a. Wilcoxon Signed Ranks Test b. Based on positive ranks. c. Based on negative ranks.						

Source: Author's computation using SPSS

As per the findings of Set 1 and 2, out of 19 hypotheses, only four null hypotheses were accepted, while fifteen alternate hypotheses were accepted. It was also observed that IPO returns across different periods varied significantly. The returns of the IPOs during

different runs were also significantly higher than the return of the benchmark indexes on listing day, very short run, short run, and medium run, while it did not outperform the benchmark indexes in the long and very long run.

9.12 Test results of hypotheses formulated to assess the pricing performance of IPOs listed during 2020-2025

Table 6.18 Test Statistics

	H ₂₀	H ₂₁	H ₂₂	H ₂₃	H ₂₄	H ₂₅	H ₂₆	H ₂₇	H ₂₈	H ₂₉	H ₃₀
N	-.399 ^b	-9.640 ^b	-9.802 ^b	-9.334 ^b	-9.580 ^b	-8.878 ^b	-9.058 ^b	-1.120 ^b	-8.123 ^b	-8.562 ^b	-1.525 ^b
Asymp. Sig. (2- tailed)	.690	.000	.000	.000	.000	.000	.000	.263	.000	.000	.127
a Wilcoxon Signed Ranks Test											
b. Based on positive ranks.											
c. Based on negative ranks.											

Source: Author's computation using SPSS software

The p value for H₀₂₀, H₀₂₇ and H₀₃₀ exceeded the 0.05 significance level, suggesting that the null hypothesis for these pairs could not be rejected. On the contrary, the significance levels for H₀₂₁, H₀₂₂, H₀₂₃, H₀₂₄, H₀₂₅, H₀₂₆, H₀₂₈, and H₀₂₉ were less than 0.05, indicating the rejection of the null hypotheses for these pairs.

The results of hypothesis testing indicate similar raw returns of IPOs between the beginning and end of the listing day, between the listing day and the very short run, and between the very short run and the short run.

9.13 Findings according to the Pricing Performance of FPOs

The FPOs generated highest average raw return during the very short run period which showed a sharp decline as the FPOs transitioned towards the longer runs (long and very long run).

The average market adjusted abnormal return (adjusted using the NIFTY-50) was highest during the short run and approximately same during the very short and the medium run. The $MAAR_1$ calculated using the NIFTY-50 recorded negative average returns during the long as well as very long run, indicating the underperformance of the FPOs in comparison to the NIFTY-50 benchmark index.

The market adjusted abnormal returns ($MAAR_2$, adjusted using the BSE IPO index) also followed a trend similar to the $MAAR_1$. The $MAAR_2$ for the very short run, short run and the medium run showed the strong performance of FPOs during these runs as compared to the long and the very long runs.

According to the results of hypothesis testing, the returns of the FPOs across the different runs were not found to be significantly different; however the returns of the FPOs significantly differed from the benchmark indexes (NIFTY-50 and the BSE IPO index) during the very short run, long run and the very long run. During the very short run the FPOs generated significantly higher returns in comparison to the benchmark indexes, whereas during the long and the very long run the returns of FPOs were significantly lower as compared to the benchmark indexes.

9.13 Future Scope of Study

The study can be expanded to include other financial instruments beyond IPOs and FPOs listed on the NSE platform. Future research could examine the performance of rights issues, debt issues, and preference shares, which were not part of this study.

The scope can be broadened to analyze the performance of IPOs and FPOs listed on stock exchanges other than NSE, such as the BSE (Bombay Stock Exchange) or regional stock exchanges, to provide a more comprehensive understanding of Indian capital markets.

Another area of research can be the pricing performance of the IPOs and FPOs of India when compared with the performance of the IPOs or FPOs/SEOs across different countries.

In future the study can be extended by including additional variables into regression models for better understanding of the factors contributing to IPO mispricing. Variables such as macroeconomic conditions, market volatility, sectoral indices, and global investor sentiment could enhance the power of the regression models and provide deeper insights for stakeholders, academicians, and market participants.

9.14 Suggestions Based on Findings of the Study

The findings revealed that IPOs with a close price >₹400 category demonstrated the strongest performance on the listing day, as well as in the short run and medium run. On the listing day, this category recorded the highest MAAR (Market Adjusted Abnormal Returns) and AMAAR (Average Market Adjusted Abnormal Returns) values, highlighting its dominance in the immediate post-listing period. Additionally, the >₹400 close price category showed progressive performance in both the short run and medium run, maintaining consistent positive returns. Although a slight decline in performance was observed in the long run relative to the medium run, the >₹400 category still yielded positive returns. Therefore, it is suggested that IPOs in the close price >₹400 category be considered as the strongest-performing group across all time horizons, offering substantial returns to investors.

The issue price plays a crucial role in determining the performance of IPOs. Findings reveal that IPOs within the ₹10-₹50 issue price category consistently delivered positive returns across all time horizons—very short run, short run, medium run, and long run—making it the best-performing issue price category. This performance indicates that lower-priced IPOs often attract higher investor interest, leading to better market-adjusted returns. Therefore, it is recommended that investors focus on IPOs within the ₹10-₹50 issue price range to maximize their returns across different investment periods.

The findings reveal that middle-aged IPOs (20-40 years) perform better than both younger and older IPOs. This is supported by Chauhan (2011), who identified a positive relationship between a company's age and its returns. The present study shows that in both the very short run and medium run, the 20-40 years category recorded the highest MAAR (Market Adjusted Abnormal Returns) and AMAAR (Average Market Adjusted Abnormal Returns) values. Furthermore, in the long run, the 20-40 years category continued to outperform the younger and older IPO categories. These results suggest that IPOs from companies aged 20-40 years tend to exhibit greater stability, maturity, and growth potential, which contribute to their superior performance. Therefore, it is recommended that IPOs within the 20-40 years age bracket be prioritized for investment, as they are more likely to deliver better returns compared to younger and older IPOs.

It is evident from the findings that IPOs with higher oversubscription ratios demonstrated significantly better performance compared to IPOs with lower subscription levels. This observation is consistent with the findings of Chhabra (2011) and Chauhan (2011), which also highlighted that IPOs in the higher oversubscription category recorded superior returns, whereas those with lower oversubscription ratios showed relatively modest returns. Therefore, it is suggested that investors carefully evaluate the subscription levels of IPOs, as higher oversubscription often reflects strong investor demand and market confidence, which can serve as an indicator of potential short-term listing gains.