"IPO subscription dynamics: A comprehensive inquiry into the Indian stock market"

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BUSINESS PERSPECTIVES

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IPO SUBSCRIPTION DYNAMICS: A COMPREHENSIVE INQUIRY INTO THE INDIAN STOCK MARKET

Abstract

The Indian IPO market showcased resilience during the global stock market downturn in 2022, emerging as a notable bright spot in regions such as Europe, the Middle East, India, and Africa. As the bullish rally of 2022 persists, Indian stock markets remain enticing for foreign institutional investors in 2023. A resurgence in IPO activity is anticipated, driven by increasing momentum and larger deals that are poised to overcome the constraints of subdued global sentiments and liquidity pressures, addressing the challenges posed by these factors. The study offers insights into factors influencing IPO subscriptions, capitalizing on the context of heightened stock market volatility and optimistic trends in the Indian stock market. A total of 132 IPOs listed on the Indian stock market between April 2019 and March 2023 were analyzed in this study. Multiple Linear Regression was used to assess the strength of the association between several factors outlined in the literature, and the overall subscription. Among the ten variables investigated in the study, it was observed that three variables under the external factors, specifically Grey Market Premium, IPO Rating, and Broker Recommendations, exerted a significant influence on the overall subscription. While other factors such as allocation proportion and issue attributes, were found to have no discernible influence on the overall subscription. The results indicate that the Indian IPO market demonstrates a prevalence of speculative behavior and a stronger reliance on expert recommendations, rather than being primarily driven by IPO characteristics.

Keywords	IPO issue, IPO allotment, IPO subscription, IPO rating, grey market premium, broker recommendation, index returns, retail investor
JEL Classification	G10, G11, G24

INTRODUCTION

IPOs stand out as the key corporate strategy to mobilize substantial funding for initiating business ventures or expanding operations, enticing investors with attractive opportunities and prompting a shift from low-return to high-return opportunities. The Indian IPO market has experienced significant growth in recent years, primarily driven by the dominance of retail investors. It is crucial to understand the complexities of this market, as it not only addresses broader corporate finance inquiries but also becomes increasingly important with the surge in the number of IPOs in the Indian landscape and the growing influence of the Indian economy on the global stage.

The performance of a company's IPO is influenced by the extent of subscriptions it garners, as emphasized in prior research. At the pre-listing stage, gauging the full subscription, oversubscription, and under-subscription levels provides an initial estimate of demand across various investor categories. Against the backdrop of inflationary stress, economic growth risks, geopolitical tensions, and interest rate increases, the Indian stock market displayed notable volatility in the year 2022. However, the PRIME Database report indicated a positive

momentum in the year 2023 with 87 companies lined up to raise over Rs 1,40,000 crores through IPO issues. The above context provides an ideal platform for examining the critical factors influencing IPO subscriptions in the Indian primary market.

1. LITERATURE REVIEW

The new issues market is often characterized by extreme uncertainty and information asymmetry, prompting many researchers to expound the mystical relationships, among which IPO overall subscription is one key dimension. IPO subscription dynamics in India are influenced by a complex interplay of market sentiment, regulatory changes, and investor preferences. Effective IPO investments necessitate a thorough comprehension of key factors, encompassing allocation proportions, issue attributes, and external factors.

1.1. Overall subscription

A subscription rate reveals how eager investors are for a new IPO (Sahoo & Rajib, 2010). Generally referred to as the oversubscription rate, it is estimated as the ratio of the number of applications to the issue size (Rahim et al., 2013). The subscription rate is calculated across all investor groups, including QIBs, NIIs, and retail investors (Sahoo, 2017). The literature on subscription rate has been broadly divided into two categories; studies (Agarwal et al., 2006; Babu & Dsouza, 2021; Cheng et al., 2005; Jotwani & Singh, 2011) examining the role of subscription rate on IPO returns, and studies (Ellikkal et al., 2022; Hossain & Omar, 2017; Jacob & Agarwalla, 2015; Sahoo, 2017) examining the factors affecting subscription rate.

The Securities and Exchange Board of India (SEBI) regulates and prescribes allocation norms for each investor category via the book-building process for every IPO issued. During the IPO issue, 50% of the shares are reserved for qualified institutional bidders (QIB), 35% for retail individual investors (RII), and the remaining 15% for non-institutional investors (NII). The subscription rate against each investor category is estimated by dividing the number of bids received by the number of shares allotted per investor category (Sandhu & Guhathakurta, 2020). Often, at the pre-listing phase, full subscriptions, oversubscriptions, and under-subscriptions provide an initial indication of investor demand.

1.2. Allocation proportion

Prior research (Banerjee & Rangamani, 2015; Hawaldar et al., 2018; Małachowski & Gadowska-dos Santos, 2021; Mehmood et al., 2020; Ong et al., 2020; Sandhu & Guhathakurta, 2020; Zhang et al., 2015) has extensively discussed book-building or fixed-price methods and attempted to explain the causes of underpricing or influence on oversubscription. Oversubscription is a major performance factor for IPOs (Shah & Mehta, 2015). A high subscription rate is attributed to investors' confidence and optimism about the new issue (Hossain & Omar, 2017; Khatri, 2017; Yadav et al., 2018), issue price and size (Ellikkal et al., 2022; Jampala et al., 2016; Mehta & Shah, 2015; Sandhu & Guhathakurta, 2020), subscription times (Hossain & Omar, 2017), grey market premium (Beierlein et al., 2016; Pinki & Sharma, 2022), and Anchor-backed IPOs (Sahoo, 2017). It appears that most of the studies have overlooked the interaction between allocation norms and over or under-subscription.

1.3. Issue attributes

The characteristics of companies undergoing IPOs hold significant interest due to their pivotal role as a primary reservoir of fresh investment prospects within the securities market. These characteristics encompass variations in factors such as the issue size, post-issue paid-up capital reflecting the issuer's size, the issuer's evolutionary stage, issue pricing, the proportion of issuer shares made available for public ownership, the specific industry or business sector the issuer operates in, and the stock exchanges where their shares are listed (Sabarinathan, 2010). This study explores the impact on overall subscriptions by considering issue size, issue price, and projected P/E ratio.

Issue size indicates the amount raised by an IPO and the success of the offering (Chhabra et al., 2017). Earlier studies have reported contrasting results on the influence of issue size on oversubscription. Some studies (Arora & Singh, 2020; Tajuddin,

2018) have claimed a linear relationship between issue size and oversubscription, while other studies (Banerjee & Rangamani, 2015; Low & Yong, 2011; MN & Brigitta, 2022; Yong et al., 2002) did not observe such a relationship. Also, a few studies have attempted to verify the association between the size of the issue and the listing price (Baluja, 2013; Jacob & Agarwalla, 2015; Manu & Saini, 2020; Mehta & Shah, 2015; Shah, 2013; Singh & Gupta, 2018). Given the varying opinions regarding the association between issue size and overall subscription, this study believes that further investigation would enhance the literature by providing a better understanding of the relationship.

At the pre- and post-listing stages of an IPO, the offer price is an important variable in estimating participation levels among various investor categories (Low & Yong, 2011; Sandhu & Guhathakurta, 2020). The issue price of an IPO is a potential factor in explaining oversubscription (Aluvaala, 2019; Tajuddin et al., 2017). Agarwal et al. (2008) observed a positive relationship between IPO underpricing and investor demand. As evidenced by Datar and Mao (2006), issuers deliberately underprice their IPOs to enhance subscriptions. Conversely, Sandhu and Guhathakurta (2020) discovered that IPOs with the lowest price ranges are less likely to attract full subscriptions or oversubscriptions. Retail and non-institutional investors moreover take cues on the quality of IPO issues based on institutional investors' subscription patterns, when they bid for shares (Khurshed et al., 2011; Ong et al., 2020). Following the above arguments, it is apparent that the issue price should be considered in conjunction with the allocation proportion and subscription times among investor categories to better explain the latter's impact on overall subscriptions.

The Price-Earnings (P/E) ratio stands as one of the widely embraced methods for assessing the value of a stock. A high P/E ratio suggests optimism among investors regarding future earnings growth, but it may also be viewed as overvalued if growth prospects are limited. Conversely, a low P/E ratio could indicate that stocks are undervalued, potentially due to short-term disruptions stemming from various factors such as company-specific issues, promoter-related concerns, industry challenges, or market conditions (Nair,

2023). According to Kim and Ritter (1999), P/E multiples based on projected earnings yield more precise valuations compared to those relying on historical earnings. IPO pricing is influenced by investor expectations, which in turn are impacted by factors such as the industry average P/E ratio and earnings per share (Chen, 2015). When the price exceeds this average P/E ratio, individual investors tend to exercise caution and may choose to participate conservatively, potentially resulting in lower fundraising outcomes (Chen, 2023). The above arguments underscore the significance of factoring in the projected P/E ratio when assessing the overall subscription of an IPO.

1.4. External factors

An oversubscribed IPO, which signifies a heightened demand for its shares, often results in a premium listing price. However, it is possible that, apart from demand, several external factors could significantly influence investor decisions in the context of Initial Public Offerings (IPOs). Factors such as Grey Market Premium (GMP), IPO evaluations, broker advice, and the performance of stock market benchmarks may exert considerable influence on the overall subscription. Understanding how these variables interplay in the IPO subscription process is vital for investors and market analysts alike. This study investigates the influence on the overall subscription by considering factors such as GMP (Grey Market Premium), IPO Ratings, broker recommendations, and index returns as key metrics for measurement.

A Grey market is an unofficial market where listing premiums are known before the IPO list (Pinki & Sharma, 2022). Grey markets are used by issuers and underwriters to assess the demand for new IPO offerings. An oversubscribed IPO encourages investors to create a buzz around the issue, persuading a higher grey market premium. India has a very active grey market for IPOs, which provides insight into market sentiments (Krishnamurti et al., 2011). Although institutional investors' subscriptions do not seem to be influenced by a low grey market premium, retail investors' participation reflects investor sentiment through the grey market premium (Neupane et al., 2014). While Loffler et al. (2005) determined that grey market premiums are a good indicator of listing prices,

however, the results of Dave(2022) did not support this conclusion. Additionally, prior studies (Beierlein et al., 2016; Cornelli et al., 2006; Krishnamurti et al., 2011; Neupane et al., 2014; Vohra & Nalwaya, 2022) focused primarily on the impact of grey market premium on listing price rather than overall subscription.

Analysts play a dual role in the IPO market by providing valuable information to enhance market efficiency while also having the potential to fuel stock hype and mislead the public regarding IPO valuations due to the relatively lesser-known nature of these offerings (Ellikkal et al., 2022). When an IPO is unveiled in the Indian market, evaluations and feedback are often recorded on two websites, namely, ipowatch.in and chittorgarh.com. The prominent IPO review platform, chittorgarh.com, features an IPO Rating system that relies on user-generated feedback. As per the website's description, the user rating of an Initial Public Offering (IPO) generally pertains to the evaluations and assessments furnished by a range of financial institutions, independent brokers, and analysts who are registered with SEBI (Securities and Exchange Board of India) ("www.chittorgarh.com," 2023). The list comprises notable participants in this field in India like Capital Market, ICICI Securities, Nirmal Bang, Motilal Oswal, HEM Securities, Ventura, Reliance Securities, Angel One, Aditya Birla Money, along with analysts such as Mr. S. P. Tulsian and Mr. Dilip Davda. The benefits of user ratings for IPOs, including information sharing, peer perspectives, risk assessment, reflecting market sentiment, and serving as community insights, facilitate a comprehensive comparison of different IPOs. Nonetheless, it is crucial to acknowledge that these ratings rely on individual subjective viewpoints. It would be intriguing to ascertain whether these user ratings exert any influence on IPO subscription trends.

Stock brokerage firms play a pivotal role in sustaining the vitality of the stock market by serving as intermediaries connecting investors with the market, facilitating new investor participation, and imparting knowledge on stock market investments (Jami, 2022). The main sources of analyst recommendations typically originate from two channels: brokerage firms, financial columnists and journalists (Jayadev & Chetak, 2015). Rajan and Servaes (1997) conducted pioneering research into the correlation between analyst coverage and IPO premiums, dis-

covering a positive impact of IPO premiums on analyst following. But Bradley et al. (2008) discovered no discernible connection between the IPO premium and the level of analyst following. Mcnichols et al. (2006) found that affiliated recommendations do not distinguish between strong and weak IPO stocks, while unaffiliated recommendations tend to be untimely in offering valuable trading guidance. The precision and variance in pricing predictions by securities analysts play a substantial role in influencing the premium associated with IPOs (Jiani & Liu, 2014). When a larger group of analysts offer favorable recommendations, it boosts the confidence of prospective investors, thereby increasing the probability of IPOs experiencing oversubscription (Sahoo, 2014; Singh & Vishwanath, 2013). Given the vital role that stock brokerage firms play in connecting investors with the market and the significant influence of analyst recommendations on IPO premiums, it is important to investigate how broker recommendations impact the overall subscription to initial public offerings (IPOs).

A stock market index represents all major deviations in the stock market and is compiled using stocks selected based on their market capitalization, type of industry, and market size (Mani, 2023). According to the PRIME database released in January 2023, the average IPO listing gain, dropped to 10% in 2022, as compared to 32.19% in 2021 and 43.82% in 2020 (Agarwal, 2023a). Several empirical studies in the past (Bandi & Suresh, 2018; Howton et al., 2002; Duraipandian & Suresh, 2012; Sahoo & Rajib, 2010) have compared IPO returns to index returns and attempted to guide investors with information about the choice of the stock exchange, underpricing, and strong QIB subscriptions affecting IPO returns. In a report by ET Market (2022), the S&P BSE IPO index was negative 34% in 2022 and hence cautioned investors about considering the IPOs as a quick cash grab. This denotes the decisive role of index returns in determining the IPO listing prices regardless of subscription levels.

The critical review of the extant literature on IPO subscriptions and their determinants essentially enabled the vivid identification of study variables. The initial reviews focused on IPO subscriptions and the factors influencing the quantum of overall subscriptions. Further, an in-depth review facilitated the identification of issue attributes and external fac-

tors as potential determinants. Several studies have examined the factors influencing the level of subscriptions during IPOs around the world. Analysts' recommendations and financial position at issue, Retail and Non-institutional investors following the subscription patterns of the Qualified Institutional Buyers (QIBs), pre-offering information about IPO prospects, IPO offer price and pre-listing demand among the different categories of investors in the Indian stock market (Agarwal et al., 2006; Banerjee & Rangamani, 2015; Kenourgios et al., 2007; Khurshed et al., 2009; Sandhu & Guhathakurta, 2020), offer price, size and timing of the IPO in the Malaysian stock market (Low & Yong, 2011), phases of the business life cycle and marketing strategies in the US Stock Markets (Brau & Osteryoung, 2001), investors' attitude in European markets (Kaustia & Knupfer, 2008), a company's age and reputation, profitability, and economic condition in the Kenyan market (Mulu, 2014; Mutswenje, 2014) were found to influence IPO subscriptions. Nevertheless, these studies were limited in scope to identifying the factors influencing subscription level. Few studies focused on explaining the association between subscription and aftermarket volatility (Ellikkal et al., 2022; Leow & Lau, 2020; Mehta & Shah, 2015; Sahoo, 2015; Shenoy & Srinivasan, 2018). While others studied the relationship between IPO issue characteristics and listing price performance (Baluja, 2013; Govindarajan & Sivagurunathan, 2012; Shi et al., 2018). The existing body of research has not offered a thorough framework for examining the concurrent relationship between the issuance of IPOs and the levels of IPO subscriptions.

The current study aims to investigate the influence of allocation proportion, issue attributes and external factors on overall subscription. The study proposes the following hypotheses:

H_1: The proportion of allotment to QIB investors influences overall IPO subscription.

H_2: The proportion of allotment to NII investors influences overall IPO subscription.

H_3: The proportion of allotment to retail investors influences overall IPO subscription.

H_4: IPO issue size has a bearing on the overall subscription.

H_5: IPO issue price has a bearing on the overall subscription.

H_6: Projected P/E ratio influences the overall subscription.

H_7: Grey market premium has a bearing on the overall subscription.

H_8: The IPO rating significantly influences the overall subscription.

H_9: The broker recommendation impacts the overall subscription.

H_{10}: The index returns influence the overall subscription of the IPO.

2. METHODS

The literature points to several factors influencing the IPO overall subscription rate. However, for the current study, the overall subscription is regarded as a dependent variable affected by three sets of independent variables viz., Allotment proportion, Issue attributes and External factors. Allotment proportion includes three variables viz., QIB allotment, NII allotment and Retail allotment, whereas the Issue attributes include Issue size, Issue price and Projected P/E Ratio, and External factors considered were GMP, IPO Rating, Broker recommendation, and the Index returns reflecting the stock market performance. Figure 1 depicts the conceptual framework employed in this study.

The dataset comprises 140 initial public offerings (IPOs) that were issued between April 1, 2019 and March 31, 2023. However, IPOs with missing essential data points were excluded from the analysis and thereby subject to the data cleansing process, the dataset was refined to include 132 IPOs with complete information.

The study sourced secondary data from multiple online databases. Issue size, issue price, the proportion of allotment among investor categories, and projected P/E Ratio are obtained from the Securities and Exchange Board of India (SEBI) website (www.sebi.gov.in). Grey Market Premium
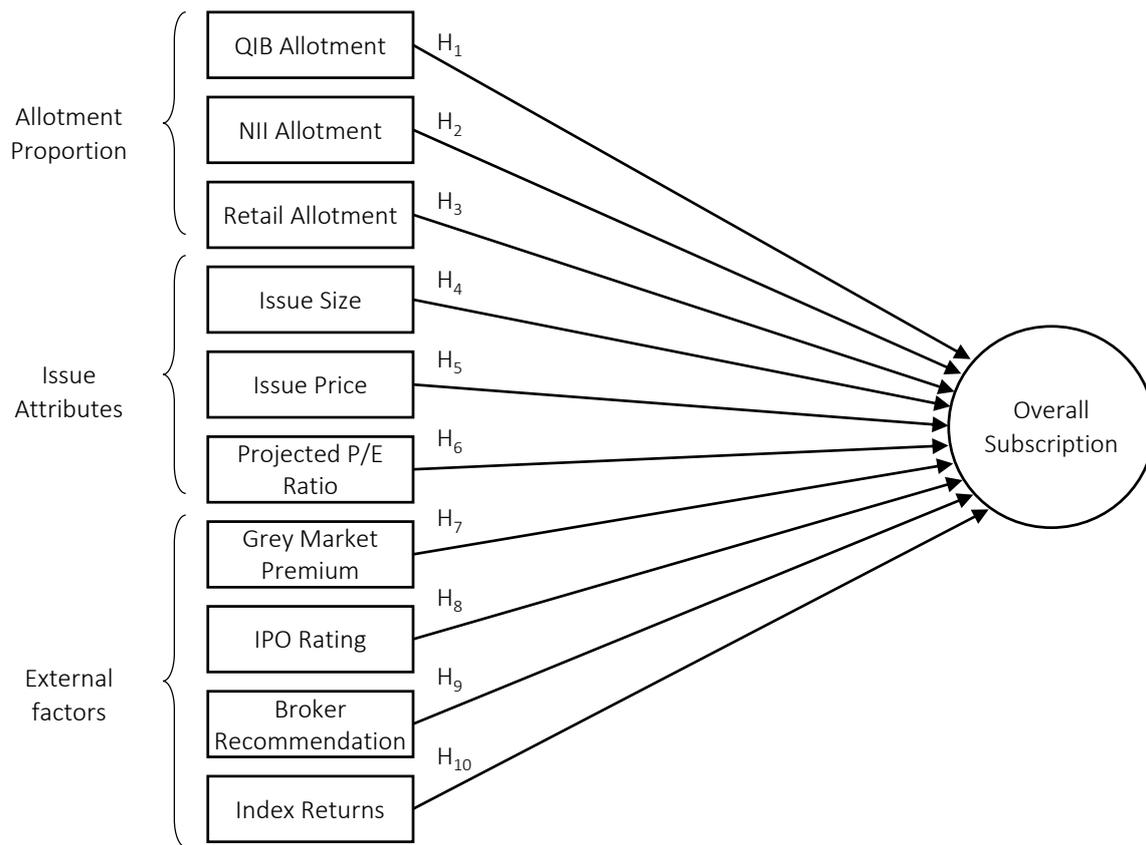
Figure 1. Conceptual framework

(GMP), IPO Ratings, Broker recommendations, and overall subscription data were compiled based on research information shared on online financial portals such as https://www.chittorgarh.com/, https://ipowatch.in/, https://www.sptulsian.com/f/ipo-analysis, and monthly index returns (NIFTY 50), historical data were extracted from the National Stock Exchange of India (http://www.nseindia.com/).

JMP Pro software was deployed for data analysis, and Multiple Linear Regression was run to quantify the influence of the identified independent variables on the overall subscription of IPOs.

3. RESULTS

Given that all the variables in the study are continuous, correlation estimates were generated as a prerequisite to the multiple regression. Table A1 displays the correlation estimates for the independent variables under investigation in this study.

Table A1 reveals that Retail allotment demonstrates robust positive correlations with both QIB (0.9974) and NII allotment (0.9430), along with a moderate positive association (0.3814) with Issue size. Additionally, index return exhibits a moderate positive correlation (0.3939) with Grey Market Premium, while IPO Rating displays a moderate positive relationship (0.4756) with Issue price. In contrast, Broker recommendations show a negative correlation (–0.5531) with IPO Rating and a mild positive correlation (0.3939) with index returns. Notably, issue price is strongly negatively correlated (–0.7965) with Grey Market Premium, and moderately positively correlated (0.4756) with IPO Rating.

Figure 2 displays the distribution of the dataset and actual vs. predicted plot. The data points are widely dispersed, reflecting the varied nature of IPOs in terms of their issue size and issue price when they were issued on the stock market.

Table 1 summarises the outcomes derived from the Multiple Linear Regression analysis. The modified RSquare score of 0.4392 in Table 1 suggests
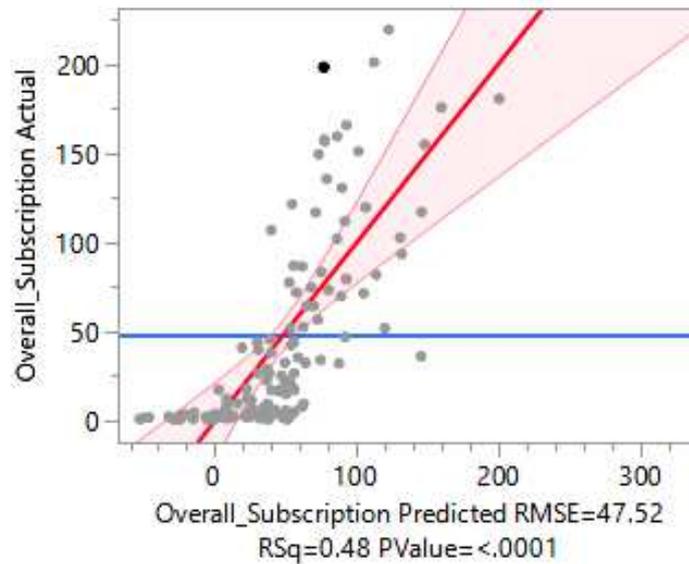
Figure 2. Actual vs. predicted plot

that approximately 43.92% of the overall subscription can be attributed to the combined impact of the predictor variables.

Table 1. Summary of model fit

Summary of Fit	
RSquare	0.482319
RSquare Adj	0.439179
Root Mean Square Error	47.41955
Mean of Response	47.89412
Observations (or Sum Wgts)	131

Table 2. Analysis of variance

Analysis of Variance				
Source	DF	Sum of Squares	Mean Square	F Ratio
Model	10	252463	25246.3	11.1803
Error	120	270972.9	2285.1	Prob > F
C. Total	130	523435.9		<.0001*

Table 3. Parameter estimates

The analysis of variance in Table 2 indicates, a statistically significant relationship between the model and the observed data ($F_{(10, 120)} = 11.1803$, $p < 0.0001$). The model accounts for a substantial portion of the variability in the data, with a model sum of squares of 252463.03. In contrast, the error term, with a sum of squares of 270972.91, represents random variability within the data. This ANOVA table, with a total of 130 degrees of freedom, suggests that the model's predictors collectively have been strongly influencing the dependent variable under investigation.

Table 3 displays the results of the multiple regression analysis. It examines the relationship between the independent variable and the dependent variable (overall subscription). The statistical significance of the intercept term in the regression equa-

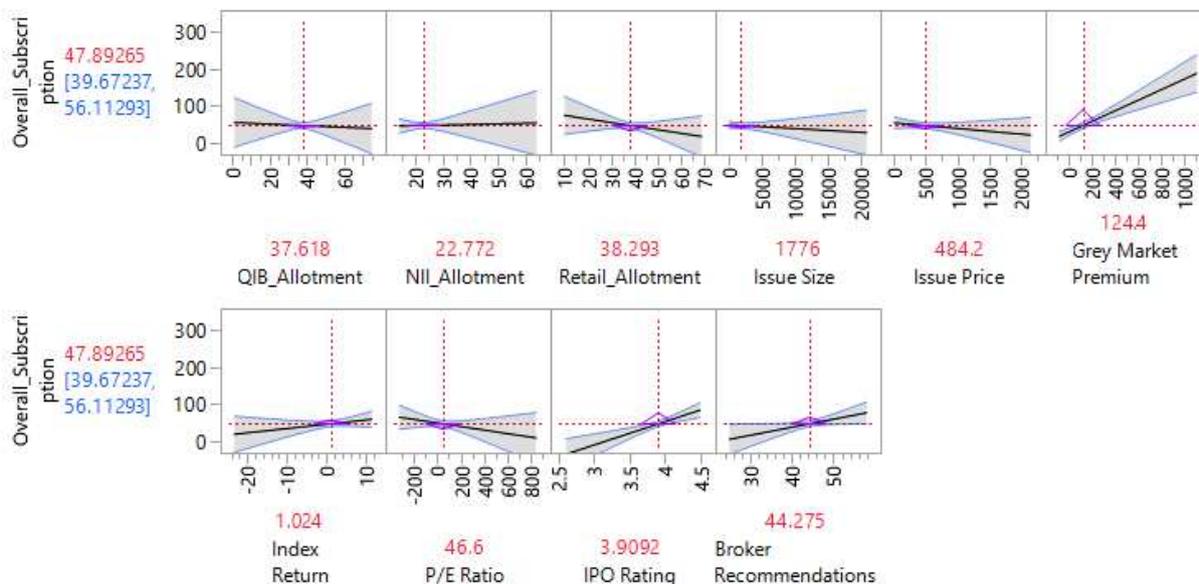| Parameter Estimates						
Term	Estimate	Std Error	t Ratio	Prob>|t|	Lower 95%	Upper 95%
Intercept	−258.3856	104.1187	−2.48	0.0145*	−464.5333	−52.2378700
QIB_Allotment	−0.219031	0.912636	−0.24	0.8107	−2.025987	1.5879244
NII_Allotment	0.1603245	1.061182	0.15	0.8802	−1.940742	2.2613908
Retail_Allotment	−0.963218	0.90424	−1.07	0.2889	−2.753551	0.8271139
Issue Size	−0.000996	0.001581	−0.63	0.53	−0.004126	0.0021342
Issue Price	−0.015332	0.014243	−1.08	0.2839	−0.043532	0.0128685
Grey Market Premium	0.1420876	0.025771	5.51	<0.0001*	0.0910635	0.1931118
Index Returns	1.1576266	1.002685	1.15	0.2506	−0.827621	3.1428739
P/E Ratio	−0.04744	0.042717	−1.11	0.269	−0.132017	0.0371369
IPO Rating	62.519799	15.93395	3.92	0.0001*	30.971694	94.0679050
Broker Recommendations	2.1657941	1.043569	2.08	0.0401*	0.0995995	4..2319888

Figure 3. Predictor profiler

tion (p-value = 0.0145) suggests a baseline effect on the dependent variable when all other independent variables are zero. The independent variables viz., QIB allotment (β = –0.219, p = 0.8107), NII allotment (β = 0.1603, p = 0.8802), and Retail allotment (β = –0.963, p = 0.2889), Issue Size (β = –0.0009, p = 0.5300), Issue price (β = –0.0153, p = 0.2839), Index return (β = 1.1576 p = 0.2506), Projected P/E Ratio (β = –0.047, p = 0.2690), do not seem to be statistically significant predictors of the overall subscription since their p-values are all greater than the commonly used significance level of 0.05. This implies that changes in these variables do not have a strong linear effect on the overall subscription in the context of this analysis. Hence, the study does not support the hypotheses H_1, H_2, H_3, H_4, H_5, H_6, and H_{10}. While Grey Market Premium (β = 0.1420, p < 0.0001),

IPO Rating (β = 62.519, p = 0.0001), and Broker recommendation (β = 2.1657, p = 0.0401) are found to significantly impact the dependent variable overall subscription. Thus, there is adequate evidence to support hypotheses H_7, H_8, and H_9.

A more detailed examination of the predictor profiler graphs (see Figure 3) reveals a vivid understanding of the dependencies between the predictor variables and the dependent variable, overall subscription. Statistically significant predictor variables are depicted with an upward pointed dangler on the charts of GMP, IPO Rating and Broker Recommendations. A small dangler is evident in the index returns chart, suggesting the impact of index returns on overall subscription; nevertheless, this relation lacks statistical significance. In summary, external factors such as GMP,

Table 4. Parameter estimate population

Parameter Estimate Population					
Term	Estimate	t Ratio	Orthog Coded	Orthog t–Ratio	Prob>|t|
Intercept	–28.386	–2.4816	47.8941	11.5357	<.0001*
QIB_Allotment	–0.219	–0.24	6.0094	1.4474	0.150400
NII_Allotment	0.16	0.1511	–0.1812	–0.0436	0.965300
Retail_Allotment	–0.963	–1.0652	1.5967	0.3846	0.701200
Issue Size	–0.000996	–0.6299	–13.7355	–3.3083	0.0012*
Issue Price	–0.015	–1.0764	8.74	2.1051	0.0374*
Grey Market Premium	0.142	5.5135	32.8508	7.9124	<.0001*
Index Returns	1.158	1.1545	1.3345	0.3214	0.748400
P/E Ratio	–0.047	–1.1106	–3.5215	–0.8482	0.398000
IPO Rating	62.52	3.9237	21.3506	5.1425	<.0001*
Broker Recommendations	2.166	2.0754	8.6165	2.0754	0.0401*

IPO Ratings, and Broker Recommendations exert a statistically significant influence on overall subscription, while the market's performance, as indicated by Index Returns, appears to have a less significant impact.

To examine the impact of predictor variables on the overall subscription rate within the entire population, parameter estimates were generated. The analysis presented in Table 4 revealed intriguing insights, with statistically significant findings for issue attributes such as issue size and issue price, in addition to the previously identified predictor variables: GMP, IPO Rating, and Broker recommendation.

A Normal plot was generated to identify the active predictor variables and inactive predictor variables. Figure 4 depicts the Normal plot for the data analyzed. The above line in the normal plot indicates absolute normality as it has a slope equal to 1 and the below line indicates the dependency model with key predictor variables with a slope equal to the t-Test Scale Lenth PSE (2.1711354).

These graphs are plotted fundamentally on the principle of effect sparsity, which reflects the idea that relatively fewer effects are active. Those effects that are inactive represent random noise. The plots are based on a pseudo-standard error (PSE), where the PSE is an approximation of variance ($\sigma2$) and

ascertained using the order statistics of the parameter estimates that are smallest in magnitude. On a normal probability plot, estimates representing inactive effects fall close to a line with slope σ.

When orthogonality transformation is employed, the vertical axis signifies the representation of Normalized Estimates. These values represent the Orthog t-Ratios discovered within the Population Parameter Estimate report (The Orthog t-Ratio values are the Orthog Coded estimates divided by the Coded Scale Lenth PSE). Because the estimates are normalized by an estimate of σ, the points corresponding to inactive effects should fall along a line of slope 1. A red line with slope 1 is shown on the plot, as well as a blue line with a slope equal to the t-Test Scale Lenth PSE. In all cases, estimates that deviate from normality at the 0.20 level, based on the p-values in the Parameter Estimate Population table (see Table 5), are labelled on the plot.

The predictor variables viz., GMP (p-value <0.001), IPO Rating (p-value < 0.001), Broker recommendations (p-value = 0.0401), which are falling away from the line with slope equal to Lenth's PSE, indicating that these are active predictors and followed by Issue size (p-value = 0.0012) and Issue price (p-value = 0.034), which were not falling on the line with slope equal to Lenth's PSE. Therefore, it is reasonable to propose that these variables may
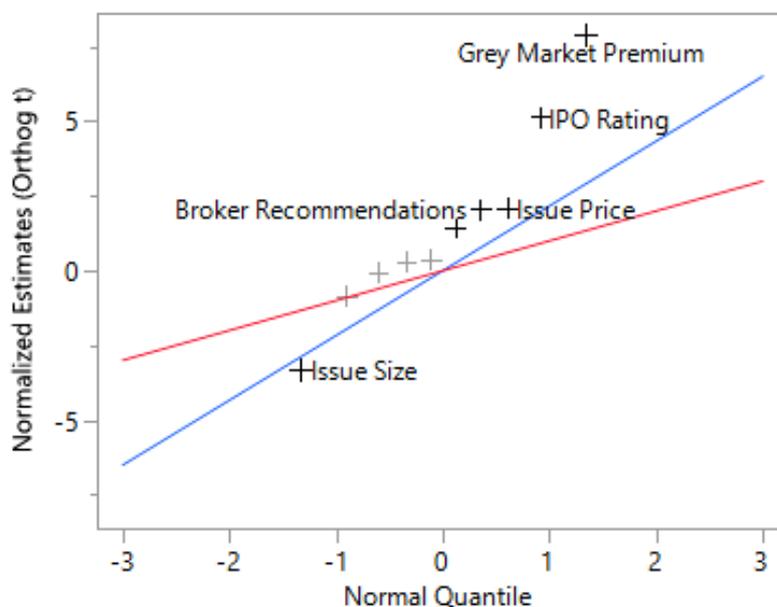

Figure 4. Normal plot

serve as effective predictor variables. At the same time QIB allotment (p-value = 0.1504), NII allotment (p-value = 0.9653), Retail allotment (p-value = 0.7012), Index returns (p-value = 0.7484) and Projected P/E Ratios (p-value = 0.3980) are found to be inactive predictor variables owing to their estimates deviating from normality at 0.20 level based on the p-values.

4. DISCUSSION

This study has necessitated out of the identified gap in the extant literature on IPO issues and their subscription dynamics. The present work examines multiple factors extracted from existing literature, including allocation proportion, issue attributes, and external factors, to gauge their influence on initial public offering (IPO) subscription levels. It can be inferred from the findings that the allocation proportion, which encompasses three primary investor categories, namely QIB, NII, and Retail, does not substantially influence the dynamics of IPO subscription, owing to multiple factors. Firstly, prevailing market sentiment can strongly shape investor responses to allocation proportions, specifically when the market momentum is exhibiting reversals. Additionally, investor preferences reflect their risk appetite predominantly and ability to comprehend the issuing company's fundamentals over allocation. Furthermore, regulatory changes in the IPO process can alter the significance of allocation proportions, while comprehensive information availability can reduce their impact.

The issue attributes, encompassing company-specific variables like issue size, issue price, and P/E ratio, also exhibited a statistically significant impact on the subscription rates. A notable finding from the analysis has been the inverse behavior of Grey Market Premium against issue price, suggesting IPOs with a lower issue price might attract speculative investors who anticipate swift profits. Such investors may tend to offer higher prices in the Grey market in anticipation of a premium price immediately after the IPO listing. Moreover, low-priced IPOs prove to be more accessible to a broader spectrum of investors, including retail investors. This enhanced accessibility can result in augmented trading volumes in the Grey market. Furthermore, a lower IPO issue price may imply

that the company is undervalued or that it intentionally reserves potential upside for investors, a sentiment that can translate into demand in Grey markets. However, Sandhu and Guhathakurta (2020) discovered that across all investor categories, there was a reduced propensity for full subscription or oversubscription of IPO issues when the initial offer prices were at their lowest range.

The third factor, denoted as 'External factors', comprises four subcomponents: GMP, IPO Ratings, broker recommendations, and index returns. It is worth stating that all of these factors, except for index returns, exerted a prominent influence on IPO subscriptions. GMP, IPO Ratings, and broker recommendations tend to be more pertinent to prospective investors, offering direct insights into an IPO's perceived potential to prove profitable for the investors. This observation is consistent with the perspective presented by Khatri (2017), indicating that a significant proportion of investors seek guidance from brokers when making investment decisions in IPOs. In contrast, index returns reflect overall market movement and need not be closely evaluated in specific IPO evaluation. Apart from the accuracy and availability, the relevance of GMP, IPO Ratings, and broker recommendations often surpass that of index returns, which are generally available to the public and less tailored to individual IPOs. Positive GMP, favorable IPO Ratings, and strong broker recommendations can bolster investor sentiment positively thereby boosting subscription rates irrespective of overall market momentum. Beierlein et al. (2016) observed that IPOs with a significant GMP tend to exhibit stronger explanatory capability. Nevertheless, their study did not delve into its influence on the overall subscription rate. Lastly, bear market conditions during the IPO period can significantly influence subscription decisions, implying a bearish trend induces investors to outweigh GMP, IPO Ratings, and broker recommendations as they seek lucrative opportunities.

The parameter estimation analysis has emphasised the statistical significance of distinct issue attributes such as issue size and issue price, in addition to GMP, IPO Rating, and Broker recommendation. The findings significantly enhance the comprehension of the factors underpinning overall subscription rates within the broader context of this study.

CONCLUSION

This study aimed to analyze factors influencing IPO subscription. It found that allocation proportions (QIB, NII, Retail) had a limited impact, with market sentiment and regulatory framework playing pivotal roles. Issue attributes like size, price and P/E ratio were not significant drivers, but lower issue prices correlated with increased Grey Market Premium, appealing to speculative investors. External factors, including GMP, IPO Ratings, and broker recommendations, emerged as influential determinants, offering valuable insights for academic research and practical decision-making in the IPO market.

This investigation also poses certain challenges due to its inherent limitations. The study includes all IPOs, regardless of size, leading to dispersed data and potential errors. Additionally, it excludes factors like IPO marketing and investor perceptions, which can impact subscription rates. The study period encompassed the COVID-19 pandemic and the Ukraine War, inducing market volatility. Certain predictor variables may become significant as circumstances evolve.

Future studies could explore incorporating IPO marketing metrics and investor perception factors to assess their impact on overall subscriptions. Investigating the interdependencies between predictor variables and their impact on both subscription rates and listing prices is a valuable avenue for future research, especially when categorizing companies based on issue size to reduce data dispersion and offer distinct insights.

AUTHOR CONTRIBUTIONS

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REFERENCES

1. Agarwal, N. (2023a, January 3). 40 IPOs gave an average listing day gain of 10% in 2022. *The Economic Times*. Retrieved from https://economictimes.indiatimes.com/markets/ipos/fpos/40-ipos-gave-an-average-listing-day-gain-of-10-in-2022-report/articleshow/96704540.cms

2. Agarwal, N. (2023b, January 7). IPO pipeline in 2023: 54 companies waiting to raise Rs 84,000 crore. *The Economic Times*. Retrieved from https://economictimes.indiatimes.com/markets/ipos/fpos/ipo-pipeline-in-2023-54-companies-waiting-to-raise-rs-84000-crore/articleshow/96704681.cms?from=mdr

3. Agarwal, S., Liu, C., & Rhee, S. G. (2006). Investor demand for IPOs and aftermarket performance: Evidence from the Hong Kong stock market. *Journal of International Financial Markets, Institutions and Money, 18*(2), 176-190. https://doi.org/10.1016/j.intfin.2006.09.001

4. Aluvaala, S. I. (2019). *Determinants of subscription levels during Initial Public Offerings (IPO's) of East African listed firms.* Strathmore University. Retrieved from https://su-plus.strathmore.edu/handle/11071/6581

5. Arora, N., & Singh, B. (2020). Determinants of oversubscription of SME IPOs in India: evidence from quantile regression. *Asia-Pacific Journal of Business Administration, 12*(3-4), 349-370. https://doi.org/10.1108/APJ-BA-05-2020-0160

6. Babu, T. R. C., & Dsouza, A. E. C. (2021). Post listing IPO returns and performance in India: An empirical investigation. *Journal of Financial Studies & Research, 2021,* 1-20. https://doi.org/10.5171/2021.418441

7. Baluja, G. (2013). Comparative Analysis of Listing Price Performance Between Different Graded IPOs in India. *Pacific Business Review International, 6*(5), 1-7. Retrieved from http://www.pbr.co.in/2013/2013_month/Nov/1.pdf

8. Bandi, S., & Suresh A. S. (2018). Initial Performance of IPOs against NIFTY, BSE-SENSEX & IPO Index. *ISBR Management Journal, 3*(1), 1-21. Retrieved from https://isbrmj.org/index.php/home/article/view/24

9. Banerjee, S., & Rangamani, K. T. (2015). Determinants of investor's subscription level of IPOs: Evidence from Indian capital market in post mandatory IPO grading regime. *DLSU Business and Economics Review, 24*(2), 77-91. Retrieved from https://ejournals.ph/article.php?id=6509

10. Beierlein, J. J., K B, L., & Narasimham, N. V. (2016). Grey Market for IPOs in India: Its Trading Mechanism and Implications for IPO Underpricing. *World Finance and Banking Symposium,* 1-20. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3095354

11. Bradley, D. J., Jordan, B. D., & Ritter, J. R. (2008). Analyst behavior following IPOs: The "bubble period" evidence. *Review of Financial Studies, 21*(1), 101-133. https://doi.org/10.1093/rfs/hhl028

12. Brau, J. C., & Osteryoung, J. S. (2001). The determinants of successful micro-IPOs: An analysis of issues made under the small corporate offering registration (SCOR) procedure. *Journal of Small Business Management, 39*(3), 209-227. https://doi.org/10.1111/0447-2778.00020

13. Chen, L. (2015). A Study on the Influencing Factors of IPO Pricing and Policy Research in Chinese Stock Market. *Proceedings of the 2015 International Conference on Education, Management and Computing Technology, ICEMCT,* 75-79. https://doi.org/10.2991/icemct-15.2015.18

14. Chen, S. (2023). *The impact of IPO pricing model on the issuing price : Evidence from China.* Singapore Management University. Retrieved from https://ink.library.smu.edu.sg/cgi/viewcontent.cgi?article=1481&context=etd_coll

15. Cheng, L. T. W., Chan, K. C., & Mak, B. S. C. (2005). Strategic share allocation and underpricings of IPOs in Hong Kong. *International Business Review, 14*(1), 41-59. https://doi.org/10.1016/j.ibusrev.2004.12.002

16. Chhabra, S., Kiran, R., & Sah, A. N. (2017). Information asymmetry leads to underpricing: validation through SEM for Indian IPOs. *Program, 51*(2), 116-131. https://doi.org/10.1108/PROG-01-2016-0009

17. Chittorgarh. (n.d.). Retrieved from https://www.chittorgarh.com/book-chapter/ipo-subscription/24/

18. Cornelli, F., Goldreich, D., & Ljungqvist, A. (2006). American Finance Association Investor Sentiment and Pre-IPO Markets. *Journal of Finance, 61*(3), 1187-1216. Retrieved from http://www.jstor.org/stable/3699321

19. Datar, V., & Mao, D. Z. (2006). Deep underpricing of China's IPOs: sources and implications. *International Journal of Financial Services Management, 1*(2/3), 345-362. https://doi.org/10.1504/ijfsm.2006.009635

20. Dave, R. (2022). A Research Study on Factors Influencing Listing Gains of IPOs. *Journal of the Asiatic Society of Mumbai, XCV*(20), 14-17. Retrieved from https://www.researchgate.net/publication/361484388

21. Duraipandian, R., & Suresh, A. S. (2012). IPO's Performance and Its Relationship With QIB Subscriptions and Grade. *International Journal of Research in Commerce & Management, 03*(03), 35-38.

22. Ellikkal, A., Rajamohan, S., & Prakash, M. O. (2022). IPOs in Indian Stock Market: Analyzing Pricing and Performance of IPO Listed in 2021. *Shanlax International Journal of Management, 10*(2), 1-8. https://doi.org/10.34293/management.v10i2.5144

23. ET Market. (2022, December 24). Which IPOs are worth your time and money? Let's find out. *The Economic Times.* Retrieved from https://economictimes.indiatimes.com/markets/stocks/news/which-ipos-are-worth-your-time-and-money-lets-find-out/articleshow/96473295.cms

24. Govindarajan, K., & Sivagurunathan, N. (2012). Impact of issue price on returns from IPO. *IEEE-International Conference On Advances In Engineering, Science And Management (ICAESM –2012),* 7-12. Retrieved from https://ieeexplore.ieee.org/abstract/document/6216214

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

26. Hossain, S. Z., & Omar, N. (2017). Factors influencing Subscription of IPO in Bangladesh. *International Journal of Economics, Management and Accounting, 25*(3), 529-548. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3822827

27. Howton, S. D., Howton, S. W., & Olson, G. T. (2002). The role of exchange listing in the initial and aftermarket performance of IPOs.

Journal of Financial Counseling and Planning, 13(1), 75-86. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2443108

28. Jacob, J., & Agarwalla, S. K. (2015). Mandatory IPO Grading: Does it Help Pricing Efficiency? *Vikalpa, 40*(2), 132-144. https://doi.org/10.1177/0256090915592104

29. Jaiswar, P. S. (2022, December 23). Nearly 100 public offerings in 2023? Here's how experts see IPO market performing next year. *Mint*. Retrieved from https://www.livemint.com/market/ipo/nearly-100-public-offerings-in-2023-here-s-how-experts-see-ipo-market-performing-next-year-11671816211607.html

30. Jami, A. A. (2022). *Report On Trade Operating and Client Management Process of UCB Stock Brokerage Limited By* (Issue January). BRAC University.

31. Jampala, R. C., Lakshmi, P. A., & Dokku, S. R. (2016). A Study on Factors Influencing the Initial Public Offerings (IPO) in the Bombay Stock Exchange (BSE), India: During 2007-2013. *International Journal of Corporate Finance and Accounting (IJCFA), 3*(1), 22-35. https://doi.org/10.4018/IJCFA.2016010102

32. Jayadev, M., & Chetak, S. (2015). Can retail investors gain on Analyst Stock recommendations, Journalists Vs Brokerage Houses : Evidence from an Emerging Market ?. *23rd Conference on Theories and Practices of Securities and Financial Markets (SFM 2015),* 1-35. Retrieved from https://repository.iimb.ac.in/handle/2074/14882

33. Jiani, W., & Liu, M. (2014). The accuracy and effectiveness of securities analysts' pricing forecast-empirical research based on A-share IPOs. *Procedia Computer Science, 31,* 587-596. https://doi.org/10.1016/j.procs.2014.05.305

34. Jotwani, D., & Singh, S. (2011). What factors drive IPO Prices? An Empirical study of Alternative factors. *Ganpat University Faculty of Management Studies Journal of Management and Research, 3,*

52-65. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2393247

35. Kaustia, M., & Knupfer, S. (2008). Do investors overweight personal experience? evidence from IPO subscriptions. *Journal of Finance, 63*(6), 2679-2702. https://doi.org/10.1111/j.1540-6261.2008.01411.x

36. Kenourgios, D. F., Papatha-nasiou, S., & Rafail Melas, E. (2007). Initial performance of Greek IPOs, underwriter's reputation and oversubscription. *Managerial Finance, 33*(5), 332-343. https://doi.org/10.1108/03074350710739614

37. Khatri, N. N. (2017). Factors Influencing Investors Investment in Initial Public Offering. *International Journal of Management and Applied Science, 3*(7), 41-49. Retrieved from https://www.iraj.in/journal/journal_file/journal_pdf/14-391-150640546441-49.pdf

38. Khurshed, A., Pande, A., & Singh, A. K. (2009). Subscription Patterns, Offer Prices and the Underpricing of IPOs. *SSRN Electronic Journal,* 1-39. https://doi.org/10.2139/ssrn.1343024

39. Khurshed, A., Pande, A., & Singh, A. K. (2011). Subscription Patterns, Offer Prices and the Underpricing of IPOs. *SSRN Electronic Journal,* 1-39. https://doi.org/10.2139/ssrn.1343024

40. Kim, M., & Ritter, J. R. (1999). Valuing IPOs. *Journal of Financial Economics, 53*(3), 409-437. https://doi.org/10.1016/S0304-405X(99)00027-6

41. Krishnamurti, C., Thong, T. Y., & Vishwanath, S. R. (2011). Grey Market for Indian IPOs: Investor Sentiment and After-Market Performance. *Physical Review E*. https://doi.org/10.2139/ssrn.1972478

42. Kumar, A., Akhani, V., Dixit, A., Khetan, A., Misra, P., & Negi, R. (2021). An Empirical Analysis of Factors Influencing Listing Return of IPOs. *2021 Emerging Trends in Industry 4.0 (ETI 4.0),* 1-7. https://doi.org/10.1109/ETI4.051663.2021.9619203

43. Leow, H.-W., & Lau, W.-Y. (2020). Impact of Oversubscription Ratio and Trading Volume on IPO First Three-day Initial Return. *Advances in Pacific Basin Business, Economics and Finance, 8,* 163-175. https://doi.org/10.1108/s2514-465020200000008008

44. Loffler, G., Panther, P. F., & Theissen, E. (2005). Who knows what when? The information content of pre-IPO market prices. *Journal of Financial Intermediation, 14*(4), 466-484. https://doi.org/10.1016/j.jfi.2004.06.004

45. Low, S. W., & Yong, O. (2011). Explaining over-subscription in fixed-price IPOs – Evidence from the Malaysian stock market. *Emerging Markets Review, 12*(3), 205-216. https://doi.org/10.1016/j.ememar.2011.03.003

46. Małachowski, P., & Gadowska-dos Santos, D. (2021). What Determines the Success of an IPO? Analysis of IPO Underpricing on the Warsaw Stock Exchange. *Central European Economic Journal, 8*(55), 1-14. https://doi.org/10.2478/ceej-2021-0001

47. Mani, A. (2023). Financial Indicators Performance of Top Constituent Firms on Real Estates and Automotive Sector in Nifty Index. *National Conference on "Emerging Perspectives & Challenges in Commerce & Management,"* 1-11. Retrieved from https://www.researchgate.net/publication/368653662_Financial_Indicators_Performance_of_Top_Constituent_Firms_on_Real_Estates_and_Automotive_Sector_in_Nifty_Index

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

49. Mcnichols, M. F., Brien, P. C. O., & Pamukcu, O. M. (2006). That Ship Has Sailed: Unaffiliated Analysts' Recommendation Performance for IPO Firms. *SSRN Electronic Journal*, 1-43. http://dx.doi.org/10.2139/ssrn.892633

50. Mehmood, W., Mohd-Rashid, R., & Ahmad, A. H. (2020). Impact of pricing mechanism on IPO

oversubscription: evidence from Pakistan stock exchange. *Pacific Accounting Review, 32*(2), 239-254. https://doi.org/10.1108/PAR-04-2019-0051

51. Mehta, D. H., & Shah, S. N. (2015). Initial performance of IPOs in India: Evidence from 2010-2014. *Samvad International Journal of Management*, *IX*(March), 77-86. Retrieved from https://samvad.sibmpune.edu.in/index.php/sam-vad/article/view/98346

52. MN, N., & Brigitta, B. (2022). Factors Affecting Oversubscription Share. *Jurnal Manajemen, 26*(3), 449-468. https://doi.org/10.24912/jm.v26i3.1061

53. Mulu, M. K. (2014). *Evaluation of recent initial public offers subscription levels in the Nairobi Securities Exchange.* Strathmore Institute of Mathematical Sciences (SIMs). Retrieved from http://hdl.handle.net/11071/4381

54. Mutswenje, S. V. (2014). A Survey of the Factors Influencing Investment Decisions: The Case of Individual Investors at the NSE. *International Journal of Humanities and Social Science, 4*(4), 25-28. Retrieved from http://www.ijhssnet.com/journals/Vol_4_No_4_Special_Issue_February_2014/11.pdf

55. Nair, V. (2023, June 17). Demystifying the P/E ratio: a guide for retail investors. *The Economic Times.* Retrieved from https://economictimes.indiatimes.com/markets/stocks/news/demystifying-the-p/e-ratio-a-guide-for-retail-investors/articleshow/101062151.cms?from=mdr

56. Neupane, S., Paudyal, K., & Thapa, C. (2014). Firm quality or market sentiment: What matters more for IPO investors? *Journal of Banking and Finance, 44*(1), 207-218. https://doi.org/10.1016/j.jbank-fin.2014.04.010

57. Ong, C. Z., Mohd-Rashid, R., & Taufil-Mohd, K. N. (2020). Do institutional investors drive the IPO valuation? *Borsa Istanbul Review, 20*(4), 307-321. https://doi.org/10.1016/j.bir.2020.05.003

58. Pinki, & Sharma, A. (2022). Grey Market Premium and IPO Listing Gain. *International Research Journal of Engineering and Technology, 9*(4), 3244-3247.

59. Rahim, R. A., Sapian, R. Z. Z., Yong, O., & Auzairy, N. A. (2013). Flipping activity and subsequent aftermarket trading in Malaysian initial public offerings (IPOs). *Asian Academy of Management Journal of Accounting and Finance, 9*(1), 113-128. Retrieved from https://ideas.repec.org/a/usm/journl/aamjaf00901_113-128.html

60. Rajan, R., & Servaes, H. (1997). Analyst Following of Initial Public Offerings. *The Journal of Finance, 52*(2), 507-529. https://doi.org/10.2307/2329488

61. Sabarinathan, G. (2010). Attributes of companies making IPOs in India - Some observations. *IIM Bangalore Research Paper No. 323, 1,* 1-14. https://doi.org/10.2139/ssrn.2122354

62. Sahoo, S. (2014). Do analyst's pre-issue recommendation create value? Empirical evidence from Indian IPO market. *Spanish Review of Financial Economics, 12*(2), 82-95. https://doi.org/10.1016/j.srfe.2014.10.001

63. Sahoo, S. (2015). Subscription Rate and Volatility: An Investigation for Indian IPOs. *Journal of Emerging Market Finance, 14*(1), 20-58. https://doi.org/10.1177/0972652714567995

64. Sahoo, S. (2017). Do anchor investors create value for initial public offerings? An empirical investigation. *IIMB Management Review, 29*(4), 259-275. https://doi.org/10.1016/j.iimb.2017.11.004

65. Sahoo, S., & Rajib, P. (2010). Aftermarket pricing performance of initial public offerings (IPOs): Indian IPO market 2002-2006. *Vikalpa, 35*(4), 27-43. https://doi.org/10.1177/0256090920100403

66. Sandhu, H., & Guhathakurta, K. (2020). Effects of IPO Offer Price Ranges on Initial Subscription, Initial Turnover and Ownership Structure – Evidence from Indian IPO Market. *Journal of Risk and Financial Management, 13*(11), 1-19. https://doi.org/10.3390/jrfm13110279

67. Shah, D. (2013). A Study on Comparison of Indian IPOs (2004:2008) short-run performance based on Issue size, Ownership structure, Sector, Activity time period and Year of issuance. *GJRIM, 3*(2), 69-73. Retrieved from https://www.utu.ac.in/DManagement/download/December%202013/6.pdf

68. Shah, S. N., & Mehta, D. H. (2015). Initial Performance of IPOs in India: Evidence from 2010-2014. *SSRN Electronic Journal,* 77-86. https://doi.org/10.2139/ssrn.2708995

69. Shenoy, S. V, & Srinivasan, K. (2018). Relationship of IPO Issue Price and Listing Day Returns with IPO Pricing Parameters. *International Journal of Management Studies, V*(4(1)), 11. https://doi.org/10.18843/ijms/v5i4(1)/02

70. Shi, S., Sun, Q., & Zhang, X. (2018). Do IPOs Affect Market Price? Evidence from China. *Journal of Financial and Quantitative Analysis, 53*(3), 1391-1416. https://doi.org/10.1017/S0022109018000091

71. Singh, B., & Gupta, K. (2018). Relationship between Directors Divertsity And IPO Underpricing: Evidence From India. *Journal of Entrepreneurship and Management, 7*(1), 1-10. Retrieved from http://www.publishingindia.com/jcar/47/relationship-between-directors-diversity-and-ipo-underpricing-evidence-from-india/671/4703/

72. Singh, K., & Vishwanath, S. R. (2013). The Value of Unaffiliated Analyst Recommendations before the IPO: Evidence from Indian IPOs. *International Research Journal of Applied Finance, 4*(4), 652-686. Retrieved from http://tapmi.informaticsglobal.com/37/

73. Tajuddin, A. H., Abdullah, N. A. H., & Taufil Mohd, K. N. (2017). The influence of firm size on IPO oversubscription: Evidence from

Bursa Malaysia. *International Journal of Research in Management, Economic and Commerce, 7*(8), 45-50. Retrieved from https://indusedu.org/pdfs/IJRMEC/IJRMEC_1296_53625.pdf

74. Tajuddin, A. H. Bin. (2018). *Determinants of oversubscriptions of initial public offerings (IPOs) in Malaysia.* Universiti Utara Malaysia. Retrieved from http://etd.uum.edu.my/7653/

75. Vohra, A., & Nalwaya, N. (2022). The Interplay of Valuations: A Study of the Impact of Selected Variables on Listing Day Discounts of IPOs. *Pacific Business Review (International), 14*(12), 35-43. Retrieved from http://www.pbr.co.in/2022/2022_month/June/4.pdf

76. Yong, O., Yatim, P., & Sapian, R. Z. Z. (2002). Size of Offer, Over-subscription Ratio and Performance of Malaysian IPOs. *Malaysian Management Journal, 6*(1&2), 35-51. Retrieved from https://e-journal.uum.edu.my/index.php/mmj/article/view/8595

77. Zhang, X.-C., Zhang, M., Huang, S. an, & Zhou, Y. (2015). Heterogeneous expectations, IPO Underpricing and issuing mechanism. *Financial Innovation, 1*(1), 1-14. https://doi.org/10.1186/s40854-015-0008-3

APPENDIX A

Table A1. Correlation estimates

Correlation	QIB_Allotment	NII_Allotment	Retail_Allotment	Issue Size	Issue Price	Grey Market Premium	Index Returns	P/E Ratio	IPO Rating	Broker Recommendations
QIB_Allotment	1.0000	0.9437	0.9974	0.3656	−0.2649	−0.0258	−0.2588	−0.0934	0.1410	−0.0296
NII_Allotment	0.9437	1.0000	0.9430	0.3213	−0.1609	−0.0553	−0.2865	−0.1387	0.2198	−0.1049
Retail_Allotment	0.9974	0.9430	1.0000	0.3814	−0.2889	0.0151	−0.2665	−0.1079	0.0970	−0.0306
Issue Size	0.3656	0.3213	0.3814	1.0000	−0.7065	0.5036	0.0144	−0.2808	−0.0311	0.053
Issue Price	−0.2649	−0.1609	−0.2889	−0.7065	1.0000	−0.7965	0.0607	0.0422	0.4756	−0.2695
Grey Market Premium	−0.0258	−0.0553	0.0151	0.5036	−0.7965	1.0000	−0.0361	−0.2463	−0.6012	0.1566
Index Returns	−0.2588	−0.2865	−0.2665	0.0144	0.0607	−0.0361	1.0000	−0.1169	−0.0926	0.394
P/E Ratio	−0.0934	−0.1387	−0.1079	−0.2808	0.0422	−0.2463	−0.1169	1.0000	0.0079	−0.1054
IPO Rating	0.1410	0.2198	0.0970	−0.0311	0.4756	−0.6012	−0.0926	0.0079	1.0000	−0.5531
Broker Recommendations	−0.0296	−0.1049	−0.0306	0.053	−0.2695	0.1566	0.394	−0.1054	−0.5531	1.0000