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An Empirical Examination of the Short-Term Pricing Performance of Indian IPOs

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Abstract

India is a developing country and over the decade the magnitude of companies going public has seen a tremendous increase. A company bringing its IPO does not only signify the growth of the company but rather highlights the general financial and economic health of the country. The purpose of this study is to compare the performance of Indian IPOs listed on the NSE from 1999 to 2019 in terms of listing day performance, very short run, and short run to the two major stock indexes (Nifty50 and BSE IPO). This paper draws statistical comparisons between the listing day performance of the IPOs and the very short run IPO performance which represents the market changes and investor behaviour. The results of the study highlight the existence of variance and mean differences between the listing day opening and closing prices however the statistical difference between the average open and close raw return on the listing day is rejected which depicts that the initial market reactions to stock listings in terms of price fluctuations remain reasonably stable throughout the day. This study would prove beneficial to the investors, stakeholders, and governments in understanding the growing Indian IPO, which would help in making sound investments and long-term success in India's changing financial ecosystem.

Keywords*: IPO, NSE, BSE, NIFTY50, BSE IPO.*

Introduction

IPO refers to the Initial Public Offerings, which is also known as going public. When a company decides to expand its capital base by issuing fresh shares it is known as Initial Public Offering (IPO). Bringing an IPO is an important event in any company's life as this

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changes the ownership of a company from private to public (Loughran & Ritter, 2004; Ritter, 2011). IPOs have always been a buzzword due to their impact on the financial market, sentiments of investors, and economic growth. The study of the lifecycle of the IPO, beginning from the listing day gain to long-term performance has caught the eye of various researchers. In developing countries like India, IPOs play an important role in the financial market and the overall economic growth. The National stock exchange (NSE) and the Bombay Stock exchange (BSE) are two of the leading stock exchanges of India and getting listed on these stock exchanges provides the company with better growth opportunities. The IPOs listed on these exchanges get global recognition and their performances are often tracked using BSE IPO index and NIFTY50 Index as these are the leading indexes that serve as a benchmark for analyzing the market performance (Chahal & Kumar, 2016; PricewaterhouseCoopers, 2020). S&P BSE IPO index is a well- known index designed to track the performance of stocks listed via initial public offerings (IPOs) for one year from the listing date of the IPO and the NIFTY 50 is an index of 50 most liquid stocks from about 25 sectors of India.

Significance and Scope of the Study

India being a developing country has enormous capital needs hence investing in profitable places would help the economy to flourish whereas locking the capital in unsuitable places would lead to huge losses. Investment of the capital in profitable IPOs would help the investors which would in turn prove beneficial for the economic growth of the country. This study would help the investors in gauging the IPO markets and in understanding the performance of the IPOs. This research would also help such investors who are unaware of the perfect time to enter the IPO market as this study highlights the performance of IPOs on the listing day, very short run and short run.

The scope of this study is very broad as it covers a period of 21 years, two decades (1999-2019) and takes into consideration all the IPOs listed on NSE during the period.

Literature Review

Several studies have been undertaken to analyze the behavior of initial public offerings (IPOs) on major stock exchanges globally. Loughran et al. (1994), Reber & Fong (2007), Kim et al. (1995), Omran (2005), Kooli & Suret (2004), and Fung et al. (2003) have studied the prevalence of the underpricing phenomena across the different IPO markets (like Singapore, Korea, Egypt and Canada, Hong Kong, Australia, Belgium, Brazil, Canada, Chile, Finland, France, Germany, Italy, Japan, Malaysia, Mexico, Netherlands, New Zealand, Portugal, Spain, Sweden, Switzerland, Taiwan, Thailand, U.K and the U.S., whereas Mishra (2010), Chaturvedula (2021), Sreedevi & Madhavi Latha (2024), Hedau (2024) and Mishra (2012) have studied the performance of the IPOs on the listing day and in the short run and documented the existence of underpricing of the IPOs in the Indian IPO market. Ritter (1991), Loughran and Ritter (1995), and Ibbotson (1975) observed the existence of underpricing of IPOs in short run and profitable initial day return pointing towards the pricing inefficiencies and high market demand. Ritter (1984) and Ljungqvist and Wilhelm (2003) explained the influence of investor sentiment and market timing on short-term IPO

performance. However, over the long term, IPOs often exhibit mixed outcomes. Jewartowski & Lizińska (2012), Cai et al. (2008), Hawaldar et al. (2018), Shukla & Shaw (2018) and Wen & Cao (2013) compared the performance of IPO during the short run and the long run period. Sehgal & Singh (2008) in their study highlighted that the under-pricing and the long run return of the IPOs have an inverse relationship and advised the investors not to hold the shares for period longer than a year however Khan et al. (2021) advised the investors to hold the underpriced IPOs for longer period to maximize the gain.

Research Gap

After reviewing several global as well as Indian studies it is found that most of the studies have documented the underpricing phenomena of the IPOs in short run whereas only a few studies have done a comparative assessment of pricing performance of IPOs across different runs. This study aims to study the IPO performance on the day of listing, during very short run and the short run. The scope of this research is fairly long (21years) as it would cover all the IPOs listed on NSE since 1999 to 2019. This study would prove to be beneficial to the investors, market regulators, and other users as this would give insights about the behavior, trends, performance of the Indian IPOs.

Objectives of the Study

a) To compare the listing day performance, very short run and short run performance of the IPOs to the NIFTY50 and BSE IPO index.
b) To compare the listing day's opening return to the listing day's closing return.
c) To compare the performance of the IPOs on the listing day with the very short run return.
d) To compare the performance of the IPOs in the very short run and the short run return.

Hypotheses

Based on the above-mentioned objectives the following hypothesizes have been formulated which has been tested in the study:

1. H_0: There is no significant difference between the Listing Day's Raw Return at Closing Price and Listing Day's Raw Return at Opening Price
2. H_0: There is no significant difference between the Listing Day's Nifty50 Return at opening price and the Listing Day's Raw Return at Opening Price
3. H_0: There is no significant difference between the Listing Day's Nifty50 return at closing price and Listing Day's Raw Return at Closing Price
4. H_0: There is no significant difference between the Very Short Run Raw Return at Closing Price and the Listing Day's Raw Return at Closing Price
5. H_0: There is no significant difference between the Very Short Run Nifty50 Return at closing price and the Very Short Run Raw Return of IPOs at Closing Price
6. H_0: There is no significant difference between the Short Run Raw Return at Closing Price and Very Short Run Raw Return of IPOs at Closing Price
7. H_0: There is no significant difference between theNifty50's Return in short run and the Raw Return on Close Price in Short run

8. H_0: There is no significant difference between the Listing Day's BSE IPO Return on Closing Price and the Listing Day's Raw Return of IPOs on Closing Price
9. H_0: There is no significant difference between the Very Short Run BSE IPO Return at Closing Price and the Very Short Run Raw Return of IPOs at Closing Price
10. H_0: There is no significant difference between the BSE IPO's short run return at Closing Price Return and the Short Run Raw Return of IPOs On Closing Price

Research Methodology

This research has covered all the IPOs that were issued in the 21 years study period i.e. 1999-2019. Since the study covers a fairly long period the results of the study could be helpful to understand the behavior and the performance of the Indian IPO market.

Data

The sample of the study covers all the IPOs listed on the National stock Exchange of the India (NSE) between the periods of 1999-2019 (21 years). This study is entirely based on the secondary data. The data for the study has been obtained from the official website of the National stock Exchange of the India. The study has been divided into two datasets: NSE NIFTY 50 and BSE IPO dataset. The NIFTY50 dataset comprises of 435 IPOs whereas, the second data set i.e. BSE IPO dataset comprises of 416 IPOs.

Further, this study has been divided into the following three time periods:

- Listing day return, which is the difference between the opening and the closing price of the IPOs
- Very short run return, which covers a period of one week from the date of listing of the IPO
- Short run, which covers a period of one month from the date of listing of the IPO

Based on the above mentioned runs raw return of the IPOs and the index return on the day of listing, in very short run and short run is calculated separately using the below mentioned formula:

Raw Return= $(p_t - p_{t-1})/p_{t-1}$
Where, p_t = price in time t (current price)
P_{t-1} = issue price/ allotment price

Further, the hypothesis stated earlier is tested using the Wilcoxon signed ranks test in order to fulfill the research hypothesis. Kha et al. (2021), Jewartowski & Lizińska (2012), Zubair et al. (2016) and Shukla & Shaw (2018) used Wilcoxon signed rank test in their research. Wilcoxon signed test is a non-parametric test which has been used to test the significance difference between various groups.

Results and Discussion

Table 1: Descriptive Statistics for NSE NIFTY 50 dataset

	N	Mean	Std. Deviation	Minimum	Maximum
Listing Day Raw Return Open Price	435	17.94726	29.852622	-78.333	298.571
Listing Day Raw Return Close Price	435	20.61155	41.303177	-87.550	283.714
Very Short Run Raw Return Close Price	435	20.46944	44.968535	-89.183	273.893
Short Run Raw Return Close Price	435	19.06431	52.967238	-88.250	351.750
Listing Day Nifty50 Open Return	435	1.92740	16.078435	-19.052	281.709
Listing Day Nifty50 Close Return	435	1.76762	16.002836	-17.715	280.044
Very Short Run Nifty50 Return	435	2.3326	17.37879	-22.77	295.30
Short Run Nifty50 Return	435	3.33625	18.788467	-45.680	301.920

Source: Self computed

Table 1 shows the descriptive statistics, like mean and standard deviation, of the different runs of 435 IPOs. Table 1 highlights how returns for individual companies (raw return on close price) and the bigger market index (Nifty50 returns) have varied over time and are distributed in different ways. The results clearly depicts that the IPOs attracted maximum gain on the day of listing followed by the very short run and the least in the short run period. In addition, the average return yielded by the NIFTY50 index is very low in comparison to the average return yielded by the IPOs. The descriptive statistics is helpful in comprehending the performance and volatility of indexes and equities over various time periods starting on the day of listing.

Table 2: Ranks for NSE NIFTY-50 dataset

		N	Mean Rank	Sum of Ranks
Listing Day Raw Return Close Price - Listing Day Raw Return Open Price	Negative Ranks	225[a]	208.09	46820.50
	Positive Ranks	209[b]	227.63	47574.50
	Ties	1[c]		
	Total	435		
Listing Day Nifty Open Return – Listing Day Raw Return Open Price	Negative Ranks	331[d]	242.67	80323.00
	Positive Ranks	104[e]	139.49	14507.00
	Ties	0[f]		
	Total	435		
Listing Day Nifty Close Return – Listing Day Raw Return Close Price	Negative Ranks	287[g]	251.89	72293.00
	Positive Ranks	148[h]	152.28	22537.00
	Ties	0[i]		
	Total	435		
Very Short Run Raw Return Close Price - Listing Day Raw Return Close	Negative Ranks	246[j]	211.07	51923.00
	Positive Ranks	184[k]	221.42	40742.00
	Ties	5[l]		

Price	Total	435		
Very Short Run Nifty Return – Very Short Run Raw Return Close Price	Negative Ranks	270[m]	252.90	68284.00
	Positive Ranks	165[n]	160.88	26546.00
	Ties	0[o]		
	Total	435		
Short Run Raw Return Close Price – Very Short Run Raw Return Close Price	Negative Ranks	249[p]	218.08	54301.50
	Positive Ranks	186[q]	217.90	40528.50
	Ties	0[r]		
	Total	435		
Short Run Nifty Return – Short Run Raw Return Close Price	Negative Ranks	255[s]	242.35	61798.00
	Positive Ranks	180[t]	183.51	33032.00
	Ties	0[u]		
	Total	435		
a. Listing day Raw Return Close Price < Listing day Raw Return Open Price				
b. Listing day Raw Return Close Price > Listing day Raw Return Open Price				
c. Listing day RAW RETURN Close Price = Listing day Raw Return Open Price				
d. Listing Day NIFTY OPEN RETURN < Listing day Raw Return Open Price				
e. Listing Day NIFTY OPEN RETURN > Listing day Raw Return Open Price				
f. Listing Day NIFTY OPEN RETURN = Listing day Raw Return Open Price				
g. Listing Day NIFTY CLOSE return < Listing day Raw Return Close Price				
h. Listing Day NIFTY CLOSE return > Listing day Raw Return Close Price				
i. Listing Day NIFTY CLOSE return = Listing day Raw Return Close Price				
j. Very short run Raw Return Close Price < Listing day Raw Return Close Price				
k. Very short run Raw Return Close Price > Listing day Raw Return Close Price				
l. Very short run Raw Return Close Price = Listing day Raw Return Close Price				
m. Very Short Run Nifty return < Very short run Raw Return Close Price				
n. Very Short Run Nifty return > Very short run Raw Return Close Price				
o. Very Short Run Nifty return = Very short run Raw Return Close Price				
p. short run Raw Return Close Price < Very short run Raw Return Close Price				
q. short run Raw Return Close Price > Very short run Raw Return Close Price				
r. short run Raw Return Close Price = Very short run Raw Return Close Price				
s. short run NIFTY return < short run Raw Return Close Price				
t. short run NIFTY return > short run Raw Return Close Price				
u. short run NIFTY return = short run Raw Return Close Price				

Source: Self computed

Table 2 summarizes the comparison between different financial metrics using ranks. It shows how one variable ranks relative to another across 435 observations. The table compares the raw return of a stock's opening and closing prices on its listing day, and how the Nifty50 index returns behave in comparison to these stock returns. The table classifies the observations into whether one variable is less than, greater than, or equal to the other, providing a comprehensive view of their relationships and relative performances.

Table 3: Test Statistics[a] for NSE NIFTY 50 dataset

	Listing Day Raw Return Close Price - Listing Day Raw Return Open Price	Listing Day Nifty Open Return - Listing Day Raw Return Open Price	Listing Day Nifty Close Return - Listing Day Raw Return Close Price	Very Short Run Raw Return Close Price - Listing Day Raw Return Close Price	Very Short Run Nifty Return - Very Short Run Raw Return Close Price	Short Run Raw Return Close Price - Very Short Run Raw Return Close Price	Nifty Short Run Return - Short Run Raw Return Close Price
Z	-.144[b]	-12.543[c]	-9.483[c]	-2.168[c]	-7.954[c]	-2.625[c]	-5.482[c]
Asymp. Sig. (2-tailed)	.885	.000	.000	.030	.000	.009	.000

Source: Self computed using SPSS

a. Wilcoxon signed ranks test
b. Based on negative ranks
c. Based on positive ranks

Table 3 shows the Z score, which explains the degree of variation/correlation between the variables for every comparison. The p value, which helps in assessing the statistical significance, is provided by Asymp sig. (2 tailed). The presence of a statistically significant difference is shown by the p value less than 0.05, which implies that the observed differences are unlikely to be the result of chance. Based on the p value and the z scores the table presents an overview of statistical tests that compare returns across different runs and statistical significance. On the day of listing there is no statistically significant difference between the raw return of the closing stock prices and their respective opening prices (Z= -0.144, p=0.885). On contrary there is a clear statistical difference between the NIFTY 50's average open price and the raw return of stock opening prices (Z=-12.543, p <0.001) as well between the NIFTY50's index's close return and the raw return of stock closing prices on listing days (Z=-9.483,p<0.001). Secondly the existence of significant difference between the raw return of the stock closing prices over very short periods compared the listing day's close price average raw return (Z=-2.168, p= 0.30), and between the NIFTY50 index's return over very short runs and stock closing prices over the same period (Z= -7.954, p<0.001) is identified. Similarly, difference was observed between the raw return of stock closing prices over short runs versus very short run raw return (Z=-2.625, p=0.009), as well as between the NIFTY50 index's return over short runs versus stock closing prices over the same period (z=-5.482, p<0.001).

Table 4: Descriptive Statistics for BSE IPO dataset

	N	Mean	S.D (σ)	Minimum	Maximum
Listing Day Raw Return Open Price	416	16.94850	27.612386	-54.706	298.571
Listing Day Raw Return Close Price	416	19.37640	38.685088	-68.716	283.714
Very Short Run Raw Return Close Price	416	19.02617	42.397801	-74.054	273.893
Short Run Raw Return On Close Price	416	17.73662	51.123735	-84.797	351.750
Listing Day Return BSE IPO Close Price	416	0.53702	8.383013	-42.126	81.790
Very Short Run Return BSE IPO Close Price	416	1.01957	11.897402	-56.186	168.335
Short Run BSE IPO Return Close Price	416	2.13048	15.352054	-51.670	164.336

Source: Self computed using SPSS

Table 4 shows the descriptive statistics, like the mean and standard deviation, of the different runs of 416 IPOs. The results of Table 4 reveal that the average raw return of the IPOs at the end of the listing day was 2.42% higher than the average raw return of the IPOs at the beginning of the listing day. It is also mentioned that there was no difference in the average raw return in the very short run or at the end of the listing day compared to the average IPO return during the three periods (i.e., the listing day, the very short run, and the short run); the return produced by the BSE IPO index is quite low.

Table 5: Ranks for BSE IPO dataset

		N	Mean Rank	Sum of Ranks
Listing Day Return BSE IPO Close Price - Listing Day Raw Return Close Price	Negative Ranks	278d	239.54	66592.00
	Positive Ranks	138e	145.97	20144.00
	Ties	0f		
	Total	416		
Very Short Run Return BSE IPO Close Price - Very Short Run Raw Return Close Price	Negative Ranks	259j	242.63	62842.00
	Positive Ranks	157k	152.19	23894.00
	Ties	0l		
	Total	416		
Short Run BSE IPO Return Close Price - Short Run Raw Return on Close Price	Negative Ranks	250p	227.82	56956.00
	Positive Ranks	166q	179.40	29780.00
	Ties	0r		
	Total	416		
d. Listing day Return BSE Close Price < Listing day Raw Return Close Price				
e. Listing day Return BSE Close Price > Listing day Raw Return Close Price				
f. Listing day Return BSE Close Price = Listing day Raw Return Close Price				
j. Very short run Return BSE IPO Close Price < Very Short Run Raw Return Close Price				
k. Very short run Return BSE IPO Close Price > Very Short Run Raw Return Close Price				

l. Very short run Return BSE IPO Close Price = Very Short Run Raw Return Close Price
p. short run BSE IPO Return Close Price < short run Raw Return on Close Price
q. short run BSE IPO Return Close Price > short run Raw Return on Close Price
r. short run BSE IPO Return Close Price = short run Raw Return on Close Price

Source: Self computed

Table 5 summarizes the variables using ranks less than, equal to, or greater than the other variables. The table compares the raw return of a stock's opening and closing prices on its listing day, and how the Nifty50 index returns behave in comparison to these stock returns. The positive ranks negative ranks and ties show how one variable behaves in comparison to the other variables which helps in understanding the relationship between the variables.

Table 6: Test Statistics[a] for BSE IPO dataset

	Listing Day Return BSE IPO Close Price - Listing Day Raw Return Close Price	Very Short Run Return BSE IPO Close Price - Very Short Run Raw Return Close Price	Short Run BSE IPO Return Close Price - Short Run Raw Return on Close Price
Z	-9.465c	-7.936c	-5.538c
Asymp. Sig. (2-tailed)	.000	.000	.000

Source: Self computed using SPSS

a. Wilcoxon Signed Ranks Test
b. Based on negative ranks
c. Based on positive ranks.

Table 6 shows the Z score, which denotes the degree of variation or correlation between the variables for each comparison. The p-value, which is utilized to assess statistical significance, is provided by the Asymp. Sig. (2-tailed). The presence of a statistically significant link or difference is shown by a decreased p-value (usually less than 0.05), which implies that the observed differences are unlikely to be the result of chance. Based on the determined Z-scores and p-values, the table presents an overview of statistical tests that compare returns across different runs and offer insights into their statistical significance. The p value helps in determining whether to accept or reject the stated hypothesis. On comparing the p values as shown above, the p value is less than 0.05 in all three cases, which implies that the null hypothesis, which states that there is no significant difference between the tested variables is rejected. This leads to the conclusion that the raw return of the IPOs in all three periods is significantly different from the return of the BSE IPO index.

Table 7: Result of Hypotheses Testing

SN	Hypothesis	Result
1.	H_0: There is no significant difference between the median of the Listing Day Raw Return Close Price and Listing Day Raw Return Open Price	Fail to Reject
2.	H_0: There is no significant difference between the median of the Listing	Reject

	Day Nifty Open Return Listing Day Raw Return Open Price	
3.	H_0: There is no significant difference between the median of the Listing Day Nifty Close Return and Listing Day Raw Return Close Price	Reject
4.	H_0: There is no significant difference between the median of the Very Short Run Raw Return Close Price and the Listing Day Raw Return Close Price	Reject
5.	H_0: There is no significant difference between the median of the Very Short Run Nifty Return and the Very Short Run Raw Return Close Price	Reject
6.	H_0: There is no significant difference between the median Short Run Raw Return Close Price and Very Short Run Raw Return Close Price	Reject
7.	H_0: There is no significant difference between the median of the Short Run Nifty Return and the Short Run Raw Return Close Price	Reject
8.	H_0: There is no significant difference between the median of the Listing Day Return BSE IPO Close Price and the Listing Day Raw Return Close Price	Reject
9.	H_0: There is no significant difference between the median of the Very Short Run Return BSE IPO at Close Price and the Very Short Run Raw Return at Close Price	Reject
10.	H_0: There is no significant difference between the median of the Short Run BSE IPO Return Close Price and the Short Run Raw Return on Close Price	Reject

Source: Author's compilation

Table 7 shows if the hypothesis is accepted or rejected based on the p value, as shown in Table 3 and 6. If the p value is greater than 0.05, the null hypotheses are accepted, and if the p value is less than 0.05, then the null hypothesis is rejected. Only one out of the 10 hypothesis is accepted and rest all are rejected. Thus, it can be concluded that the return yielded by the IPOs in all phases is significantly different from the return yielded by the NIFTY 50 and the S&P BSE IPO index.

Conclusion

The statistical results of the study reveal several key insights, considering the background of India's financial markets. To begin, the analysis of raw returns on a stock's listing day reveals the initial market sentiment toward freshly listed stocks, which reflects investor reactions to IPOs. In India, IPOs frequently create tremendous interest and volatility, and the listing day performance of the IPOs is closely observed by investors, analysts, and market players. The opening and closing average raw return on the listing day vary from 17.95% to 20.61%, and the standard deviations of 29.85% and 41.30% reflect volatility around the listing dates. However, the hypothesis stating that there is a significant difference between the average open and close raw return on the listing day is rejected ($Z = -0.144$, $p = 0.885$), which depicts that the initial market reactions to stock listings in terms of price fluctuations remain reasonably stable throughout the day.

Compared to individual stock returns, the Nifty50 index shows significant variance in both its opening and closing returns on the same day. These differences highlight the different characteristics of individual stock performances vs larger market movements recorded by the index.

The raw return of stocks in the short run and the very short run shows a statistically significant difference, which shows rapid adaption/influence of market conditions and economic news. This volatility reflects India's dynamic market environment, where regulatory changes, geopolitical developments, and macroeconomic data can immediately influence stock prices.

The BSE IPO Index reflects significant variability in market reactions during the initial listing days of IPOs. Comparisons between very short-term and short-term raw returns relative to the BSE IPO Index demonstrate statistically significant differences. It can be concluded that in every instance, the raw return generated by the initial public offerings excee ded the return generated by the NIFTY50 and the BSE IPO index.

The statistical data demonstrates the importance of market indexes and individual stock performance in India's financial environment. They offer useful information for investors looking to capitalize on market possibilities while managing the complexity of one of the world's fastest expanding economies.

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