An Empirical Study on Initial Listing Performance of IPOs in India

Archana H. N. [1]
Srilaskhmi. D [2]

Abstract

In this paper, we analyzed the initial listing performance of initial public offerings (IPOs) by computing the raw return (RR) and the market adjusted excess return (MAER). The study also identified and analyzed the factors that had an influence on the performance of IPOs. We used a sample of 239 IPOs offered during the period from 2016–2018 and examined the performance by employing factors such as offer price, issue size, and method of pricing. The analysis indicated that the offer price had a positive relationship towards the initial listing performance of IPOs ; whereas the issue size, market return, and listing delay showed a negative relationship towards the performance of IPOs. Apart from this, the study also highlighted that underpricing existed in Indian markets during the study period and the level of underpricing was high in fixed price method of issuing IPOs in comparison to book building method of issuing IPOs. It was also found that there was a significant relationship between initial listing performance of IPOs with varying offer price, varying issue size, method of pricing, and different sectors.

Keywords : **Initial public offerings, raw return, market adjusted excess return, issue size, underpricing**

JEL Classification : C12, G1, G12, G14

Paper Submission Date : July 3, 2019 ; Paper sent back for Revision : August 18, 2019 ; Paper Acceptance Date : September 1, 2019

The financial system started witnessing a metamorphic change fundamentally and structurally in the 1970s at the global level and in the 1990s at the national level (the era of LPG). Investments started crossing the boundaries ; collaboration at the international level became very common leading to various prospects and complexities, which were essential for the growth of the country in general and the economy in particular (Archana, Jayanna, & Hiremath, 2015). The financial market acts as an intermediary in transferring the financial resources between surplus spending units (SSUs) and deficit spending units (DSUs). Financial markets are classified as primary market and secondary market. The primary market is a market where a company raises money by issuing shares for the first time to the public, which is called as an IPO. The secondary market is a place where already issued shares are traded on the stock exchange. From investors' point of view, it is essential to analyze the securities (underpriced or overpriced securities) before taking the investment decisions. Underpricing refers to the situation where the closing prices of IPOs (after listing) on the first day is greater than the offer price, which is a cost for the company and is called as money left on the table.

Overpricing means the closing price of an initial public offering (after listing) on the first day is less than the

[1] *Associate Professor,* Department of Studies and Research in Business Administration, Vijayanagara Sri Krishnadevaraya University, Jnana Sagara Campus, Vinayak Nagar, Cantonment, Ballari - 583 101. Karnataka. (E-mail : archana.hn@gmail.com ; archana@vskub.ac.in)

[2] *Research Scholar,* Department of Studies and Research in Business Administration, Vijayanagara Sri Krishnadevaraya University, Jnana Sagara Campus, Vinayak Nagar, Cantonment, Ballari - 583 101. Karnataka. (E-mail : srilakshmivims@gmail.com)

DOI : 10.17010/ijrcm/2019/v6/i3/148880

offer price, which is loss from the investor's point of view. Emelie, Elin, and Andreas (2009) reported a significant 51% underpricing of IPOs after analyzing 58 listed companies in the Swedish market. Das (2013) also interpreted that 92.5% IPOs were underpriced after analyzing the 40 IPOs during 2000 - 2009 in the Indian capital market. In this context, Jain and Padmavathi (2012) pointed out that the underpricing of IPOs is a serious problem in any economy. Therefore, in this backdrop, it is essential to ascertain the dynamics of organizations in general and dynamics of market dynamics in particular to take the right decisions from both - issuer and investor point of view. This paper is a humble attempt in this direction. The paper analyzes the initial listing performance of IPOs. Apart from it, the paper also endeavours to study the influence of offer price, issue size, sectors, and method of pricing on initial listing performance of IPOs.

Review of Literature

Emelie, Elin, and Andreas (2009) investigated whether the two abnormalities (underpricing and underperformance of IPOs in the long run) existed in the Swedish market during the period from 1998 - 2007. The results showed that 51% of the IPOs were underpriced and majority of the companies showed negative returns after 1 year of performance and few companies reported that they recovered their returns by 5 years after listing of IPOs in the long run in the Swedish market.

Sahoo and Rajib (2010) evaluated the price performance of 92 IPOs on the listing day during the period from 2002 - 2006 in the Indian capital market. The study showed that of the 92 IPOs, an average of 46.55% IPOs were underpriced on the listing day compared to the market index. The short run performance of IPOs was analyzed by market adjusted abnormal returns and wealth relatives ; whereas, buy and hold abnormal returns were used to measure the long run performance of IPOs for 36 months. Further, the researchers used factors like underpricing, offer size, post issue promoter holding leverage ratio, ex - ante uncertainty, subscription rate age of the firm, and price to book value ratio to study their influence on the long run performance of IPOs.

Jain and Padmavathi (2012) researched 227 book built IPOs during the period from 2004 to 2009. They examined the factors influencing the underpricing of IPOs. The researchers documented a few theoretical arguments/hypotheses such as underwriter's monopsony power, winner's curse, signalling, costly information acquisition, reduced monitoring as the reasons for underpricing of IPOs and examined them using variables like age, return on opening, promoter's holding, pre IPO leverage, issue size, market condition, listing delay, return on opening, and subscription. The results of the empirical study indicated that underpricing was a result of high returns on opening, high subscription, low pre IPO leverage, and high index volatility. The study also indicated that IPOs of high value firms were more underpriced than IPOs of low value firms.

Mishra (2012) examined the influence of method of pricing (fixed price method or book building method) on the pricing of IPOs by analyzing 235 IPOs during the period from 1997 to 2008. The studied found that the book building method of pricing helped in reducing underpricing of IPOs in the Indian context apart from reducing the information asymmetry between issuers, investment bankers, and investors.

Das (2013) probed into the trend of pricing of IPOs during the period from 2000 - 2009. The researcher categorized and selected 40 IPOs during boom and recession period in India. The paper examined the extent of underpricing by computing first day initial returns and also long and short run performance of IPOs in mega and minor issues. The author also concluded that out of 40 IPOs, around 92.5% of the initial public offerings were underpriced. The study showed that the monthly returns were positive for mega issues (issue size was more than 100 crores) ; whereas, weekly returns were positive and monthly returns were negative in the first month for minor issues (issue size was less than 100 crores).

Ravichandran (2014) analyzed the performance of IPOs on both the listing day and after the listing day for short, medium, and long term period during 2006-2013 covering 322 IPOs in India. The work analyzed the nature and characteristics of IPOs by considering various factors like issue size, offer price, ownership pattern, sector

wise, year wise, and subscription ratio. The author examined the relationship between market returns and returns on various IPOs by calculating the market adjusted excess returns. The results showed that of the 322 IPOs, around 68% of the IPOs were underpriced and were able to post positive returns and the remaining 38% of the IPOs were overpriced.

Jindal (2015) studied 108 IPOs during the period from 1999 - 2014. The work examined the short and long run performance of IPOs using measures such as market returns, standard deviation, market adjusted excess returns, beta, Sharpe ratio, Treynor ratio, and Jensen ratio considering different sectors, issue size, subscription level, and rating grades. The study concluded that the performance of IPOs was negatively recorded in both short run and long run.

Malhotra and Nair (2015) considered 288 book built IPOs during the period from 2004 to 2010. This paper attempted to find the underpricing of IPOs by computing the excess returns after adjusting the market movements for a 7 - year period of time and also found the relationship between dependent variable (initial returns or excess returns) and independent variables (number of underwriters, price bandwidth, subscription rate, offer price, offer size, age of the company, net asset, and market volatility) by using the regression model. The results found that 22.44% IPOs were underpriced in the Indian capital market. The predominant factors such as offer size, market volatility, and subscription rate had a significant influence on IPO underpricing.

Dhall (2017) explored the relationship between fixed price IPO and factors like issue size, age of the company, revenue, return on net worth, industry profits to earnings ratio, net profits, net asset value per equity share, earnings per share, promoter's shareholdings by using multivariate regression model during the period from 2010 –2016 in Indian markets. The study found that most of the variables did not have any impact on pricing of IPOs except a few such as net asset value per share and net profit, which were positively correlated towards the offer price and the listing price ; whereas, issue size showed a negative relationship with the offer price.

Phadke and Kamat (2018) analyzed 239 underpriced IPOs during 2000 - 2014 using various factors like issue type, issue size, subscription rate, repo rate, and exchange rate (independent variables) and impact on marginally adjusted return on opening (dependent variable) by using multiple regression analysis and finally concluded that there was a negative relationship between the large cap and mid cap stocks towards the marginally adjusted return on opening and subscription rate. Repo rate was found to have a positive relationship towards the marginally adjusted return on opening. The exchange rate did not have any impact on the level of underpricing.

Research Gap

An IPO refers to the first - time offering made to the public. IPOs get listed and start to trade on the stock exchange. The price fluctuates based on demand and supply for a particular share. The closing price of an IPO on the first day varies in comparison to the offer price issued before listing. Underpriced securities are those where the closing prices (on the first day) after listing of an IPO is greater than the offer price. This is popularly known as "money left on the table" and is a cost for the company. Overpriced securities refer to those where the closing price (on the first day) after listing of an IPO is less than the offer price, which is a loss for the investors. Therefore, shares can either be underpriced or overpriced. The underpricing of a stock is a concern and a serious problem in any economy, which may vary from country to country. Underpricing may discourage firms to offer IPOs and may also create arbitrage opportunities in the stock market (Jain & Padmavathi, 2012). Similar thoughts were presented in the works of Emelie et al. (2009) and Sahoo and Rajib (2010). In this background, a humble attempt is made to study the existence of underpricing in Indian markets. Apart from this, the study also aims to measure the initial listing performance of IPOs in the Indian capital market.

Objectives of the Study

- To study the characteristics of IPOs during the period from 2016 to 2018.

- To analyze the initial listing performance of IPOs based on year, offer price, issue size, listing delay, method of pricing, and sector.
- To identify the factors that have an influence on the performance of IPOs.
- To examine the factors influencing the performance of IPOs in the Indian capital market by using correlation analysis.

Hypotheses

(1) Offer Price of an IPO : The price at which the shares are offered at first by a company in the primary market is referred to as offer price of an IPO. Malhotra and Nair (2015) showed in their study that the offer price had a significant relationship towards the pricing of IPOs. Therefore, the first hypothesis attempts to find the relationship between offer price and initial listing performance of an IPO.

- **H_{01} :** There is no significant relationship between varying offer prices and initial listing performance of IPOs.
- **H_{a1} :** There is a significant relationship between varying offer prices and initial listing performance of IPOs.

(2) Issue Size : Issue size refers to the amount of capital that is raised by a company by issuing shares in IPOs with respect to the offer price by an individual company. There are works that show a negative relationship between issue size and initial return (Malhotra & Nair, 2015 ; Pradhan & Shrestha, 2016). There are also works that show a positive relationship between issue size and initial return. In the backdrop of contradictory evidences, the second hypothesis is framed as below:

- **H_{02}:** There is no significant relationship between varying issue sizes and initial listing performance of IPOs.
- **H_{a2}:** There is a significant relationship between varying issue sizes and initial listing performance of IPOs.

(3) Method of Pricing : The pricing of IPOs happens either through fixed price method or book building method. Fixed price of an IPO refers to the price of a share which is fixed by the issuer in association with the merchant banker. Book building method of an IPO allows the investors to bid for a share in a certain price band (range) as given by issuer. To test the relationship between method of pricing and performance of an IPO, the third hypothesis is framed as below :

- **H_{03} :** There is no significant relationship between the method of pricing and the initial listing performance of initial public offerings.
- **H_{a3}:** There is a significant difference between the method of pricing and the listing performance of initial public offerings.

(4) Sector Wise : The companies are classified into different sectors based on the common activities of companies to see the different sectors contributing towards the performance of the initial public offerings. Therefore, the fourth hypothesis is stated below :

- **H_{04} :** There is no significant relationship between different sectors and initial listing performance of initial public offerings.
- **H_{a4} :** There is a significant relationship between different sectors and initial listing performance of initial public offerings.

Research Methodology

(1) Tools Used for the Study :

(i) Data Sources : Secondary data sources such as publications, journals, theses, magazines, textbooks, and website of Bombay Stock Exchange are used for the study.

(ii) Scope and Period of Study : A sample of 239 IPOs is considered during the period from January 1, 2016 to December 31, 2018. The data pertaining to the closing prices of stocks, industries, offer price, issue size, listing date, and the market index closing prices were collected from the Bombay Stock Exchange website.

(iii) Sample Size : 239 IPOs are considered for the study.

(iv) Statistical Tools Used : Market adjusted excess return, mean, standard deviation, and correlation analysis are used for the study.

(2) Methodology

(i) Mean : Mean is also known as arithmetic average and is the most commonly used tool to measure the central tendency. It is calculated by the sum of all the given numbers divided by the number of observations.

$$\bar{x} = \Sigma x_i) / n$$

where,

$\bar{x}$ = Mean,
x_i = The values of the independent variable,
n = Number of observations.

(ii) Standard Deviation : Standard deviation was introduced by Karl Pearson in 1893 and is widely used as a tool to measure the dispersion of a set of data from its mean. It measures the absolute variability of a distribution. The formula to calculate the standard deviation is given by :

$$\sigma = \sqrt{\frac{\Sigma (x - \bar{x})^2}{n}}$$

where,

σ = Standard deviation,
$\bar{x}$ = Mean,
x = the values of the independent variable.

(iii) Calculation of Raw Return : Raw return or initial return of each of the IPOs is calculated by taking the difference between the closing price on the first day of listing and the closing price on the offer day. Further, the numerator is divided by the closing price on the offer day.

$$RR = (P_1 / P_0) - 1 \quad \ldots\ldots(1)$$

where,

RR = Raw return or initial return,

P_1 = Closing price on the first day of trading,

P_0 = Offer price.

(iv) Calculation of Market Return : Market return is also known as the index return. Since BSE Sensex is considered for the study, the market index return is calculated by taking the difference between the closing value on the first day of market return and the closing value of the market index on the offer day divided by closing value of the market index on the offer day.

$$MR = (Rm_1/Rm_0) - 1 \quad \ldots\ldots (2)$$

where,

MR = Market return or index return,

Rm_1 = Closing value on the first day of market return (Sensex),

Rm_0 = Closing value of the market index on the offer day.

(v) Calculation of Market Adjusted Excess Return : Market adjusted excess return refers to the difference between the raw return and the market or index return.

Market Adjusted Excess Return = Equ(1) – Equ(2)

Market Adjusted Excess Return = Raw return – Market return

(vi) Correlation Analysis : Correlation measures the relationship between two variables. The coefficient values can range between –1 to +1.

$$r_{xy} = \frac{\Sigma(x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\Sigma(x_i - \bar{x})^2 \, \Sigma(y_i - \bar{y})^2}}$$

where,

r_{xy} = The correlation coefficient of variables x and y,

x_i = The values of the independent variable,

$\bar{x}$ = The mean of the values of the independent variable,

y_i = The values of the dependent variable,

$\bar{y}$ = The mean of the values of the dependent variable.

Data Analysis and Results

(1) Characteristics of IPOs During the Period from 2016 – 2018 : IPOs are analyzed by classifying them based on year, offer price, issue size, method of pricing, and sectors they belong to.

Table 1 shows the number of IPOs issued and amount mobilized during the period from 2016 - 2018. The table clearly indicates that the amount mobilized through IPOs has increased year on year. It is worthy to note that though the same numbers of IPOs were issued during the period from 2017 - 2018, but the amount mobilized in 2018 was far higher than the amount mobilized in 2017.

It is clearly evident from Table 2 that though a large chunk of IPOs (148) were offered in the price range of ₹ 0 - ₹ 100, only 4,261.3 crores, that is, 1% of the total amount was raised. On the other hand, 60 IPOs (25%) were offered in the price range of ₹ 100 - ₹ 500 and the amount raised was ₹ 50,791.45 crores (17% of the total amount) ; whereas, only 26 IPOs (11%) were offered in the price range of ₹ 500 - ₹1000 and ₹ 230,644.29 crores (78%) was raised, which is the highest figure as compared to the other price ranges. Further, only 5 IPOs were issued in the price range of ₹ 1000 and above and only ₹ 9,482.21 crores (3%) was mobilized. Therefore, it can be deduced that the prices of IPOs in the range of ₹ 500 - ₹ 1000 resulted in greater amount of mobilization.

Table 3 show the classification of IPOs based on the size of the issue (amount raised by the issuer in initial public offering). Majority (186) of the IPOs had an issue size of ₹ 0 - ₹ 500 crores compared to the other issue sizes, while a minimum (4%) amount was raised (₹ 12,372.54) for this issue size compared to other issue sizes. Further, 21 IPOs (9%), 20 IPOs, (8%), and 12 IPOs (5%) were offered in the issue sizes of ₹ 500 - ₹ 1000 crores, ₹1000 - ₹ 2000, and above ₹ 2000 crores, respectively. From the table, it is observed that a huge amount (₹ 197,564.44 crores (67%)) was raised in the issue size of ₹ 1000 - ₹ 2000 compared to the other issue sizes.

It can be inferred from Table 4 that of the 239 IPOs, only 94 (39%) IPOs were issued under book building method of pricing and the remaining 145 (61%) IPOs were issued under fixed price method. It is also evident from

Table 1. Year Wise Classification of IPOs Issued and the Amount Mobilized

Year	No. of IPOs Issued	(%)	Amount (Cr)	(%)
2016	68	28	26,861.89	9
2017	86	36	63,912.54	22
2018	85	36	204,404.89	69
Total	**239**	**100**	**295,179.32**	**100**

Table 2. Offer Price Wise Classification of IPOs and the Amount Mobilized

Offer Price (₹)	No. of IPOs	(%)	Amount (Cr)	(%)
0 - 100	148	62%	4,261.3	1%
100 - 500	60	25%	50,791.45	17%
500 - 1000	26	11%	230,644.29	78%
Above 1000	5	2%	9,482.21	3%
Total	**239**	**100%**	**295,179.25**	**100%**

Table 3. Classification of IPOs Based on Issue Size

Issue Size(Cr)	No. of IPOs	%	Amount (Cr)	%
0-500	186	78%	12,372.54	4%
500-1000	21	9%	15,003.86	5%
1000-2000	20	8%	197,564.44	67%
Above 2000	12	5%	70,238.33	24%
Total	**239**	**100%**	**295,179.17**	**100%**

Table 4. Classification of IPOs Based on Method of Pricing

Method of	Year					Amount (Cr)				
Pricing	2016	2017	2018	Total	(%)	2016	2017	2018	Total	(%)
Book Building	28	36	30	94	39	26,525.7	63,426.57	203,628	293,580.3	99
Fixed Price	40	50	55	145	61	336.19	485.97	776.89	1,599.05	1
Total	68	86	85	239	100	26,861.89	63,912.54	204,404.9	295,179.3	100

Table 5. Classification of IPOs Based on Sectors

Sl.No	Sector	No. of IPOs	%	Amount (Cr)	%
1	Agricultural Products	3	1.26%	1,576.08	0.53%
2	Automotive	8	3.35%	4,478.03	1.52%
3	Chemicals	7	2.93%	1,589.31	0.54%
4	Comm. Trading & Distribution	22	9.21%	133.43	0.05%
5	Construction & Engineering	14	5.86%	1,754.27	0.59%
6	Consumer Goods	15	6.28%	3,598.98	1.22%
7	Defence	3	1.26%	5,261.00	1.78%
8	Education	6	2.51%	1,030.29	0.35%
9	Energy	5	2.09%	2,138.99	0.72%
10	Finance	24	10.04%	2,47,933	83.99%
11	FMCG	11	4.60%	2,585.4	0.88%
12	Healthcare	9	3.77%	2,680.82	0.91%
13	Industrial Machinery	7	2.93%	89.42	0.03%
14	IT	16	6.69%	4,458.35	1.51%
15	Manufacturing	15	6.28%	1,122.97	0.38%
16	Media & Entertainment	5	2.09%	521.55	0.18%
17	Other Appareals & Accessories	15	6.28%	402.04	0.14%
18	Other Elect. Equipment/Production	7	2.93%	406.68	0.14%
19	Pharamaceuticals	10	4.18%	3,171.92	1.07%
20	Realty	8	3.35%	586.32	0.20%
21	Retailing	4	1.67%	1,905.87	0.65%
22	Telecom	4	1.67%	1,284.97	0.44%
23	Textile	9	3.77%	1,202.28	0.41%
24	Travel & Tourism	12	5.02%	5,267.53	1.78%
	TOTAL	**239**	100.00%	**295,179.32**	100.00%

the table that a large amount, ₹ 293,580.3 cr (99%), was raised through the book building method as compared to the fixed price method of pricing (₹1,599.05 cr only (1%) of the total amount was raised).

According to Table 5, the highest amount was mobilized (₹ 247,933 cr ; 83.99%) in the finance sector followed by travel & tourism (₹ 5,267.53 cr ; 1.78%) and automotive sector (₹ 4,478.03; 1.52%) .

(2) Initial Listing Performance of IPOs Based on Characteristics : The overall listing performance of IPOs is measured at the aggregate level, and at the disaggregate level, the listing performance is measured based on year,

offer price, issue price, method of pricing, and sector. It is done by comparing the raw return (RR) with the market adjusted excess return (MAER).

Table 6 shows the overall listing performance of 239 IPOs during the period from 2016 – 2018. It is clearly visible from the table that 71% of the IPOs showed positive return, which indicates the underpricing of IPOs (the closing prices of IPOs on the listing day were greater than the offer prices) and 26.36% of the IPOs showed negative return or were overpriced and the remaining 3% of the IPOs showed zero return, which indicates that the closing prices of IPOs on the listing day were equal to the offer prices. The mean raw return of 239 IPOs is 9.51% and it is significant at 1%.

According to Table 7, the mean raw return in the years 2016 and 2017 is 7.67% and 16%, respectively and performs better against the mean market adjusted excess return values of 7.51% and 15.24%, respectively. The values are also significant at the 1% level. On the contrary, the year 2018 shows the RR to be slightly less than the MAER. The standard deviation records higher values of 37.01% and 36.98% in 2017. The positive return (underpricing) in raw return is high (77.94%) in 2016 followed by 73.26% in 2017 compared to high positive return in MAER : 67.65% and 65.88% in the years 2016 and 2018. The negative return (overpricing) in raw return is less compared to the MAER values. Therefore, it can be deduced that most of investors benefited in the year 2016 as compared to 2017 and 2018.

It is evident from Table 8 that the varying offer price results in varying raw return and market adjusted excess return. The RR of initial listing performance of IPOs is better against the market adjusted excess return in the range of offer prices ₹ 0 - ₹ 100 and ₹ 100 - ₹ 500 and significant at the 1% level. The maximum return is 181.67% in the range of offer price ₹ 0 - ₹ 100 compared to other offer price ranges. It is also seen from the table that the performance of IPOs differs with the varying offer prices. Therefore, the alternate hypothesis (H_{a1}) stands accepted.

Table 6. Overall Listing Performance of IPOs

	Mean	*SD*	Min	Max	PR	NR	ZR
RR	9.51%*	25.75%	-28.75%	181.67%	70.71%	26.36%	2.93%
MAER	9.40%*	25.54%	-26.20%	180.68%	64.85%	34.73%	0.42%

Note. (i) *SD,* PR, NR, ZR indicates standard deviation, positive return, negative return, and zero return, respectively.

(ii)* indicates significant @ 1%.

Table 7. Year Wise Listing Performance of IPOs

			Raw Return				
Year	**Mean**	***SD***	**Min**	**MAX**	**PR**	**NR**	**ZR**
2016	7.67%*	14.69%	-21.58%	58.68%	77.94%	20.59%	1.47%
2017	16.00%*	37.01%	-19.00%	181.67%	73.26%	23.26%	3.49%
2018	4.41%**	15.77%	-28.75%	65.13%	62.35%	34.12%	3.53%
			MAER				
Year	**Mean**	***SD***	**Min**	**MAX**	**PR**	**NR**	**ZR**
2016	7.51%*	14.73%	-23.13%	58.18%	67.65%	32.35%	0%
2017	15.24%*	36.98%	-20.93%	180.68%	61.63%	37.21%	1.16%
2018	5.02%*	15.29%	-26.20%	62.59%	65.88%	34.12%	0%

Note. * and ** indicates 1% and 5% levels of significance, respectively.

Table 8. Offer Price Wise Listing Performance of IPOs

RAW RETURN							
Offer Price (₹)	**Mean**	***SD***	**Min**	**MAX**	**PR**	**NR**	**ZR**
0 - 100	7.93%*	25.44%	-28.75%	181.67%	72.97%	22.97%	4.05%
100 - 500	14.13%*	28.37%	-21.58%	139.95%	71.67%	26.67%	1.67%
500 - 1000	4.53%	16.00%	-16.75%	44.03%	57.69%	42.31%	0%
Above 1000	26.62%	35.54%	-9.00%	65.01%	60.00%	40.00%	0%
MAER							
Offer Price (₹)	**Mean**	***SD***	**Min**	**MAX**	**PR**	**NR**	**ZR**
0-100	7.72%*	25.39%	-26.20%	180.68%	65.54%	33.78%	0.68%
100-500	13.97%*	27.87%	-23.13%	139.48%	68.33%	31.67%	0%
500-1000	5.22%	15.97%	-18.31%	42.56%	53.85%	46.15%	0%
Above 1000	26.13%	34.42%	-8.92%	62.59%	60.00%	40.00%	0%

Note. * and ** indicates 1% and 5% levels of significance, respectively.

From the reference of Table 9, it is seen that the mean RR has performed better and is significant against the MAER. It is also noticed from the table that the return is high 18.96% and is significant in the range of issue size ₹ 1000 - ₹ 2000 crore and the corresponding standard deviation stands at 27.65% against the standard deviation of MAER (26.81%). It is clear that the maximum return is slightly high in the range of issue size between ₹ 0 - ₹ 500 crore followed by the price range of ₹ 1000 - ₹ 2000 crore against the maximum return in MAER. The positive return is high in case the issue size is in the range of ₹ 0 - ₹ 500 crore and positive return is 58% in the range of issue size above ₹ 2000 cr, which indicates that higher the issue size, lower is the positive return. In other words, underpricing of IPOs decreases with increase in issue size. Hence, we conclude that the alternate hypothesis (H_{a2}) is accepted.

According to Table 10, the mean RR (raw return) and MAER (market adjusted excess return) of BB and FP are significant at the 1% level. The values of standard deviation are found to be similar for both RR and MAER. The total amount raised by 239 IPOs is ₹ 295,179.32 crores, of which 99% of the amount is raised through the book building method ; whereas, only 1% of the amount is mobilized through the fixed pricing method. It is important

Table 9. Listing Performance of IPOs Based on Issue Size

RAW RETURN							
Issue Size (Cr)	**Mean**	***SD***	**Min**	**MAX**	**PR**	**NR**	**ZR**
0 - 500	8.75%*	26.27%	-28.75%	181.67%	72.58%	24.19%	3.23%
500 - 1000	7.67%	20.03%	-21.58%	63.81%	61.90%	33.33%	4.76%
1000 - 2000	18.96%*	27.65%	-8.13%	114.30%	70%	30%	0%
Above 2000	8.74%	22.72%	-14.41%	65.01%	58%	42%	0%
MAER							
Issue Size (Cr)	**Mean**	***SD***	**Min**	**MAX**	**PR**	**NR**	**ZR**
0 - 500	8.59%*	26.18%	-26.20%	180.68%	64.52%	34.95%	0.54%
500 - 1000	7.89%	19.51%	-23.13%	61.48%	57.14%	42.86%	0%
1000 - 2000	18.90%*	26.81%	-10.86%	112.43%	80%	20%	0%
Above 2000	8.84%	21.60%	-14.27%	62.59%	58%	42%	0%

Note. * and ** indicates 1% and 5% levels of significance, respectively.

to notice that the underpricing is high in the fixed price method as compared to the book building method (positive return of 73.10% is greater than the positive return of 67.02%). Hence, the alternate hypothesis (H_{a3}) is accepted.

From the Table 11, it can be noticed that the initial listing performance of RR of IPOs in the sectors - chemicals, consumer goods, finance, FMCG, manufacturing are significant at the 5% level and travel & tourism is significant at the 1% level. However, in case of MAER, the same sectors have shown significant return except in the chemicals industry. The standard deviation is very high in the agricultural products sector (87.29%) followed by retail sector. The positive return is maximum (100%) both in agricultural & telecom sectors followed by FMCG (90.91%), manufacturing (86.67%), and travel & tourism (91.67%). Hence, we deduce that the alternate hypothesis (H_{a4}) is accepted.

Table 10. Method of Pricing (MOP) Wise Listing Performance of IPOs

RAW RETURN							
MOP	**Mean**	***SD***	**Min**	**MAX**	**PR**	**NR**	**ZR**
BB	12.77%*	25.69%	-21.58%	139.40%	67.02%	30.85%	2.13%
FP	7.39%*	25.66%	-28.75%	181.67%	73.10%	23.45%	3.45%
MAER							
MOP	**Mean**	***SD***	**Min**	**MAX**	**PR**	**NR**	**ZR**
BB	12.96%*	25.09%	-23.13%	138.57%	69.15%	30.85%	0%
FP	7.10%*	25.64%	-26.20%	180.68%	64.14%	35.17%	1%

Note. * indicates 1% level of significance.

Table 11. Sector Wise Listing Performance of IPOs

Raw Return								
Sl.No	**Sector**	**Mean**	***SD***	**Min**	**Max**	**PR**	**NR**	**ZR**
1	Agricultural Products	80.88%	87.29%	29.47%	181.67%	100%	0%	0%
2	Automotive	8.39%	15.71%	-10.93%	37.22%	62.50%	37.50%	0%
3	Chemicals	7.24%**	7.43%	0.38%	20.00%	100%	0%	0%
4	Comm. Trading & Distribution	7.20%	31.52%	-20.00%	126.67%	63.64%	31.82%	4.55%
5	Construction & Engineering	12.39%	38.14%	-20.00%	139.95%	78.57%	21.43%	0%
6	Consumer Goods	23.07%**	38.31%	-8.20%	139.40%	73.33%	26.67%	0%
7	Defence	15.80%	42.72%	-9.00%	65.13%	33.33%	66.67%	0%
8	Education	-0.38%	11.94%	-16.75%	20.00%	50%	50%	0%
9	Energy	3.25%	11.53%	-4.88%	23.49%	40%	60%	0%
10	Finance	17.08%**	30.88%	-14.41%	127.07%	75%	25%	0%
11	FMCG	7.36%**	9.31%	-5.00%	25.62%	90.91%	9.09%	0%
12	Healthcare	5.86%	17.69%	-21.58%	38.59%	55.56%	44.44%	0%
13	Industrial Machinery	6.93%	8.99%	-1.67%	21.25%	71.43%	14.29%	14.29%
14	IT	3.39%	18.05%	-20.73%	58.68%	56.25%	37.50%	6.25%
15	Manufacturing	7.99%**	11.04%	-0.92%	37.57%	86.67%	6.67%	6.67%
16	Media & Entertainment	2.23%	6.13%	-3.00%	12.06%	60%	40%	0%
17	Other Appareals & Accessories	0.57%	10.50%	-28.75%	19.50%	73.33%	26.67%	0%
18	Other Elect. Equipment/Production	8.41%	11.27%	-6.41%	20%	71.43%	14.29%	14.29%
19	Pharamaceuticals	2.30%	8.29%	-8.33%	20%	50%	50%	0%

20	Realty	0.84%	16.28%	-20.67%	36.96%	62.50%	37.50%	0%
21	Retail	31.09%	55.67%	0.00%	114.30%	75%	0%	25%
22	Telecom	9.07%	9.01%	0.97%	20%	100%	0%	0%
23	Textile	0.41%	10.31%	-20%	12.67%	55.56%	44.44%	0%
24	Travel & Tourism	11.18%*	9.37%	0.03%	27.86%	91.67%	0%	8.33%

MAER

Sl.No	Sector	Mean	*SD*	Min	Max	PR	NR	ZR
1	Agricultural Products	79.45%	87.69%	26.89%	180.68%	100%	0%	0%
2	Automotive	9.71%	14.43%	-5.05%	37.50%	62.50%	37.50%	0%
3	Chemicals	7.27%	9.04%	-2.19%	20.37%	85.71%	14.29%	0%
4	Comm. Trading & Distribution	6.89%	31.52%	-20.93%	126.69%	50.00%	50.00%	0%
5	Construction & Engineering	20.29%	37.72%	-16.41%	139.48%	71.43%	28.57%	0%
6	Consumer Goods	23.49%**	37.48%	-5.86%	138.57%	80.00%	20.00%	0%
7	Defence	15.75%	39.78%	-8.92%	61.64%	33.33%	66.67%	0%
8	Education	-0.49%	11.76%	-18.31%	18.13%	50.00%	50.00%	0%
9	Energy	3.49%	11.60%	-6.82%	22.96%	60.00%	40.00%	0%
10	Finance	17.04%**	30.09%	-14.27%	127.10%	70.83%	29.17%	0%
11	FMCG	7.27%**	9.58%	-5.25%	25.64%	72.73%	27.27%	0%
12	Healthcare	5.12%	18.12%	-23.13%	38.27%	55.56%	44.44%	0%
13	Industrial Machinery	6.38%	9.51%	-2.77%	20.23%	57.14%	42.86%	0%
14	IT	2.76%	18.03%	-20.27%	58.18%	50%	50%	0%
15	Manufacturing	7.24%**	10.60%	-2.33%	35.69%	80%	20%	0%
16	Media & Entertainment	1.15%	5.42%	-5.12%	9.47%	60%	40%	0%
17	Other Appareals & Accessories	0.50%	9.58%	-26.20%	17.56%	60%	40%	0%
18	Other Elect. Equipment/Production	6.57%	11.15%	-6.55%	18.73%	57.14%	42.86%	0%
19	Pharamaceuticals	1.84%	9.61%	-10.99%	21.94%	50%	50%	0%
20	Realty	0.25%	17.39%	-21.03%	38.96%	37.50%	62.50%	0%
21	Retailing	31.68%	54.12%	0.01%	112.43%	75%	0%	25%
22	Telecom	10.83%	10.55%	0.74%	21.00%	100%	0%	0%
23	Textile	1.15%	10.35%	-16.92%	12.41%	66.67%	33.33%	0%
24	Travel & Tourism	11.20%*	10.07%	-1.12%	25.37%	83.33%	16.67%	0%

Note. * and ** indicates 1% and 5% levels of significance, respectively.

Table 12. Correlation Among the Variables

	MAER	Offer Price	Issue Size (Cr)	MR	Listing Delay (Days)
MAER	1				
Offer Price	0.077388141	1			
Issue Size (Cr)	-0.025923162	0.188145973	1		
MR	-0.012132093	0.17646948	0.983676053	1	
Listing Delay(Days)	-0.051898195	0.03234395	0.071030419	0.082697924	1

(3) Correlation Analysis : Table 12 portrays the summary of correlation analysis. It is clear from the table that only

offer price shows a positive relationship towards MAER. This implies that greater the offer price, higher is the level of underpricing and the remaining variables namely, issue size, market return, and the listing delay show a negative relationship with the MAER performance.

Conclusion

The study classifies the IPOs based on the characteristics like year, offer price, issue size, method of pricing, and sector wise. Apart from it, the number of IPOs and amount mobilized in each of these factors are grouped separately. The initial listing performance of IPOs is analyzed by calculating the MAER. The important finding of the study is that the underpricing is high in fixed price method as compared to the book building method during the study period. The positive return is maximum in agriculture products followed by FMCG and travel & tourism sectors. The results also indicate that the offer price has a positive relationship towards the initial listing performance of IPOs and the issue size, market return, and the listing delay have a negative relationship towards the performance of initial public offerings. It is also found that the initial listing performance of IPOs differs with varying offer price, varying issue size, method of pricing, and different sectors.

Research Implications, Limitations of the Study, and Directions for Further Research

The main objective of this research paper is to analyze the initial listing performance of IPOs and to examine the impact of factors such as offer price, issue size, market condition, and listing delay on the performance of initial public offerings. We find that a significant 71% of the IPOs were underpriced and 26% of the IPOs were overpriced in the study period. It is also observed that the amount mobilized by book built IPOs is far greater in comparison to the amount mobilized by the fixed price IPOs. In addition to this, we also note that the quantum of underpricing is predominantly seen in the book building method of pricing. This study also reveals that the issue size, market condition, and listing delay show a negative relationship towards the pricing of IPOs except offer price.

The initial listing performance of IPOs can be assessed using various factors. This study employs factors such as offer price, issue size, method of pricing, and listing day's influence on pricing of initial public offerings for a period of 3 years. The study can further be extended to incorporate other company specific factors namely subscription ratio, underwriter reputation, grading of initial public offerings, firm size, age of the company, earnings per share, and return on investment.

Further studies can also include macroeconomic factors such as repo rate and exchange rate. In addition to this, the relationship between the variables can also be assessed by descriptive analysis and multiple regression analysis. Researchers can also incorporate other methods such as wealth relatives, buy and hold, abnormal returns, Sharpe ratio, and Treynor ratio to measure the performance of initial public offerings.

References

Archana, H. N., Jayanna, S., & Hiremath, V. (2015). Impact of bond rating changes on stock prices in India: Rating agency wise analysis. *Indian Journal of Research in Capital Markets, 2*(4), 20 – 32.

Das, S. (2013). *Analyzing the trend of market prices of IPOs: A study based on some selected Indian companies* (Published thesis). The University of Burdwan, Golapbag, Burdwan.

Dhall, H. S. (2017). Pricing determinants of selected fixed price IPOs issued in India. *IOSR Journal of Business and Management (IOSR - JBM), 19*(7), 113 – 121.

Emelie, A., Elin, B., & Andreas, F. (2009). *Initial public offerings - An investigation of IPO's on the Swedish market*. Jonkoping International Business School, Jonkoping University. Retrieved from http://hj.diva-portal.org/smash/get/diva2:289945/FULLTEXT01.pdf

Jain, N., & Padmavathi, C. (2012). *Underpricing of initial public offerings in Indian capital market.* Retrieved from https://ssrn.com/abstract=2252111

Jindal, M. (2015). *Investors rationality and IPO pricing: An empirical investigation* (Published Thesis). University School of Management, Kurukshetra University, Kurukshetra.

Malhotra, M., & Nair, M. (2015). *Initial public offerings' underpricing: A study on the short run price performance of book built IPOs in India.* Retrieved from https://ssrn.com/abstract=2572348

Mishra, A. K. (2012). Underpricing of initial public offerings in India. *Investment Management and Financial Innovations, 9*(2), 182 – 192.

Phadke, K. M., & Kamat, M. S. (2018). Impacts of macroeconomic and IPO factors on underpricing on Initial public offerings on NSE in India. *International Journal of Management Studies, 5*(1(4)), 46 – 52.

Pradhan, R. S., & Shrestha, K. (2016). *Performance of the initial public offering (IPO) in the Nepalese Stock Market.* DOI : http://dx.doi.org/10.2139/ssrn.2793490

Ravichandran, V. (2014). *Listing day and after market performance of IPOs in India* (Published Thesis). PG and Research Department of Commerce, Chennai.

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

About the Authors

Dr. Archana H. N. is an Associate Professor in the Department of Studies and Research in Business Administration, VSK University, Ballari, Karnataka, India. She is a Gold medallist both at UG and PG levels and has 12 years of experience. Her area of thrust is capital markets and market efficiency. She has presented research papers in various national and international conferences and has also published research papers in various journals of repute.

Srilakshmi. D is a Research Scholar in the Department of Studies and Research in Business Administration, VSK University, Ballari, Karnataka, India. She has 7 years of teaching experience. She is currently pursuing research in the area of capital markets. Her specialization and interested areas in finance include security analysis and portfolio management, Indian financial system, and financial services. She has presented papers in various national conferences and published six research papers.