Short Run Underpricing of Initial Public Offerings (IPOs) in the National Stock Exchange (NSE)

Amit Kumar Singh*
Shivani Kalra**

ABSTRACT

In order to gauge the phenomenon of underpricing and behaviour of returns generated by Indian IPOs with respect to underlying factors, a complete analysis of the short run performance of IPOs listed on National Stock Exchange (NSE) has been done by taking 210 sample stocks from 2009-2017 for which Market Adjusted Average Returns have been calculated for first, fifth, tenth, fifteenth and twentieth trading days respectively. After an analysis of the Short Run Performance of the stocks using Market Adjusted Average Returns (MAAR) technique, t-statistics, Wealth Relative statistics, etc, it is analysed whether size of the offering as measured by the price at which it is offered has any correlation or effect on the short run performance of the IPO. Further the relationship between the short run performance of an IPO and its volume (measured by market capitalisation value) has been studied by dividing the entire data into categories above and below median volume. The results show maximum returns on the 10th trading day and a positive correlation between underpricing and size of the IPOs. Overall, the high volume stocks give a consistent return of 11% and maximum returns when the stock is held till the fifteenth day of trading. The study provides useful insights to both investors for their investment and divestment planning as well as to issuer companies with respect to timing of IPO issue.

Keywords: IPOs, Underpricing, Short-Run Performance, Market Capitalization, MAAR

JEL Classification: G0, G12, C12, C13

* Associate Professor, Department of Commerce, Delhi School of Economics, University of Delhi, Email: amitipo10@gmail.com

** Research Scholar, Department of Commerce, Delhi School of Economics, University of Delhi, Email: shivanikalra94@gmail.com (Corresponding Author)

1. INTRODUCTION

An efficient market is defined as the one in which an investor cannot possibly earn abnormal returns with the publicly available information. But the evidence on deviations of the returns and volatility of stock prices of new issues reflect clear inconsistency with the fundamentals of efficient market hypothesis and makes it questionable. And hence studying the underpricing anomaly becomes an interesting investigation for researchers.

The term 'underpricing' itself suggests that the IPO has been priced below its intrinsic worth and this can be calculated by taking the difference between the price at which the issue was offered and the price on the first trading day. If the price of first trade comes out to be more than the price offered, the IPO is said to be underpriced. This analysis can be further extended to determine the short run performance of the IPO by taking the difference between offer price and the price on different trading days such as 1^{st} day, 5^{th} day 10^{th} day 15^{th} day, etc. or even over a few months.

This study examines the performance of IPO stocks in the short run considering the market adjustments and helps evaluate underpricing of such stocks over a few initial trading days. This is done to prevent the conclusions about initial underpricing of the stocks (calculated on the basis of listing day returns) from getting hampered due to variation caused by external factors. Thus, the analysis provides a strengthened basis for the cause and behaviour of underpricing in the IPO stocks by taking returns over a few trading days and not just initial trading day. Also, the study tests the impact of important issue characteristics on the short run performance of stocks, providing useful insights to investors.

1.1 Theoretical framework

The financial economists have identified three prevalent anomalies in the IPO market which are as follows:

A) UNDERPRICING

As illustrated above, it is a universal phenomenon observed across the globe wherein due to first trade price being higher than the offer price; positive excess returns are achieved, thus contravening the basic rudiments of efficient market hypothesis. Various degrees of underpricing have been

observed across different countries (Loughran, Ritter and Rydqvist (1994).

B) HOT ISSUE PHENOMENON

According to **Ibbotson and Jaffe (1975)**, the New Issues Market can be categorized as Hot Markets and Cold Markets and thus even IPOs pass through these cycles. 'Hot issue market' is a phenomenon in which there is severe underpricing along with enormous issue activity i.e. large number of offerings. On the other hand, 'cold issue market' phenomenon is characterized by less number of offerings as well as low underpricing level.

C) LONG RUN UNDERPERFORMANCE

As per **Ritter (1991)**, the long run underperformance of IPOs has been a prevalent anomaly arising out of market timing hypothesis wherein managers try to take advantage of favourable market conditions and select such timing for issue in which their stock is overvalued by the market in the early stage. This may also be the result of overreaction effect in which investors overvalue the stock in the early stage and when the stock reaches its equilibrium value in the long run, it reflects long run underperformance and hence its negative relationship with initial after market returns.

1.2 Possible reasons behind underpricing

An efficient primary market can be extremely beneficial to both growing firms as well as large corporations for it helps in stimulating growth potential as well as ensures low cost capital for expansion purposes. However, the phenomenon of short run underpricing of IPO market does not go hand in hand with the fundamentals of an efficient market. Hence, it is interesting to investigate further this widely researched area of underpricing of IPOs and discuss the possible reasons behind.

- **Rock (1986)** developed the *Winners' curse hypothesis* to provide for a strong evidence for short run underpricing of IPOs, wherein he categorized the investors as informed and uninformed. Out of these two categories, the uninformed investors do not have much idea about desirable or undesirable issues and hence they are unbiased towards them while applying for the IPO. However, if they receive complete allotment of the issue they applied for, it reflects that it is not a desirable issue or is the least demanded for, especially by informed investors.

Hence they suffer winners' curse due to their 'lack of information' handicap. In order to prevent them from exiting the market, the IPOs are priced lower so that the uninformed investors, especially the individual investors (who are in majority while investing in India) are compensated and they do not leave.

- Another reason behind short run underpricing could be the tactic of issuers to persuade the first few investors to invest in the issue so that others get motivated to follow them who otherwise would have been reluctant at the start. This process is also termed as *informational cascading* (Welch, 1992). The evidence of using this tactic by Indian issuers is clear in the advertisements which they come up with, highlighting the agreement of institutional investors to subscribe to the issue.
- Sometimes, the regulatory conditions require the firms coming up with an initial public offer to set the price as per past performance, past earnings, book value or value of ratios. Thus firms with lower past performance or those without any past performance such as those who are new (green field corporations) have to set the price of their stock low according to regulatory requirements and hence are found to be more underpriced. This regulatory factor serves as another reason behind large scale underpricing.
- In India, there is *absence of a proper mechanism to gather information* regarding demand of a particular IPO. Investment bankers, while setting the price, do not consult investors or regular institutional clients, rather only discuss with finance managers and since they do not wish to take the risk of being undersubscribed, they usually set the price lower.
- Another factor influencing the issuers to set the price of issue lower could be the motive of achieving *political connections*. This can be achieved through biased allocation and allotment of shares to politicians and their deliberate underpricing. At times, government owned companies earn a lot of votes by coming out with substantially underpriced IPOs.
- Whenever a firm which came out with an IPO decides to come up with a further issue after a few years, it is referred to as seasoned offering. Since

the first issue was well underpriced giving positive abnormal returns to investors, coming out with an FPO facilitates *better prices* because as per **Allen and Faulhaber (1989)**, underpriced new issues "leave a good taste in investors' mouths".

The above list of probable reasons behind underpricing is not exhaustive as many other factors can contribute towards it. Underpricing can also result from the influence of multiple factors at the same time which may include macro economic factors as well (political and economic).

In our study we wish to analyse the short run performance of new issues which came out in the post crisis or Recovery period i.e. from 2009-17. The study comprises of 210 IPOs, analyses their market adjusted returns and decomposes it into different criteria such as size of issue (based on IPO pricing) and volume of issue (market capitalisation). The rest of the chapter is bifurcated into different sections. The second section gives a comprehensive literature review based on both domestic as well as international evidence of underpricing in the first few trading days of an IPO. The third section provides the objectives of the study based on research gaps identified through the in-depth literature review. The data sources, hypothesis and methodology have been highlighted in the fourth section. The fifth section presents the results of empirical analysis conducted on the sample IPOs. The last section concludes along with highlighting the scope for future research.

2. LITERATURE REVIEW

Based on cross sectional regression analysis of 668 IPOs of Shanghai and Shenzhen Stock Exchange of China during 1996 to 2000, **Chi and Padgett (2002)** concluded Chinese IPOs to be extraordinarily underpriced. Also, the Wealth Relative (WR) figures were indicative of outperformance by Chinese IPOs. A severely high proportion of individual investors with inadequate information along with Chinese quota system (an annual quota system decided by Chinese Securities Regulatory Committee (CSRC) for issue of new shares as per development goals of various regions) causing high demand were the major two factors that were identified leading to underpricing. In China, the demand of investment in stock market is much higher because of lack of attractive investment opportunities elsewhere as

well as reduction in interest rates. And due to this high demand, the underpricing in Chinese stock market is also very high. Hence, quota system is found to be a major factor leading to underpricing because of lack of supply with respect to number of issues allowed by CSRC (less supply-high demand misbalance).

The study also tests whether there is any relationship between size of the IPO issue and underpricing. As per Rock's model, if the size of IPO is small, it is easy to manipulate price and hence the stocks are risky leading to higher underpricing. As per the study, the Chinese stock market shows a negative relationship between initial returns and size of IPOs.

The study also tries to find if any relationship exists between underpricing and government ownership of shares in the Chinese market. The results are indicative of negative relationship between the two as private ownership of shares is expected to lead to improved corporate governance, more confident investors and high management efficiency, thus resulting in high market adjusted initial returns.

The conclusion is that in Chinese stock market, investors welcome privatization more than government ownership. This study supports Rock's Model and Information Asymmetry Hypothesis but not Signaling Hypothesis.

Perera and Kulendran (2012) also tested the Rock Model and Uncertainty Hypothesis in the Australian IPO Market using a sample of 254 IPOs listed during 2006-2011. Underpricing was found to be a prevalent phenomenon in case of primary and total market although secondary market was found to be overpriced by 1.55% according to the results obtained by the technique of MAAR (Market Adjusted Average Abnormal Returns). The study is bifurcated into First day Returns Analysis and Post Day Returns Analysis. In the first day returns analysis based on sectors, it was observed that the industrial sector IPOs showed highest underpricing in the Australian market whereas in post listing analysis, the highest marginal probability was reflected by Consumer Discretionary/ Staples Industry. For post listing analysis, Cumulative Average Returns (CAR) were calculated w.r.t. nine trading days which led to the conclusion that underpricing decreased from 7^{th} to 10^{th} trading day due to fall in the post listing prices.

Using the binary regression model of Logit and Probit, the major determinants of short run performance of Australian IPOs were identified some of which included time to listing, listing delay, IPO period, market volatility, etc. Out of the five major determinants identified, four of them namely, listing delay, IPO period, Total listing period and Total Net Proceeds Ratio were found to be inversely related to underpricing whereas market volatility was identified to be positively related.

In order to identify the most influential factor affecting short run performance of IPOs, marginal probability analysis was also done which concluded with identification of Market Volatility and Total Net Proceeds ratio to be the explanatory variables contributing to major changes in the performance of IPOs in the short run. Out of the two variables identified, Market Volatility has a positive relationship with uncertainty and thus underpricing whereas TNRP holds a negative association.

In order to empirically test the indirect implications of the Rock Model, **Khursheed and Mudambi (2001)** analysed the short run performance of 575 IPOs on UK Main Market out of which 190 were investment trusts and the remaining were conventional issuing companies. The former is different from the latter in the sense that the scope of creating an information advantage is much less for investment trusts due to characteristics such as lack of business history, fixed capital stock and assets containing frequently traded securities with publicly quoted price. On computation of Wealth Relative (WR), Market Adjusted Abnormal Return (MAAR) and t-statistic of the sample pertaining to 1989-96, the results showed strong evidence in support of Rock Model, that suggested less underpricing in case of investment trusts due to lack of information advantage. However the results do not support the finding of Risk Aversion Hypothesis which suggests no difference between conventional issuing companies and investment trusts. Also the results are in contrast to Baron's Hypothesis of Vertical Asymmetry and Monopsony Hypothesis which favour the direct relationship between underpricing and involvement of intermediaries such as investment banks as no significant underpricing was found in case of investment trusts which involve financial intermediaries. Overall the findings which favour Rock's Model suggest that Investment Trust are not a good choice for investors looking for extremely short run profits from investment in an IPO.

With a sample of 34 IPOs listed on Tunis Stock Exchange (TSE), **Zouri et al (2011)** examined their short run performance from 1992-2008 using the methodology of Market Adjusted Average Abnormal Returns (MAAR). The initial returns were calculated for the first three trading days which resulted in underpricing to the extent of 17.8 per cent. Further on applying Linear Regression Model, the authors tried to analyse the factors leading to IPO underpricing along with introducing control variables. The study tried to find out whether underpricing was negatively or positively affected by factors such as retained capital, oversubscription rate, size of issue, offer price, size of issuing firm, age of issuing firm, listing time, and underwriter price support. Three control variables were also introduced in the study namely level of price discount set by issuer which was based on mean of firm value, liquidity contract in IPO and part of IPO reserved for institutional investors. It was found that firm age, size of issue and firm size did not affect the level of underpricing while oversubscription rate was positively related. Retained capital, listing delay and offer price were found to be major determinants of IPO underpricing in Tunisian Stock Market as per the study. Lastly, based on sectoral analysis, IPO underpricing was found to be more pronounced in Non-Manufacturing sector than in manufacturing sector (which includes General Manufacturing, Metal, Steel, Chemical, Pharmaceutical, etc)

Applying Event Study methodology**, Kaya (2012)** tried to analyse short run performance of 32 IPOs listed on Istanbul Stock Exchange (ISE) between January 2010 and June 2011. Firstly, the Market Adjusted Stock Returns were calculated taking ISE as the base index, followed by expected/ predicted returns using Capital Asset Pricing Model (CAPM). In the third step, the difference between actual and predicted returns of CAPM was calculated to arrive at abnormal returns. And finally, One way ANNOVA test analysed the significance of the results.

The returns were analysed for 1^{st}, 2^{nd}, 3^{rd}, 4^{th} trading days, first week, one month and finally three months and six months time basis. It was observed that out of 32 IPO firms, 15 showed negative returns after first day and 19 of them gave negative performance after first month. The abnormal returns were observed to be positive only at the end of third trading day.

The second part of the study analysed the short run performance of sample

IPOs based on abnormal returns by grouping the IPOs into different criteria such as firm size, sector of IPO firms, age and shares sold to foreign investors. The results reflected no significant association of short run performance with the above factors taken in consideration.

Using a sample of 225 Greek IPOs listed on Athens Stock Exchange (ASE), **Gounopoulos (2003)** analysed the Initial Returns (IR) and Market Adjusted Initial Returns (MAIR) in order to oversee the initial performance of the IPOs. The study revealed an underpricing of 63.92% on an average. A sectoral bifurcation was done with three broad classification categories namely industrial, financial and others. The highest initial underpricing was observed in the 'industrial' category i.e. to the extent of 67.14%, followed by the 'financial' category and 'others' category respectively.

In the second part of the study, multiple regression method was applied in order to identify more pronounced determinants of initial underperformance of Greek IPOs. Under this, Market Adjusted Initial Returns was the dependent variable and all the possible factors influencing returns of IPOs (based on past literature) formed the independent variables such as market condition, demand multiple, age of the company, industrial classification, cold and hot period IPOs , underwriters' reputation, etc. Out of all these variables, the analysis concluded that significant determinants of underpricing were limited to four variables namely market condition, demand multiple, cold-hot issue periods and offer price independence.

3. OBJECTIVES OF THE STUDY

Based on an extensive literature review of both Indian as well as International researches on IPO underpricing or short run performance of IPOs, we could identify a few research gaps and wanted to extend the empirical evidence on initial performance of IPOs with respect to the following objectives:

1) To measure the short run **performance** of IPOs listed on National Stock Exchange (NSE) on the basis of Market Adjusted Average Returns (MAAR).

2) To analyze the relationship between **size** of offering and initial returns of IPOs calculated on the basis of Market Adjusted Short Run Performance (MASRP).

3) To examine whether short run performance of IPOs is correlated with or is dependent of **volume** of IPO issue.

4. DATA SOURCES AND METHODOLOGY

4.1 Data

The study comprises of 210 sample IPOs which were listed on National Stock Exchange (NSE) during 2009-17. The data has been collected from various sources such as the websites of chittorgarh (www.chittorgarh.com), moneycontrol (www.monycontrol.com), NSE (www.nse.com), SEBI (www.sebi.com), etc. The website Chittorgarh provided data of IPO returns on 1^{st}, 5^{th}, 10^{th}, 15^{th} and 20^{th} trading days and the market index value on these days were taken from the NSE website.

A short run analysis is performed on the data of IPOs in which Mean Market Adjusted returns are calculated along with t-statistic and Wealth Relative (WR). In our study, it is also analysed if size and volume of IPO issue, have any effect on the short run performance of IPOs.

Microsoft Excel has been used to calculate the figures of Market Adjusted Average Returns (MAAR), t-statistic as well as Wealth Relative (WR). Following previous literature, Market Adjusted Average Returns (MAAR) is used as an indicator of short run performance, and Wealth Relative (WR) is used to indicate whether the IPO is outperforming the market or not (where, if WR > 1, it indicates that IPO outperforms the market).

4.2 Methodology

The conventional method of measuring the performance of IPOs in the short run has been Mean Market Adjusted Initial Returns (MAIR) and Wealth Relative (WR) Method. These techniques have been widely used in previous literature by economists and researchers such as Aggarwal et al. (1993), Khursheed and Mudambi (2001), Chi and Padgett (2002), Sadaqat et al. (2011), Heerden and Alagidede (2012), etc.

The raw initial return is calculated by using the following formula:

Raw Initial Return= (Price on a particular trading day- Offer Price)/ Offer Price

$$RIRx,\ d = \frac{Px,\ d - Px,\ 0}{Px,\ 0}$$

Where,

$RIR_{x,d}$ = Raw Initial Return of stock 'x' on d^{th} trading day

$P_{x,d}$ = Price of stock 'x' on d^{th} trading day

$P_{x,0}$ = Offer price of stock 'x'

Now, we calculate the average of Raw Initial Return calculated above:

$$RIRx,\ d = \frac{1}{N}\sum_{i=1}^{n} RIRx,\ d$$

The average Raw Initial Return represents the sum of individual Raw Initial Returns of different stocks divided by the number of stocks in the sample. This return calculated above is ideal only when the markets are perfect. In other words, there is neither any transaction cost nor any opportunity cost. Also, when there is no time gap between the offer closing day and the day of trading/listing. However, in order to incorporate market changes occurring from the offer date till the date of trading, this Raw Initial Return has been adjusted with the market return in the following way:

Using the National Stock Exchange as the benchmark index for calculating market returns, the market return on the stock market of the country has been calculated as follows:

Return of the stock market on dth trading day= (Market Index Value at the end of dth trading day- Market Index Value on the offer day)/ Market Index Value on the offer day)

$$Rm,\ d = \frac{MIm,\ d - MIm,\ 0}{MIm,\ 0}$$

Where,

$R_{m,d}$ = Market Return on dth trading day

$MI_{m,d}$ = Market Index value on dth trading day

$MI_{m,0}$ = Market Index value on the offer day of stock 'x'

Now, we incorporate the market return in the Average Raw Initial Return calculated above in order to arrive at the market-adjusted performance of

the stock in the short run.

The Market Adjusted Short Run Performance is calculated as follows:

$$MASRPx, d = 100 * \left\{ \frac{(1 + RIRx, d)}{(1 + Rm, d)} - 1 \right\}$$

In order to arrive at the average Market Adjusted Short Run Performance, we divide the above results by the sample number of IPOs in the following way:

$$MASRPx, d = \frac{1}{N} \sum_{i=1}^{n} MASRPx, d$$

Having calculated the average market adjusted short run performance, we test the hypothesis to see whether Average Market Short Run Performance is equal to zero or different from it.

For this, t statistic is calculated using the following formula:

$$t = \frac{MASRPx, d}{s / \sqrt{n}}$$

Where,

$MASRP_{x,d}$ = Average Market Adjusted Short Run Performance of stock 'x' on dth trading day

s= Standard Deviation

n= Number of firms

Lastly, in order to gauge whether IPOs have outperformed the market or not, Wealth Relative Method has been applied for dth trading day and 'n' number of sample IPOs.

$$WRd = \frac{1 + (\frac{1}{n}) \sum_{x=1}^{n} RIRx, d}{1 + (\frac{1}{n}) \sum_{m=1}^{n} RIRm, d}$$

According to Ritter (1991), if the wealth relative formulated above gives a result greater than 1, it means that market has been outperformed by the IPOs in that period. However, if the WR comes out to be less than one, then it indicates the underperformance of IPOs as compared to the market performance.

5. Data and Results

5.1 Short Run Analysis

The returns on the initial day of trading are influenced by a lot of external factors due to which irregularities are inevitable. Thus it is wise to analyse the short run performance of the IPOs according to their returns in the initial few days of getting listed. After a review of literature taking both domestic as well as international aspect, it was decided to take the returns of the IPOs taken in our study for the first, fifth, tenth, fifteenth and twentieth trading days.

In our study, the short run performance of IPOs listed from 2009-17 has been analysed by taking their Market Adjusted Average Returns (MAAR) as on 1^{st}, 5^{th}, 10^{th}, 15^{th} and 20^{th} trading days. The examination of returns as on these days has been done in consistency with the existing literature. However, as per the existing literature, the highest returns are achieved on the first trading day whereas our study indicates that the highest returns are achieved on the 10^{th} trading day followed by 1^{st}, 5^{th}, 15^{th} and 20^{th} trading days.

This is consistent with the analysis of a few economists who argue in favour of irregularities on the first trading day which ultimately lead to insignificant initial returns on that day. Our study highlights that an investor would have preferred to hold on to his IPO investment for at least 10 days, post which the returns are expected to be the highest.

In order to test the hypothesis, p-value is calculated and compared with the level of significance.

If p-value is greater than the significance level, then the null hypothesis is not rejected.

If p-value is less than the significance level, then null hypothesis is rejected.

In our study, the p-values for various trading days during 2009-17 are:

Table 1: Results of t Test along with P-values

TRADING DAY	T-STATS	P-VALUE
1st Trading Day	5.73	0.0000
5th Trading Day	4.73	0.0000
10th Trading Day	2.61	0.0096
15th Trading Day	3.26	0.00 13
20th Trading Day	2.66	0.0084

Null Hypothesis: $MASRP_{x,d} = 0$

Alternate Hypothesis: $MASRP_{x,d} \neq 0$

From the above summary, we can conclude that all the p-values for all trading days are less that 0.10, 0.05 as well as 0.01. In other words, t-stats values are significant at 10%, 5% as well as 1% significance level. And whenever p-value is less than the significance level (i.e. the results are significant), we reject the null hypothesis which says that "$MASRP_{x,d}$" is zero. Hence the Market Adjusted Short Run Performance ($MASRP_{x,d}$) is concluded to be different from zero.

Table 2: Short Run Performance of IPOs

	Days	Raw Return (%)	Average Market Return (%)	Average Market Adjusted Return (%)	t-Statistic	Wealth Relative
2009	1st	11.27	1.94	10.07	1.24	1.09
	5th	4.25	1.98	2.77	0.44	1.02
	10th	4.56	2.68	1.9	0.27	1.02
	15th	2.55	2.62	0.14	0.02	1
	20th	2.17	2.28	0.36	0.04	1
2010	1st	15.05	0.3	14.76	3.75***	1.15
	5th	13.05	0.51	12.72	2.4**	1.12
	10th	7.3	-0.8	25.48	1.32	1.08
	15th	6.18	0.97	5.32	1.17	1.05
	20th	3.96	1.86	2.08	0.46	1.02

2011	1st	2.86	0.82	2.64	0.29	1.02
	5th	2.04	1.15	1.13	0.11	1.01
	10th	-8.09	1.4	-9.39	-0.97	0.91
	15th	-11.32	1.11	-12.87	-1.36	0.88
	20th	-9.15	0.1	-9.71	-0.88	0.91
2012	1st	4.95	0.19	4.81	1.13	1.05
	5th	9.19	0.34	8.83	1.75	1.09
	10th	14.06	0.29	13.74	2.6**	1.1
	15th	11.32	0.93	10.3	1.84*	1.1
	20th	9.27	0.18	8.99	1.58	1.09
2013	1st	2.14	-1.97	4.25	0.58	1.04
	5th	3.73	-4.58	8.82	0.76	1.09
	10th	-0.32	-4.46	4.46	0.37	1.04
	15th	0.4	-3.11	4.21	0.34	1.04
	20th	1.12	-2.15	3.44	0.31	1.03
2014	1st	28.76	-1.05	29.7	2.24	1.3
	5th	36.61	-0.67	36.87	1.96	1.38
	10th	39.07	-0.22	39.14	1.97	1.39
	15th	37.12	-0.83	37.92	1.94	1.38
	20th	35.78	1.72	33.6	1.73	1.33
2015	1st	10.68	-0.87	11.61	2.74**	1.12
	5th	11.77	-0.77	12.62	2.59**	1.13
	10th	11.49	-1.54	13.34	2.8**	1.13
	15th	10.64	-1.43	12.51	2.4**	1.12
	20th	10.94	-1.85	13.58	2.69**	1.13
2016	1st	13.21	0.07	13.09	3.51***	1.13
	5th	13.05	-0.63	13.57	3.2***	1.14
	10th	13.53	-0.41	13.98	3.39***	1.14
	15th	16.55	0.89	15.36	3.32***	1.16
	20th	14.18	0.88	13.06	2.89***	1.13
2017	1st	22.48	0.4	21.9	3.41***	1.22
	5th	24.77	0.66	23.86	3.24***	1.24
	10th	28.82	1.39	26.88	3.07***	1.27
	15th	27.94	1.74	25.6	3.14***	1.26
	20th	23.97	2.12	21.31	2.93***	1.21

2009-17	1st	13.31	0.33	13.11	5.73***	1.13
	5th	12.87	0.39	12.56	4.73***	1.12
	10th	10.87	0.21	15.49	2.61***	1.11
	15th	9.88	0.93	8.85	3.26***	1.09
	20th	8.44	1.07	7.28	2.66***	1.07

Source: Authors' Calculations

Year-On-Year Analysis

Apart from an overall analysis of the time period starting from 2009 till 2017, it is important to do a year-on-year analysis of the short run performance of the IPO market such that the results can be minutely examined.

After the major downfall of the IPO market in 2008, due to the U.S. Financial Crisis, the period starting from 2009 onwards is generally regarded as the 'Recovery Phase' of the IPO market.

Taking a closer look at the period of downswing, i.e. right after the crisis, one can conclude that the highest initial return is observed on the first trading day itself especially in case of 2009 and 2011. It means, whenever there is a downturn in the economy due to external shocks or a major event affecting the stock market negatively, it is not a good option to hold onto the IPO but rather it should be sold after the first trading day itself to attain maximum returns.

However, as we take a closer look at the results of 2012, 2013, 2014, 2015, 2016 and 2017 i.e. when the markets recovered from the shock and started to recover from the downturn, the highest initial returns were observed mostly on the 10th day of trading. In case of 2016, the highest returns were observed on the 15th day of trading whereas in 2013, it was observed on the 5th day of trading. But overall, on an average, the highest return is observed on the 10th day of trading for all stocks that came out from 2009-17. This analysis leads to the conclusion that during an upswing or when the markets recover and gain its original shape, it is a good option to hold on to the IPO for a comparatively longer period and not go for its sale right after the 1st trading day.

In our study, we can clearly see that IPOs have outperformed the market in the overall period of 2009-17 as per the Wealth Relative figures (which are greater than 1).

Year-on-Year analysis also reflects that IPOs have outperformed the market in all the years except in 2011 where the Wealth Relative value for 10^{th}, 15^{th} and 20^{th} trading days is less than 1. This result is in tandem with the negative values of Market Adjusted Returns of the stocks.

5.2 Size

According to Ibbotson et. al. (1994), on an average, small offerings (low priced IPOs) in the US have been found to be more underpriced as compared to large offerings. One probable reason could be the risk factor involved in low priced offerings. Since small offering are considered as comparatively riskier than large offerings, higher returns are expected out of them. Hence, in order to compensate the risk, high returns may be expected out of small offerings. However, the past literature highlights that during the period of downturn or any unforeseen event that affects the market negatively, a preference for valuable or large offerings by the investors has been observed. Hence, on an average, low priced stocks are found to be less underpriced as compared to large offerings. In other words, they give fewer returns as compared to large offerings.

In our study, the benchmark IPO size has been taken as INR 185 as it is in close proximity to the median IPO price during the nine year study period.

The IPOs which were priced above INR 185 during 2009-17 have generated more returns in the short run as compared to those priced below INR 185. In other words, underpricing has been observed in high priced shares on an average.

However, if we take a more specific Year-on-Year look at the size-based results, the MASRP values are higher in case of IPOs priced less than INR 185 especially in 2014 and 2017, when markets started to recover and got back into their original shape. In these two years, more underpricing has been observed in low priced IPOs. In 2014, high priced IPOs gave negative returns whereas low priced IPOs were found to be severely underpriced.

Table 3: Short Run Performance of IPOs w.r.t. Size of IPOs

	Number of IPOs	Mean Market Adjusted Returns (%)				
		1st	5th	10th	15th	20th
2009						
>185	6	7.18	7.47	8.94	9.38	9.83
<=185	14	11.30	0.75	-1.12	-3.82	-3.70
2010						
>185	21	16.84	16.32	63.34	11.88	9.57
<=185	38	13.62	10.73	4.56	1.69	-2.06
2011						
>185	5	42.87	33.69	12.85	13.38	13.98
<=185	24	-5.74	-5.66	-14.02	-18.34	-14.64
2012						
>185	4	8.07	6.67	8.23	7.97	8.00
<=185	6	2.64	10.27	17.41	11.86	9.65
2013						
>185	2	7.95	10.21	4.03	6.93	5.96
<=185	1	-3.16	6.03	5.33	-1.25	-1.60
2014						
>185	1	-8.70	-12.30	-4.98	-18.75	-24.83
<=185	4	39.30	49.17	52.66	52.09	48.20
2015						
>185	12	18.16	22.69	23.40	24.04	23.41
<=185	9	2.88	-0.81	-0.07	-2.85	0.48
2016						
>185	24	13.41	13.97	14.22	16.03	13.45
<=185	2	9.24	8.68	11.09	7.26	8.31
2017						
>185	30	14.51	14.26	13.70	15.48	12.40
<=185	7	53.56	65.04	83.36	68.95	59.47
2009-17						
>185	105	15.48	15.49	23.88	14.64	12.62
<=185	105	10.73	9.64	7.11	3.05	1.95

Source: Authors' Calculations

Right after the major crisis of 2008 which affected the stock markets on a global level, preference for high priced IPOs has been observed, especially in the year 2008, 2010 and 2011. In these three years, high priced or valuable investments have shown better returns or we could say that investors have preferred valuable investments at the time of crisis and in the immediate post crisis period.

In 2012, low priced IPOs gave higher returns to compensate for the risk that is associated to them except on the initial day of trading.

After 2011, when market recovered from the downturn, less underpricing has been observed in high priced IPOs except in those years where the proportion of low and high priced IPOs is biased towards one side. For example, in 2016, only two IPOs were priced below INR 185 whereas 24 IPOs were priced above it. As a result, the average market returns in 2016 are higher for IPO priced above INR 185 and which are more in number.

Overall, our study shows a fluctuating and mixed trend of price based results of MASRP of IPOs during 2009-17. The average analysis, however, show high priced IPOs to be more underpriced during the recovery period.

After the 2008 crisis, the average IPO price has increased from INR 190.65 in 2009 to INR 514 in 2017 which clearly indicates preference of investors for quality IPOs of established companies (as per the results of the study).

5.3 Market Capitalisation

Following the previous literature, the median volume/ market capitalisation has been taken to segregate the data into high volume IPOs and low volume IPOs. Therefore, the IPOs with market capitalization of more than INR 351 CR (median market capitalisation value) form the first category and those with a market capitalization of less than INR 351 CR form the second.

The 2008 U.S. Financial crisis had severely affected the markets globally including the Indian market. Due to its impact, the investors' trust was shaken and hence they preferred quality companies both during crisis and post crisis period. In other words, their preference shifted to well known and established firms and not to those with high volume issues, at least in the initial years right after crisis period.

According to the capitalisation based results, one can observe that in the post crisis period, starting from 2009 to 2011, the IPOs with market capitalization of less than INR 351 CR gave higher returns as compared to those of high capitalisation companies. This can be attributed to the risk attached to the companies with small market capitalisation. They tend to underprice their stocks more in order to attract the investors. Hence in 2009, a return of 16.78% can be observed for the initial day of trading for firms with a market capitalisation value of less than INR 351 CR. Similarly a return of 21.53% has been generated in 2010 by firms of lower market capitalisation as compared to negative returns by higher capitalized companies.

However, when the market started to move towards normalcy, it started reflecting the regular trend of high volume companies (capitalisation more than INR 351 CR) generating better returns as compared to low volume companies. In other words, better returns are generated by companies with high market capitalisation.

In 2017, IPOs with a market capitalization of less than INR 351 CR showed more underpricing as compared to those with a volume of more than INR 351 CR, even though low volume companies were 6 in number.

A mixed trend has been observed with respect to market capitalisation for the sample period taken in our study. The overall results show that companies with market capitalisation of less than INR 351 CR tend to underprice more in order to attract investors. However, companies with market capitalisation of more than INR 351 CR show consistent results and maximum returns when the investment is held till 15th day of trading.

Table 4: Short Run Performance of IPOs w.r.t. Market Capitalisation

	Number of IPOs	Mean Market Adjusted Returns (%)				
		1st	5th	10th	15th	20th
2009						
>351	10	3.35	1.55	1.91	2.35	2.08
<=351	10	16.78	3.99	1.88	-2.07	-1.36

2010						
>351	18	-0.64	-3.70	-4.57	-4.05	-6.53
<=351	41	21.53	19.93	38.67	9.43	5.86
2011						
>351	3	-2.29	-7.46	-9.17	-7.28	-4.70
<=351	26	3.21	2.12	-9.41	-13.52	-10.28
2012						
>351	4	12.08	15.99	16.84	14.42	13.80
<=351	6	-0.03	4.05	11.67	7.56	5.79
2013						
>351	1	18.87	30.12	24.69	27.56	24.96
<=351	2	3.06	1.84	5.65	7.47	7.32
2014						
>351	1	50.55	68.10	74.86	62.67	64.99
<=351	4	24.49	29.07	30.20	31.74	25.75
2015						
>351	14	15.99	18.99	19.59	19.76	19.59
<=351	7	2.85	-0.12	0.86	-1.98	1.57
2016						
>351	23	13.64	14.53	13.46	15.65	13.43
<=351	3	8.88	6.18	17.98	13.12	10.20
2017						
>351	31	16.04	15.46	16.71	16.43	13.17
<=351	6	52.18	67.28	79.40	72.94	63.34
2009-17						
>351	105	11.12	11.12	11.22	11.64	9.77
<=351	105	15.10	14.00	19.77	6.05	4.80

Source: Authors' Calculations

Overall, from 2009-17, the data show that till the 10^{th} day of trading, low volume IPOs are underpriced more however, if the investor holds onto the investment till 15^{th} or 20^{th} day of trading, high volume IPOs i.e. those with

market capitalization of more than INR351 CR tend to be more underpriced and hence generate returns.

6. CONCLUSION

Market Adjusted Average Returns have been taken (with NIFTY as the benchmark index) as the proxy to measure the short run performance of 210 IPOs taken in our study. These returns have been calculated for first, fifth, tenth, fifteenth and twentieth trading days keeping in mind the irregularities affecting the listing day return hence making it an inappropriate variable to test the short run performance of IPOs. An analysis of the short run performance of the IPOs which came out during 2009-17 reflect that maximum returns are achieved only when the IPO is held till the tenth day of trading. However, during a downturn in the economy resulting from any economic slowdown or a global shock, it is better to sell off the investment on the first day of trading as it generates the maximum return for investors.

The second part of the analysis finds out the association between 'Size of the IPO' measured by the Issue price with the short run performance of the IPO measured by Market Adjusted Average Returns for initial trading days. The results are indicative of investors' preference for quality IPOs (high priced IPOs) during the period of economic downturn (immediate post crisis period from 2009 to 2012) as they give better returns as compared to low priced IPOs. However, in the normal scenario or when markets tend to take the original shape, low priced IPOs tend to give higher returns (more underpriced) in order to attract investors and to compensate for the risk attached to them. In our study, post 2012, high priced IPOs give lesser returns if seen on an individual basis but due to mixed price based results, the overall figures show more underpricing in case of high priced IPOs.

For assessing the relationship between Market Capitalisation of IPO stocks and the short run performance of such stocks, median value of capitalisation was taken to bifurcate the 210 sample IPOs into the categories of low and high market capitalized IPOs. The overall results reflect that companies with market capitalisation of less than INR 351 CR (median value) tend to underprice more in order to attract the investors and to compensate for the risk associated to them whereas high market capitalisation IPOs (more than INR 351 CR) give consistent returns of 11% during 2009-17 and maximum

returns if the IPO is held till the fifteenth day of trading. However, an year on year analysis shows a mixed trend.

The study not only gives an overall picture of how IPOs have performed over the years with respect to short run analysis but also indicates the impact of important issue characteristics such as size of the issue, market capitalisation, etc on short run underpricing of the stocks. The conclusion of the research reflects the timing of the issue as well as behaviour of stocks and their returns in the short run as per market conditions, thus adding to the knowledge bank of investors. The study clearly indicates the performance of stocks with high market capitalisation during economic recovery period as well as downturn. Also, it shows the impact of size of offering on the stock performance during normal conditions as well as post crisis period, thus enhancing the base of IPO literature.

6.1 Implications of the Study

The study contributes to the knowledge enhancement of investors with respect to taking investment decisions in such a way that helps maximize returns from the stocks in the short run. Fly-by investors who sell their stock on the first day of trading can attain optimum returns during crisis period or a period of abnormal conditions in the market. However, investors who look forward to a short run gain, can achieve maximum returns if they hold their stock till the tenth trading day. This shows that investors can plan to redeem their investment in the IPOs as per the condition in the market if they have a short run outlook.

Also, as per the findings of our study, during a slowdown in the economy, investors should invest in those IPOs which are high priced and prefer to invest in low priced IPOs during normal scenario as the low priced IPOs are more underpriced.

As far as volume of the stock is concerned, consistent returns have been achieved by high volume stock that is, those IPOs with high market capitalisation.

6.2 Limitations

The short run analysis conducted in our research has the following shortcomings:

a) The study focuses on majorly two factors, namely Size and Market Capitalisation, to gauge the impact on short run performance of IPOs over the study period. Various other factors also play a crucial role in the determination of underpricing of IPOs.

b) Also, the analysis conducted to identify underpricing in the IPOs is limited to initial twenty days of trading only.

c) The data has been categorized into two parts based on the median size of the offering and median market capitalisation; however three subcategories would have given a clearer picture with respect to performance of the stocks over the years.

6.3 Scope for Future Research

Based on the above shortcomings of the study, further investigation can be conducted in future in the following way:

a) Factors such as listing delay, underwriters' reputation, oversubscription, etc can also be taken into consideration in order to gauge the performance of IPOs in the short run.

b) The study can be further extended to one month, three months, six months or one year time period for analysis of the short run underpricing of IPOs.

c) Various other techniques such as multiple regression, event study, etc can also be applied to validate the returns achived by Market Adjusted Average Returns methodology.

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