

Post listing performance of Indian IPOs

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Abstract - Literature has well documented the extent of under-pricing across countries on the first day of IPO listing itself. Performances of IPOs have also been widely studied. Indian IPO Performance varies over time. Mostly, IPO's are underpriced initially, they over perform in the short run, followed by underperformance for a longer period and thereafter an over performance. When to exit an investment in IPO's is a retail investor Question, which needs immediate attention. This study was carried out with the following objectives: (1) To calculate the post listing performance of IPO's and (2) To analyse whether to exit the investment on listing day or hold the IPO investment for a longer period.

A descriptive research design was used for the study. The 416 IPO's listed from April 2003 – March 04 to April 2012-March 13 was the sampling frame for the study. The IPOs with missing information were excluded from the sample. 313 IPOs which is 75.24 % of the sampling frame was used for the analysis of research objectives. The post listing performance of IPOs was measured using Benchmark Adjusted Buy-and-Hold Returns (BHAR). It was estimated for the listing day, one month, six months, twelve months, eighteen Months, twenty four months, thirty six months, forty eight months and sixty months post listing. BHAR was calculated from offer price and listing price. The share prices of Companies were taken from BSE Website (www.bseindia.com).

The results obtained from the study provide important information to investors intending to invest in IPO's for a long term. It is found that IPOs are on an average underpriced on the listing day. Investors investing in IPOs at the offer price and holding these shares over a longer period (1 year) get better returns compared to investors investing in those shares on the listing day. Investors investing at the list price would not get excess returns at least up to two years from listing.

Key Words: IPO Investment, listing day returns, post listing performance, BHAR, Offer price, listing price, robustness

I. INTRODUCTION

An Initial Public Offer (IPO) is the first offer of specified securities by an unlisted issuer to the public for subscription. After the public issue process, the securities are listed and traded in the secondary market. Going public is a means to companies to raise cash and is a good source of investment for public. But IPOs are under-priced in the short run and underperform in the long run. The high volatility and losses on investments in IPOs dissuade investors from participation in an IPO. The concerns of IPOs have been addressed with the SEBI reforms over years. A framework for a better IPO process has evolved in terms of data transparency and pricing. But the IPOs are still not attractive to Indian retail investors. With these concerns existing, a detailed study on post listing

performance of IPOs in India would help coin strategies to attract retail investors to IPOs.

Rationale for the study

Literature has well documented the extent of under pricing across countries on the first day of IPO listing itself. IPOs are, on average, underpriced by 45% in India. Performances of IPOs have also been widely studied. Indian IPO Performance varies over time. Mostly, IPO's are underpriced initially, they over perform in the short run, followed by underperformance for a longer period and thereafter an over performance. IPO investors should follow this cycle to plan the span of investment in IPO's. When to exit an investment in IPO's is a retail investor Question, which needs immediate attention. This study is aimed at analysing the long run performance of IPO's. The study is relevant to academicians, investors, capital market

intermediaries and policy makers to time their IPO investments. The Low average IPO subscription in India by retail investors has led to the following research questions. Do Underpriced IPOs perform in the long run, post listing?

Research Objectives

The research was conducted with the following objectives:

1. To calculate the post listing performance of IPO's.
2. To analyse when to exit the IPO investment

II. LITERATURE REVIEW

A stock issue is underpriced if the closing price on the first day of listing is more than the IPO issue price (Ritter, 1991). Investors are able to get high rate of return in comparison with market index on the listing day (Kuklinski, 2003; Purnanandam and Swaminathan, 2004) by investing in IPOs. But subsequently the underperformance of the IPOs persists in the long run. Long-run performance refers to the price behaviour of the IPOs beyond the listing day. Hoechle and Schmid (2007) found a significant underperformance of IPO firms over the first year after going public. But they do not document underperformance after one year. Ritter (1991) and Jaskiewicz *et al* (2005) found that post listing underperformance continue usually up to three to five years post listing. Madhusoodanan and Thiripalraju (1997) analysed both short-run and long-run after-market pricing performance of the Indian IPOs issued before 1997. They indicated that in the short run, the Indian IPOs generate more market-adjusted initial return than the international IPOs. Even after one year listing, Indian IPOs generated higher returns compared to the negative returns found in other countries. Table 1, depicts the international studies on IPO underperformance. It could be seen that IPO underperformance ranged from a period of 12 months to 36 months across various countries. Table 2, depicts the Indian studies on IPO underperformance. Studies on the long-run performance of IPOs in India are limited and the evidence on long-run underperformance is mixed.

III. RESEARCH DESIGN

A descriptive research design is used for the study. The 416 IPO's listed from April 2003 – March 04 to April 2012-March 13 was the sampling frame for the study. The IPOs with missing information were excluded from the sample. 313 IPOs which is 75.24 % of the sampling frame was used for the analysis of research objectives. The post listing performance of IPOs was measured using Benchmark Adjusted Buy-and-Hold Returns (BHAR). Lyon, Barber and Tsai (1999) argue that BHAR is the right measure of IPO long run performance, as it measures investor experience, i.e., the buy-and-hold experience. It was estimated for the listing day, one month, six months, twelve months, eighteen Months, twenty four months,

thirty six months, forty eight months and sixty months. BHAR was calculated from offer price and listing price. The share prices of Companies were taken from BSE Website (www.bseindia.com). The details of the Issuing Companies were obtained from SEBI Website (www.sebi.gov.in).

Tools for analysis

The market-adjusted BHAR as the excess return for the IPOs over and above the market return is computed as:

$$BHAR_{it} = \prod_{t=1}^T (1 + R_{it}) - \prod_{t=1}^T (1 + R_{mt}) \tag{1}$$

The average BHAR for the entire sample is also calculated to find out the overall performance of the portfolio of IPOs for a specific period of time. The mean BHAR is computed as the arithmetic average of abnormal returns on all IPOs in the sample of size *N*. Mean BHAR is computed by the following formula:

$$\overline{BHAR} = \frac{1}{N} \sum_{i=1}^N BHAR_{it} \tag{2}$$

A positive BHAR for a specific time period is interpreted as a better performance of the IPOs compared to the benchmark return for the same period. In this method, the terminal values of both of the investment strategies, i.e., investment on a portfolio of IPO and market index, are compared. From the investors' point of view, BHAR indicated whether the benefit (positive initial day return) accrued in terms of investing through IPO subscription is extended to the late buyers or is completely exhausted on the listing date.

IV. ANALYSIS OF POST-LISTING PERFORMANCE OF IPOs

The post listing long run performance of IPOs was calculated from the Offer and Listing Price. Market adjusted BHAR was used as a measure of post listing long run performance. Negative BHAR values means that IPO's are under performing the Sensex during the period. Positive BHAR values shows over performance of IPOs compared to Index.

Post Listing performance of sample IPOs from Listing and Offer Price using BHAR

The post listing performance of IPOs was calculated for a period up to 60 months from both offer and listing price. Market adjusted BHAR of sample IPOs calculated using Listing price is shown in Table 3. The analysis shows that the mean IPO returns from listing price is negative (-7.18) when measured after 1 month of listing. The returns increased (though negative) up to 6 months. The return further reduced (-5.73) and the post listing returns was least at 1.5 years of listing 9 (-49.20). Again the post listing returns turned positive at 3 years post listing. Therefore the IPOs underperformed Sensex throughout 2

years. This implies that the investors did not gain positive returns on investing in IPOs on the listing day and selling the stocks before 2 years. On further holding the stocks beyond 4 years, the returns again turn negative. The volatility of the returns was least in the first month. There after volatility increased and was maximum at 3 years post listing. The increase in the volatility could be attributed to company or economy related factors. The analysis shows that, if an IPO is bought on the listing day, the investor can get maximum returns by holding it for 4 years.

The Market adjusted BHAR of sample IPOs calculated using offer price is shown in Table 4. Sample IPOs showed mean positive returns up to 1 year, if BHAR is calculated from offer price. But mean return decreased after one year, but continued to be positive at 2 years, which further reduced. So if Investors buy IPO through offer, their returns will be positive up to 1 year. There after their returns will be less than Market Index. The volatility of the returns was least in the first month. There after volatility increased and was maximum at 2 years post listing.

Therefore if investors buy shares during IPO offer period at offer price, they can exit the IPO till 2 years to get positive returns. If the IPOs are bought on the listing day, the IPO can be exit only after 3 or 4 years. It is ideal to invest in IPO during offer.

Post Listing performance of Overpriced IPOs from Listing and Offer Price using BHAR

The post listing performance of overpriced IPOs was calculated for a period up to 60 months from both offer and listing price. Table 5, shows the Market adjusted BHAR of overpriced IPOs calculated using Listing price. The analysis shows that the mean IPO returns from listing price is negative (-6.16) when measured after 1 month of listing. The returns increased (though negative) up to 6 months. Thereafter the overpriced IPOs over performed Sensex throughout the holding period. This implies that if the IPOs are overpriced, it is not advised for the investors to exit the IPO before 6 months of post listing. Maximum mean return was recorded at 4 years post listing. Beyond 4 years, the returns decreased. The volatility of the returns was least in the first month. There after volatility increased and was maximum at 3 years post listing. The analysis shows that, if overpriced IPOs are bought on the listing day, the investor can get maximum return by holding it for 4 years, but the risk involved is also higher at this period.

Overpriced IPOs showed mean negative returns throughout the holding period, from offer price (Table 6). The mean return (Negative, -19.17) was highest on the listing day and was lowest at 6 years. Therefore if overpriced IPOs are bought through offer, the returns would be negative throughout the holding period. The volatility of the returns was least in the first month. There after volatility increased and was maximum at 1.5 years post listing.

This implies that overpriced IPOs, bought on listing day, gave positive returns after 6 months post listing and can be held upto 4 years. Overpriced IPOs bought through offer underperformed the market upto 5 years.

Post Listing performance of Underpriced IPOs from Listing and Offer Price using BHAR

The post listing performance of Underpriced IPOs was calculated for a period up to 60 months from both offer and listing price. Table 7, shows the Market adjusted BHAR of underpriced IPOs calculated using Listing price. Underpriced IPOs showed mean negative returns throughout the holding period if bought on listing day. The mean return (Negative, -04.25) was highest at 6 months. Therefore if an investor buys an underpriced IPO on listing day, the returns would be negative throughout the holding period. The volatility of the returns was least at 6 months. There after volatility increased and was maximum at 2 years post listing.

Underpriced IPOs showed mean positive returns up to 1 year, if bought through offer (Table 8). The highest return (39.14) was recorded on the listing day, further returns decreased. The mean return was negative at 1.5 years. The volatility of the returns was least in the first month. There after volatility increased and was maximum at 2 years post listing.

Therefore underpriced IPOs bought on listing day gave negative returns throughout the holding period. Underpriced IPOs bought through offer gave positive returns up to 1 year.

V. ROBUSTNESS TESTS OF BHAR FOR ALL INDUSTRIES

Manufacturing Industry

The post listing performance of sample IPOs from Manufacturing Industry was calculated for a period up to 60 months from both offer and listing price. The analysis shows that the mean IPO return for Manufacturing Industry has been negative throughout the 60 months from listing (Table 9). The volatility of the returns was least in the first month. There after volatility increased and was maximum at 3 years post listing. The analysis shows that, an IPO bought on the listing day did not give positive returns to the investor. IPOs showed positive returns till 6 months from offer price (Table 10). The Mean returns started decreasing after 6 months. The volatility of returns was lowest in the first month and highest in the second year.

Therefore an IPO bought on the listing day, underperformed the market throughout the holding period. But an IPO bought during offer period, gave higher return than market index up to 6 months post listing.

Financial Services and Packaging Industry

The post listing performance of sample IPOs from Financial Services and Packaging Industry was calculated for a period up to 60 months from both offer and listing price. The mean return of the IPOs in Financial Services and Packaging Industry was positive throughout the holding period if calculated from listing price (Table 11). The highest return was recorded in the third year. The volatility of returns was lowest in the first month and highest in the third year. IPOs showed positive returns up to 1.5 years from offer price (Table 12). Thereafter the Mean return started decreasing. The volatility of returns was lowest in the first month and highest in the first year.

So the shares bought on listing day, gave higher returns than market index throughout 60 months holding period. But shares bought during IPO offer period, gave a higher return than market index, up to 1.5 years only.

Media, IT and Telecommunication Industry

The post listing performance of sample IPOs from Media, IT and Telecommunication Industry was calculated for a period up to 60 months from both offer and listing price. The IPOs underperformed the market index up to 1.5 years when the returns are calculated from the listing price (Table 13). Thus it can be inferred that investment in IPOs in Media, IT and Telecommunication Industry should be held for more than 1.5 years to earn a positive return on them. The volatility of returns was lowest in the first month and highest in the second year. IPOs showed positive returns up to 1 year if calculated from offer price (Table 14).

So shares bought on listing day, gave returns less than Market Index for about 1.5 years and thereafter they yielded positive returns. But shares bought during IPO offer period at offer price, gave a higher return than market index upto 1 year.

Other industry

The post listing performance of sample IPOs from Other Industry was calculated for a period up to 60 months from both offer and listing price. The mean return of the IPOs in Other Industry was negative throughout the holding period from listing price (Table 15). The volatility of returns was lowest in the first month and highest at 1.5 years. IPOs showed positive returns till 1 year when bought at offer period (Table 16).

So shares bought on listing day, gave returns less than Market Index throughout the holding period. But shares bought during IPO offer period, gave a higher return than market index till 1 year.

Under performance and over performance 'Runs' of IPOs

A run is a series of consecutive price increases or decreases. Here a run represents the number of times the market adjusted BHAR was continuously positive or negative. The Under and over performance 'Runs' of Post listing performance of IPOs is shown in Table 17.

For the sample IPOs, the BHAR from listing price is initially negative upto 2 years, followed by a period of over performance for 1 year and subsequent underperformance. Underpriced IPOs have shown underperformance throughout the holding period from listing price. Same is the case of Manufacturing Industry and Other Industry. The Media, IT and Telecommunication Industry showed Underperformance upto 1.5 years, followed by over performance for 1 year and subsequent Underperformance. Only Financial Services and Packaging Industry has over performed the market index throughout the holding period. The present study finds positive benchmark-adjusted return after 2 years, when BHAR is calculated from listing price. But international evidence (Liu and Rhee, 2008; Alvarez and González, 2005; and Ritter and Welch, 2002), exist that the underperformance even continued up to 36 months.

The BHAR from offer price is positive on the listing day. The over performance continues for 1 years, followed by underperformance and subsequent over performance and underperformance upto 60 months. Overpriced IPOs underperform the market throughout the holding period, if bought on offer. IPOs in Manufacturing Industry gave positive returns upto 6 months only. IPOs in Media, IT and Telecommunication Industry and Other Industry gave positive returns upto 1 year. Manufacturing Only Financial Services and Packaging Industry gave positive returns upto 1.5 years. In contrast to literature, this study documents Positive BHAR from offer price upto 1 year post listing. This could be because of High level of under pricing in Indian IPOs.

Therefore the initial underperformance, followed by over performance and subsequent underperformance is a pattern in IPOs for BHAR from listing price. Initial over performance, followed by under performance and subsequent over performance is a pattern in IPOs for BHAR from Offer price.

VI. SUMMARY OF FINDINGS

The following are the major findings of the study:

Post Listing performance of IPOs from Listing and Offer Price using BHAR

If investors buy shares during IPO offer period, they can hold the IPO till 2 years to get positive returns. If the IPOs

are bought on the listing day, the IPO can be exit only after 3 or 4 years. It is ideal to invest in IPO during offer.

The overpriced IPOs, bought on listing day, gave positive returns after 6 months post listing and can be held upto 4 years. Overpriced IPOs bought through offer underperformed the market upto 5 years.

The underpriced IPOs bought on listing day gave negative returns throughout the holding period. Underpriced IPOs bought through offer gave positive returns up to 1 year.

Robustness Tests of BHAR for all Industries

Manufacturing Industry: The analysis shows that, an IPO bought on the listing day did not give positive returns to the investor. But an IPO bought during offer period, gave higher return than market index up to 6 months post listing.

Financial Services and Packaging Industry: So the shares bought on listing day, gave higher returns than market index throughout 60 months holding period. But shares bought during IPO offer period, gave a higher return than market index, up to 1.5 years only.

Media, IT and Telecommunication Industry: Analysis showed that investment in IPOs in Media, IT and Telecommunication Industry should be held for more than 1.5 years to earn a positive return on them from listing price. But shares bought during IPO offer period, gave a higher return than market index upto 1 year.

Other industry: The mean return of the IPOs in Other Industry from listing price was negative throughout the holding period. But shares bought during IPO offer period, gave a higher return than market index till 1 year.

VII. CONCLUSION

It is found that IPOs are on an average underpriced on the listing day. Investors investing in IPOs at the offer price and holding these shares over a longer period (1 year) get better returns compared to investors investing in those shares on the listing day. Investors investing at the list price would not get excess returns at least up to two years from listing. IPO investors can use the findings of the study to maximize their returns. The results obtained from the study provide important information to investors intending to invest in IPO's for a long term.

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TABLES

Table 1: International studies on IPO Underperformance

Author / Year	Sample period	country	Abnormal return (%)	Period of Underperformance
Aggarwal et al (2008)	1993-1997	Hong Kong	-48.03	36 months
Khurshed et al (2008)	1991-1995	United Kingdom	-17.8	36 months
Sohail & Nasr (2007)	2000-2006	Pakistan	-38.10	12 months
Jaskiewicz et al (2005)	1990- 2000	Germany	-32.80	36 months
Alvarez & González (2005)	1987-1997	Spain	-27.80	36 months
Derrien & Womack (2003)	1992-1998	France	-6.30	24 months
Ritter and Welch (2002)	1980-2000	USA	-23.45	36 months
Espenlaub et al (2000)	1985-1992	United Kingdom	-21.30	60 months
Almeida & Duque (2000)	1992-1998	Portugal	-13.8	12 months
Keloharju, M (1993)	1984-1989	Finland	-21.1	36 months
Ritter (1991)	1975-1984	USA	-29.1	36 months

Source: Compiled from various literature

Table 2: Indian Studies on Long-run performance of IPOs

Author(s)	Period	Sample Size	Return
Madhusoodan et al.	1992-95	1922	16.33%
Krishnamurti and Narasimham	1992-1998 1999-2000	39 56	-26.13% -32.25%
Singh and Mittal	1992-1996	500	-65.53%
Pandey	1999-2002	84	-.85%

Source: Compiled from various literature

Table 3: Market adjusted BHAR of sample IPOs calculated using Listing price

	Minimum	Maximum	Mean	Std. Deviation
LBHAR1M	-1150.81	361.48	-7.18	74.71
LBHAR6M	-752.73	449.18	-3.74	79.13
LBHAR12M	-1874.91	1888.25	-5.73	170.59
LBHAR18M	-318.42	1283.70	-49.20	250.44
LBHAR24M	-2122.22	1120.27	-16.19	244.45
LBHAR36M	-1275.09	1592.74	7.95	280.82
LBHAR48M	-195.65	933.52	9.91	207.78
LBHAR60	-239.16	748.71	-31.74	176.39

Source: Data Analysis

Table 4: Market adjusted BHAR of sample IPOs calculated using offer price

	Minimum	Maximum	Mean	Std. Deviation
OBHAR1	-140.36	230.34	14.73	44.45
OBHAR1M	-143.58	523.79	10.39	59.38
OBHAR6M	-155.46	451.52	10.98	84.39
OBHAR12M	-345.64	563.34	8.17	107.33
OBHAR18M	-1099.16	984.53	-90.63	169.71
OBHAR24M	-166.53	2818.42	7.07	282.56
OBHAR36M	-205.84	1755.34	-10.72	203.71
OBHAR48M	-174.07	490.65	-31.95	117.69
OBHAR60M	-251.30	230.17	-64.07	89.98

Source: Data Analysis

Table 5: Market adjusted BHAR of overpriced IPOs calculated using Listing price

	Minimum	Maximum	Mean	Std. Deviation
LBHAR1M	-94.12	361.48	-6.16	42.84
LBHAR6M	-131.76	430.86	-3.00	70.88
LBHAR12M	-88.59	1888.25	10.15	187.56
LBHAR18M	-260.10	1283.70	55.93	338.25
LBHAR24M	-93.50	614.89	40.34	167.17
LBHAR36M	-194.01	1592.74	102.17	357.54
LBHAR48M	-156.15	933.52	107.24	293.06
LBHAR60	-239.16	748.71	45.42	251.44

Source: Data Analysis

Table 6: Market adjusted BHAR of overpriced IPOs calculated using offer price

	Minimum	Maximum	Mean	Std. Deviation
OBHAR1	-140.36	37.07	-19.17	22.55
OBHAR1M	-143.58	55.62	-25.60	27.70
OBHAR6M	-145.16	389.23	-24.44	56.10
OBHAR12M	-128.85	274.04	-28.69	59.18
OBHAR18M	-270.87	984.53	-60.00	172.65
OBHAR24M	-166.53	92.14	-38.14	53.98
OBHAR36M	-205.84	200.19	-44.13	71.98
OBHAR48M	-161.66	204.77	-51.38	94.23
OBHAR60M	-251.30	230.17	-78.11	88.49

Source: Data Analysis

Table 7: Market adjusted BHAR of Underpriced IPOs calculated using Listing price

	Minimum	Maximum	Mean	Std. Deviation
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LBHAR1M	-1150.818	190.973	-7.915	90.890
LBHAR6M	-752.738	449.181	-4.258	84.610
LBHAR12M	-1874.908	403.696	-16.654	157.504
LBHAR18M	-318.428	261.076	-130.075	94.069
LBHAR24M	-2122.227	1120.279	-51.715	277.576
LBHAR36M	-1275.092	710.712	-54.370	195.041
LBHAR48M	-195.652	223.156	-52.016	83.873
LBHAR60	-237.952	107.868	-81.250	70.334

Source: Data Analysis

Table 8: Market adjusted BHAR of Underpriced IPOs calculated using offer price

	Minimum	Maximum	Mean	Std. Deviation
OBHAR1	-18.614	230.347	39.143	40.120
OBHAR1M	-72.10	523.792	36.304	62.561
OBHAR6M	-155.460	451.525	36.095	91.889
OBHAR12M	-345.645	563.341	33.719	124.595
OBHAR18M	-1099.164	322.162	-114.574	164.777
OBHAR24M	-152.634	2818.425	35.485	355.976
OBHAR36M	-200.642	1755.340	11.377	254.428
OBHAR48M	-174.076	490.654	-19.242	130.064
OBHAR60M	-215.867	191.763	-55.073	90.619

Source: Data Analysis

Table 9: Market adjusted BHAR calculated using Listing price for IPOs of Manufacturing Industry

	Minimum	Maximum	Mean	Std. Deviation
LBHAR1M	-68.008	190.973	-6.851	37.913
LBHAR6M	-87.625	449.181	-7.698	77.987
LBHAR12M	-106.710	339.980	-15.123	70.516
LBHAR18M	-318.428	220.441	-112.482	89.739
LBHAR24M	-117.545	273.040	-35.845	71.158
LBHAR36M	-121.308	1592.745	-3.393	299.851
LBHAR48M	-142.805	391.435	-36.019	138.306
LBHAR60	-220.698	253.277	-83.677	82.770

Source: Data Analysis

Table 10: Market adjusted BHAR calculated using offer price for IPOs of Manufacturing Industry

	Minimum	Maximum	Mean	Std. Deviation
OBHAR1	-95.886	230.347	16.963	49.711
OBHAR1M	-78.321	523.792	8.897	73.669
OBHAR6M	-155.460	451.525	4.450	99.462
OBHAR12M	-345.645	472.076	-.318	110.324
OBHAR18M	-1099.164	197.599	-119.763	178.608
OBHAR24M	-166.530	1141.444	-8.801	200.877
OBHAR36M	-119.632	231.906	-36.003	79.231
OBHAR48M	-147.050	293.232	-53.135	105.063
OBHAR60M	-213.834	230.178	-79.862	80.076

Source: Data Analysis

Table 11: Market adjusted BHAR calculated using Listing price for IPOs of Financial Services and Packaging Industry

	Minimum	Maximum	Mean	Std. Deviation
LBHAR1M	-64.344	88.235	4.214	27.465
LBHAR6M	-69.145	124.796	14.122	50.474

LBHAR12M	-83.730	403.696	27.807	96.836
LBHAR18M	-183.496	773.388	205.376	297.310
LBHAR24M	-86.729	614.891	105.315	197.857
LBHAR36M	-99.399	960.100	243.750	336.027
LBHAR48M	-100.775	933.521	232.293	326.319
LBHAR60	-103.244	748.711	181.533	268.108

Source: Data Analysis

Table 12: Market adjusted BHAR calculated using offer price for IPOs of Financial Services and Packaging Industry

	Minimum	Maximum	Mean	Std. Deviation
OBHAR1	-79.509	187.687	8.129	53.030
OBHAR1M	-95.992	180.388	14.842	64.759
OBHAR6M	-104.241	181.565	12.248	69.791
OBHAR12M	-106.367	563.341	22.976	132.978
OBHAR18M	-189.220	322.162	1.465	115.993
OBHAR24M	-136.307	92.145	-12.553	52.748
OBHAR36M	-156.418	200.198	11.161	76.055
OBHAR48M	-161.664	204.774	.927	85.601
OBHAR60M	-176.206	141.806	-31.223	84.841

Source: Data Analysis

Table 13: Market adjusted BHAR calculated using Listing price for IPOs of Media, IT and Telecommunication Industry

	Minimum	Maximum	Mean	Std. Deviation
LBHAR1M	-100.068	76.719	-9.345	31.878
LBHAR6M	-131.763	181.771	-8.506	60.792
LBHAR12M	-88.327	158.844	-4.804	63.364
LBHAR18M	-261.690	56.607	-124.220	97.490
LBHAR24M	-108.448	1120.279	65.825	352.576
LBHAR36M	-194.011	710.712	4.598	246.097
LBHAR48M	-144.287	81.992	-62.065	76.474
LBHAR60	-239.160	66.847	-78.886	82.425

Source: Data Analysis

Table 14: Market adjusted BHAR calculated using offer price for IPOs of Media, IT and Telecommunication Industry

	Minimum	Maximum	Mean	Std. Deviation
OBHAR1	-140.367	154.364	20.967	53.143
OBHAR1M	-143.580	135.504	11.913	56.696
OBHAR6M	-145.168	364.912	22.325	101.687
OBHAR12M	-110.223	506.537	32.740	129.630
OBHAR18M	-270.871	87.842	-113.598	101.834
OBHAR24M	-104.750	2818.425	231.635	859.345
OBHAR36M	-205.842	1755.340	117.284	553.228
OBHAR48M	-151.775	391.945	-18.293	165.888
OBHAR60M	-251.307	191.763	-43.280	136.004

Source: Data Analysis

Table 15: Market adjusted BHAR calculated using Listing price for IPOs of Other Industry

	Minimum	Maximum	Mean	Std. Deviation
LBHAR1M	-1150.818	361.485	-10.033	110.000
LBHAR6M	-752.738	346.271	-3.716	91.013
LBHAR12M	-1874.908	1888.253	-6.956	251.639

LBHAR18M	-264.511	1283.700	-67.777	313.585
LBHAR24M	-2122.227	388.452	-71.120	298.666
LBHAR36M	-1275.092	358.684	-72.359	201.122
LBHAR48M	-195.652	253.931	-47.767	105.778
LBHAR60	-237.952	104.269	-92.210	76.901

Source: Data Analysis

Table 16: Market adjusted BHAR calculated using offer price for IPOs of Other Industry

	Minimum	Maximum	Mean	Std. Deviation
OBHAR1	-96.596	145.880	12.707	32.411
OBHAR1M	-65.022	158.315	10.013	42.131
OBHAR6M	-81.415	341.899	13.167	65.694
OBHAR12M	-128.856	469.538	4.498	87.886
OBHAR18M	-244.977	984.537	-93.113	191.834
OBHAR24M	-157.359	401.775	-18.836	94.311
OBHAR36M	-200.642	771.886	-32.023	134.556
OBHAR48M	-174.076	490.654	-37.195	124.773
OBHAR60M	-215.867	151.576	-75.050	83.740

Source: Data Analysis

Table 17: Under and over performance ‘Runs’ of Post listing performance of IPOs

	BHAR from Listing Price (Runs)	BHAR from Offer price (Runs)
Sample IPOs	-5, +2, -1	+, +3, -1, +1, -3
Overpriced IPOs	-2, +6	-, -8
Underpriced IPOs	-8	+, +3, -1, +2, -2
Manufacturing Industry IPOs	-8	+, +2, -6
Financial Services and Packaging Industry IPOs	+8	+, +4, -1, +2, -1
Media, IT and Telecommunication Industry IPOs	-4, +2, -2	+, +3, -1, +2, -2
Other Industries IPOs	-8	+, +3, -5

Source: Compiled from table 3 to 16