
PRICE PERFORMANCE OF IPOs: A COMPARISON BETWEEN BOOM & RECESSION

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ABSTRACT

This paper is an effort to compare the price performance of Initial Public Offers between boom and recession period. The price behaviour of IPOs has been examined with the help of price performance indicators; average market adjusted abnormal return (Avg. MAAR), average buy and hold abnormal return(Avg. BHAR) and wealth relative(WR). The study examines the price behaviour of selected IPOs in India up to three years from the listing day. A sample of 488 IPOs offered during the year 1993-94 to 2007-2008 has been considered to study the price behaviour of IPOs. The study period has been categorized into three phases; phase 1 during 1993-1997, Phase 2 from 1998 to 2003 and Phase 3 from 2004 to 2007. Comparative price performance of all three phases has been also depicted.

Key Words: Market Adjusted Abnormal Return, Buy and Hold Abnormal Return, Wealth Relative, Initial Public Offers, Price Behaviour, Price Performance, Underpricing, Overpricing.

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INTRODUCTION

Post liberalized era has provided a lot of investment opportunities for Indian Corporate. Numbers of ways are accessible to finance the projects of expansion. Initial Public offer is one of the most prominent modes to raise the funds. An initial public offer (IPO) is the first sale of stock by a public limited company to the public. IPO market in India has displayed many ups and down during the last two decades. It has observed a sharp rise in the initial years of the liberalized era. The growth observed during the first half of the 90s is mostly credited to the financial liberalization of the economy. Capital market reforms like abolition of the office of controller of capital issues (CCI), constitution of SEBI under the new security and regulation act and relaxation in pricing of capital issues played an important role in such rise. The study has been conducted to compare the extent of underpricing in India during three phases, classified on the basis of activity of IPO market during 1993 to 2007.

During the study period Indian IPO market has experienced a changeable trend. Thus, it is interesting to study the IPO market 1993-94 to 2007-08. Indian IPO market has witnessed boom in 1993-94 to 1996-97. But 1997-98 to 2002-03 can be considered as a cold period for Indian new issue market. Although, in year 1999-00 and 2000-01 IPO market tried to pick up but again failed in 2001-02 & 2002-03. During 2004-05 to 2007-08, again Indian IPO market experienced the boom. These ups and downs attract the researchers to study the Indian IPO market.

REVIEW LITERATURE

The reviews of the various studies regarding IPOs are as:

Ghosh Saurabh (2004) has conducted a study on 1842 offerings for detailed investigation of the boom and slump period (1993-2001) in the Indian primary market. The study concentrates on key variables namely, IPO volume and initial return and analysis their nature and interrelation during those two periods. The IPO volume series was auto correlated over the entire period and especially during the boom period. This suggests that over the sample period, the Indian issuers' did not depend on the information content of the initial returns while taking their decision to go public. Amongst the other characteristics that might have influenced the likelihood of IPOs during hot and cold period (e.g. industry classification, age and under pricing of new issues). Study finds listing delay (lead time) and size of the issue as the significant determinants of underpricing. The study found the contrary results to the international markets, that in Indian market the underpricing is lower during the hot period compared to slump period as stated that

during boom, offers with premium are considered less risky by Indian investors. Study also found evidence that large issue were less underpriced than smaller issue.

Pande Alok, Vaidyanathan R (2007) found that the degree of under pricing in the Indian stock markets has reduced over the years.

Jankiramanan, S. (2007) conducted a study on 116 IPOs issued by the companies in the Indian market during the period from 2000 to 2001. The study found that under- pricing exists in Indian Market.

Sehgal Shikha & Singh Balwinder (2007, 2008) has conducted a study to check underpricing and long run performance of 438 Indian initial public offers listed on BSE during June 1992- March 2001. The mean underpricing has been found to be 99.2 percent, which is very high if compared with international evidence.

Shelly and Singh (2008) studied the 1,963 offerings listed on BSE during July 1992 and August 2006, to study the signaling variables and found that lead manager reputation, firm age, and certification to issue provided by underpricing led to oversubscription while market issue size and industry did not have any significant effect on oversubscription in Indian Market.

Sahoo Seshadev & Prabina Rajib(2010) covered 92 Indian IPOs issued during the period 2002-2006. It is reported that on an average IPOs are underpriced to the tune of 46.55% on the listing day. The long run performance of IPOs upto a period of 36 months are measured by using wealth relative (WR) and average buy and hold abnormal return (BHAR), both being adjusted with market index, CNX-Nifty. The average BHAR after 3 years reported 41.91% on offer price.

Jain Neeta C & Padmavathi (2012) study on 227 book-built IPOs for the period of 2004-2009 found that the average underpricing during this period was 28 percent while the maximum underpricing was around 242 per cent.

Kumar Vinod & Dhanda Neelam (2013) cover 488 IPOs offered through BSE during 1993 to 2007, Study proves existence of underpricing in Indian IPO market. Average market adjusted return & wealth relative are used as price performance indicators. The average market adjusted abnormal return has been reported 82.67 per cent on the listing of IPOs. All the twenty three sectors have shown existence of underpricing with more than one value of wealth relative.

RESEARCH METHODOLOGY

Objectives of the study:

The study has been carried out to compare the The Raw Return, Average MAAR, and Wealth Relative & Annualized Average MAAR of IPOs of three phases on listing day and also to present the comparative position of three phases' Average BHAR & WR at different points of time after listing.

Sample Plan of the study:

This study is based on equity shares initial public offers offered on BSE during 1993-94 to 2007-08. For the years from 1993-94 to 1996-97, it was not feasible to cover all the IPOs offered due to their large number. Therefore, systematic random sampling is used and 400 companies are selected for the study, but due to non-availability of data 166 are companies finally considered for the study related to this time period. 322 companies have been taken for the years from 1997-98 to 2007-08. Thus, in total a sample of 488 companies has been constituted. The companies which issued right issue, bonus issue & who changed the face value of the share during first three years of the IPO listing have been excluded to maintain the accuracy level of the computations of the return.

Data Collection:

To achieve the objectives of the study, secondary data is used. Secondary data is collected from the different sources such as: annual reports of SEBI, Prowess, Primedatabase, The Economics Times, www.icicidirect.com, www.bseindia.com. & www.sebi.gov.in.

Analysis Pattern of the Study:

With a view to know raw return, market return, Market Adjusted Abnormal Return (MAAR), BHAR& Wealth Relative of IPOs the following pattern is used:

Price Behaviour on Listing Day of Indian IPOs:

To examine the price performance on listing day of Indian IPOs, Market adjusted abnormal return of issuing firms and wealth relative have been calculated as under:

Raw Return/Return on a Stock

$$R_i = (P_i/P_o) - 1 * 100$$

Where, R_i (in %) is the shareholders' raw return, P_i is the closing price on the first day of trading and P_o is the offer price.

Return on Market Index

The return on the market index R_m (in %) during the same period is calculated.

$$R_m = (P_{m1}/P_{m0}) - 1 * 100$$

P_{m1} denotes the closing value of the benchmark index on the first trading day of the stock and P_{m0} is the closing value on the benchmark index on the offer's closing day. The BSE Sensex is used as the benchmark index.

Market Adjusted Abnormal Return

$$MAAR = R_i - R_m$$

Market-adjusted abnormal return (in %) is calculated as the return on the stock minus the return on a market benchmark (BSE-sensex) over the same period.

$$\text{Average MAAR} = \frac{1}{n} \sum_{i=1}^n MAAR$$

Annualized Market Adjusted Abnormal Return

$$\text{Annualized Market Adjusted Abnormal Return} = \frac{365}{\text{lead time}} * MAAR$$

Wealth Relative

The magnitude of wealth relative is an indication of the performance of the stock vis-à-vis the benchmark index. A wealth relative greater than unity implies that IPOs outperformed the benchmark index in that period, while a wealth relative below 1 indicates underperformance.

Wealth relative is computed as follows:

$$WR = \frac{1 + \frac{1}{N} \sum_{i=1}^n r_i}{1 + \frac{1}{N} \sum_{i=1}^n r_m}$$

Where,

N = Total number of IPOs in the sample

r_i = $R_i/100$

r_m = $R_m/100$

Short & long run price behaviour of IPOs:

To examine short & long run price behaviour, average buy and hold abnormal returns (BHARs) and the wealth relative (WRs) are calculated. BHARs and WRs of after listing one month, two month, three month and six month have been considered to make out short term price performance of IPOs. Average BHARs and WRs of after listing one year, two years & three years have been considered to compose the long term performance of IPOs.

Buy and hold Abnormal Return (BHAR)

The return of IPO i is calculated for a buy and hold investment strategy. This investment strategy presumes that an IPO is received at the offer price (issue price) and is kept in the portfolio over a

period of T months. The buy-and-hold abnormal return for firm i over a period of t months, is calculated as:

$$BHAR_{iT} = \prod_{t=1}^T (1 + R_t) - \prod_{t=1}^T (1 + R_m)$$

Where, BHAR_{iT} is the buy-and-hold abnormal return for firm i during holding period T, R_m is the raw return for firm i in month or year t, and R_m is the return of the BSE sensex used as the benchmark return. Positive buy-and-hold abnormal return demonstrates better performance of IPO compared to the benchmark. The mean buy-and-hold abnormal return is computed as the arithmetic average of abnormal returns on all IPOs in the sample of size n:

$$\overline{BHAR} = \frac{1}{N} \sum_{t=i}^N BHAR_{iT}$$

where, Average BHAR (average buy-and-hold abnormal return) of all the IPOs in the sample of size N for the holding period T and BHAR_{iT} is the buy-and-hold abnormal return for firm i during the holding period T.

The study endeavors to test the null hypothesis that IPOs in India are not underpriced. In other words, Average MAAR/BHAR is statistically not significant at five per cent level. To test the hypothesis t –test has been used.

Underpricing of IPOs means that average market adjusted abnormal return / buy and hold abnormal return of IPOs is positive or greater than zero. Wealth relative greater than one also indicates for underpricing. On the other hand the IPOs are considered overpriced when average market adjusted abnormal return / buy and hold abnormal return of IPOs is negative or less than zero. Wealth relative less than one also indicates for overpricing.

ANALYSIS & RESULTS

This section compares the three phases of the study period i.e. 1993-94 to 2007-08. This section explains phase-wise, listing day price performance (underpricing) , short term (after listing month one; after listing two months; after listing three months and after listing six months) and long run price performance(after listing one year; after listing two years and after listing three years) .Table 1 depicts the phase-wise underpricing in India. It shows phase-wise average raw return, average market adjusted abnormal return and annualized average market adjusted abnormal return. Average market adjusted return is used to determine the level of underpricing.

Table 1

Phase-Wise Price Performance On Listing Day
(Underpricing) Of IPOs

Phase	No. of IPOs	Average Raw Return (%)	Average Market Adjusted Abnormal Return (%)	Annualized Average Market Abnormal Return (%)	WR
1993-1996	166	68.7150*	65.3519*	306.5311*	1.6323
1997-2003	125	204.1301*	184.4982*	379.6697*	2.5422
2004-2007	197	34.8148*	32.6512*	499.4030*	1.3196
Total	488	89.7161*	82.6700*	403.1256*	1.7723

Underpricing on listing day is very high in cold period or recession period (phase-11)Average market adjusted abnormal return for all three phases is positive & significantly different than zero at 5% level of significance. Indian IPO market has shown underpricing on listing day for all three phases of the study period. Underpricing (average MAAR) ranges 32.6512% to around 184.4982% across the three phases. The average market adjusted abnormal return is highest in the phase 1997-2003. Wealth Relative (WR) of this phase also verify the results, it is more than 2 for the same time period. In the phase 2004-2007, the WR is 1.3196, which is lowest out of these three phases. Average MAAR for phase-1, phase-11& phase-111 is 65.3519%, 184.4982%, 32.6512 respectively. Hence, it is concluded that during the study period Indian IPO market remain underpriced on the listing day or the very first trading of the IPOs.

Table 2 examines the short-run phase-wise price performance or after market performance of IPOs in India. It shows four parameters of short run performance, one month after listing, two months after listing, three months after listing and six month after listing. Average BHAR & WR have used to examine the performance.

Table 2

Phase -Wise Short Term Price Performance Of IPOs

Phase	No. of IPOs	After Listing Month 1		After Listing Month 2		After Listing Month 3		After Listing Month 6	
		AVG. BHAR (%)	WR	AVG. BHAR (%)	WR	AVG. BHAR (%)	WR	AVG. BHAR (%)	WR
1993-1996	166	67.0923*	1.6437	69.8011*	1.6732	70.7036*	1.6810	79.1368*	1.7813
1997-2003	125	145.9041*	2.2296	118.7203*	2.0138	84.9168*	1.7250	58.2133*	1.5164
2004-2007	197	28.1206*	1.2686	23.8967*	1.2243	22.1093*	1.2032	19.3035*	1.1681
Total	488	71.5473*	1.6618	63.8006*	1.5892	54.7273*	1.5010	49.6233*	1.4524

Indian IPO market has shown underpricing for all three phases of the study period in short-run also. Underpricing ranges 19.3% to around 145.9 %. The average BHAR after listing one month, after listing two months & three months is highest in phase 1997-2003. It is concluded that in short run level of underpricing was very high in boom. Wealth Relative (WR) of this phase also verifies the results. The average BHAR after listing six months is highest for the phase 1993-96. In short-run average BHARs for all three phases are positive & significantly different than zero at 5% level of significance. Hence, it is concluded that during the study period Indian IPO market remain underpriced in short-run also.

Table 3 examines the long-run phase-wise price performance or after market performance of IPOs in India. It shows three points of time for long run price performance, one year after listing, two years after listing and three years after listing. BHAR & WR have used to examine the performance.

Table 3

Phase -Wise Long Term Price Performance of IPOs

Phase	No. of IPOs	After Listing year One		After Listing year Two		After Listing year Three	
		AVG. BHAR (%)	WR	AVG. BHAR (%)	WR	AVG. BHAR (%)	WR
1993-1996	166	30.8363*	1.3039	-29.5564*	0.7113	-51.2919*	0.5116
1997-2003	125	76.8935	1.6388	76.8729*	1.5897	90.1145*	1.5582
2004-2007	197	17.9566*	1.1468	31.2538	1.2317	7.0420	1.0504
Total	488	37.4343*	1.3262	22.2536	1.1814	8.4777	1.0635

Phase 1993-96 IPOs showed negative average BHARs for after listing two years & after listing three years. These two values are significantly different than zero. Phase 1997-2003 IPOs scored positive return for long run. The average BHARs for after listing two years and three years are positive & significantly different than zero. It is concluded that the Phase 1997-2003 (cold period) was the golden era of the investors of IPOs. Investors who purchased the IPOs during this phase have scored always positive return upto three years of the listing. But the investors who have purchased IPOs during 1993-96 after listing two years and three years of the listing incurred huge losses. Investors who purchased IPOs during 2004-07 has scored always positive return but the average BHAR is not significantly differ than zero for after two & three years of the listing.

Table 4

Phase-Wise Consolidated Price Performance Of IPOs

Time	AVG.MAAR/ BHAR 1993-1996	AVG.MAAR/ BHAR 1997-2003	AVG.MAAR/ BHAR 2004-2007
Listing Day	65.3519*	184.4982*	32.6512*
After Listing Month 1	67.0923*	145.9041*	28.1206*
After Listing Month 2	69.8011*	118.7203*	23.8967*
After Listing Month 3	70.7036*	84.9168*	22.1093*
After Listing Month 6	79.1368*	58.2133*	19.3035*

After Listing year One	30.8363*	76.8935	17.9566*
After Listing year Two	-29.5564*	76.8729*	31.2538
After Listing year Three	-51.2919*	90.1145*	7.0420
<ul style="list-style-type: none"> • Significant at five per cent level of significance 			

Table 5

Phase-Wise Comparative Price Behaviour of IPOs (Wealth Relative)

Time	WR 1993-1996		WR 1997-2003		WR 2004-2007	
	Listing Day	1.6323	Underpricing	2.5422	Underpricing	1.3196
After Listing Month 1	1.6437	Underpricing	2.2296	Underpricing	1.2686	Underpricing
After Listing Month 2	1.6732	Underpricing	2.0138	Underpricing	1.2243	Underpricing
After Listing Month 3	1.6810	Underpricing	1.7250	Underpricing	1.2032	Underpricing
After Listing Month 6	1.7813	Underpricing	1.5164	Underpricing	1.1681	Underpricing
After Listing year 1	1.3039	Underpricing	1.6388	Underpricing	1.1468	Underpricing
After Listing year 2	0.7113	Overpricing	1.5897	Underpricing	1.2317	Underpricing
After Listing	0.5116	Overpricing	1.5582	Underpricing	1.0504	Underpricing

year 3						
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Average market adjusted abnormal return for all three phases is positive & significantly different than zero at 5% level of significance. Indian IPO market has shown underpricing on listing day for all three phases of the study period. In short-run average BHARs for all three phases are positive & significantly different than zero at 5% level of significance. Hence, it is concluded that during the study period Indian IPO market remain underpriced in short-run also. In long run there are mixed results, Investors who purchased IPOs during 2004-07 has scored always positive return but the average BHAR is not significantly differ than zero for after two & three years of the listing. 1997-2003 was the golden phase from the investors' point of view. Investors who purchased the IPOs during this phase have scored always positive return upto three years of the listing. But the investors who have purchased IPOs during 1993-96 after listing two years and three years of the listing faced significantly negative average BHAR.

Table 5 is showing WR for all three phases. On the base of that it is concluded that the Phase 1997-2003 was the golden era of the investors of IPOs. Investors who purchased the IPOs during this phase have scored always positive return upto three years of the listing. But the investors who have purchased IPOs during 1993-96 after listing two years and three years of the listing incurred huge losses. Investors who purchased IPOs during 2004-07 has scored always positive return but the average BHAR is not significantly differ than zero for after two & three years of the listing.

CONCLUSION

The whole fifteen years has been classified into three phases that is Phase I from 1993-1996, Phase II from 1997-2003 and Phase III 2004-2007. Average market adjusted abnormal return for all three phases is positive & significantly different than zero at 5% level of significance. Indian IPO market has shown underpricing on listing day for all three phases of the study period. In short-run average BHARs for all three phases are positive & significantly different than zero at 5% level of significance. Hence, it is concluded that during the study period Indian IPO market remain underpriced in short-run also. Only for phase 1993-96 after listing two years & three years value of wealth relatives are less than one, which confirms the overpricing. Moreover, the investors who have purchased IPOs during 1993-96 after listing two years and three years of the listing faced significantly negative average BHAR. Investors who purchased the IPOs during this phase II have scored always positive return upto three years of the listing. Hence, it may be

concluded the 1997-2003 was the golden phase from the investors' point of view. In long run there are mixed results, Investors who purchased IPOs during 2004-07 has scored always positive return but the average BHAR is not significantly differ than zero for after two & three years of the listing. It is concluded that in cold period or low activity period (phase during 1997-2003), level of underpricing was very high. Investors have scored gorgeous earnings in short run as well as long run. Results of the present study similar with Ghosh, S. (2004).

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ANNEXURE

Table 6
One-Sample T Test All IPOs

All IPOs	Test Value = 0					
	t	df	Sig. (2- tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Raw Return	6.125	487	0.0000	89.7161	60.9352	118.4970
AVG.MAAR	5.755	487	0.0000	82.6700	54.4438	110.8963
AVG. BHAR m1	6.415	487	0.0000	71.5473	49.6344	93.4602
AVG. BHARm2	5.411	487	0.0000	63.8006	40.6320	86.9692
AVG. BHARm3	5.723	487	0.0000	54.7273	35.9378	73.5168
AVG. BHARm6	5.815	487	0.0000	49.6233	32.8553	66.3913
AVG. BHARy1	2.942	487	0.0030	37.4343	12.4324	62.4363
AVG. BHARy2	1.675	487	0.0950	22.2536	-3.8486	48.3558
AVG. BHARy3	0.633	487	0.5270	8.4777	-17.8484	34.8038
AVG. AMAAR	10.574	487	0.0000	403.1256	328.2173	478.0339

Table 7
One-Sample T Test Phase 1993-96

1993-96	Test Value = 0					
	t	df	Sig. (2- tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Raw Return	7.253	165	0.0000	68.7150	50.0103	87.4197
AVG.MAAR	6.953	165	0.0000	65.3519	46.7934	83.9104
AVG. BHAR m1	5.91	165	0.0000	67.0923	44.6778	89.5068
AVG. BHARm2	5.441	165	0.0000	69.8011	44.4696	95.1327
AVG. BHARm3	5.353	165	0.0000	70.7036	44.6226	96.7847

AVG. BHARm6	4.482	165	0.0000	79.1368	44.2742	113.9994
AVG. BHARy1	2.106	165	0.0370	30.8363	1.9319	59.7408
AVG. BHARy2	-4.068	165	0.0000	-29.5564	-43.9019	-15.2109
AVG. BHARy3	-8.167	165	0.0000	-51.2919	-63.6917	-38.8921
AVG. AMAAR	6.964	165	0.0000	306.5311	219.6231	393.4391

Table 8**One-Sample T Test Phase 1997-2003**

1997-2003	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Raw Return	3.765	124	0.0000	204.1300	96.8300	311.4300
AVG.MAAR	3.457	124	0.0010	184.4982	78.8586	290.1377
AVG. BHAR m1	3.71	124	0.0000	145.9041	68.0555	223.7526
AVG. BHARm2	2.852	124	0.0050	118.7203	36.3424	201.0982
AVG. BHARm3	2.7	124	0.0080	84.9168	22.6678	147.1658
AVG. BHARm6	2.75	124	0.0070	58.2133	16.3130	100.1136
AVG. BHARy1	1.766	124	0.0800	76.8935	-9.2959	163.0828
AVG. BHARy2	2.096	124	0.0381	76.872	4.2882	149.4576
AVG. BHARy3	2.189	124	0.0300	90.1145	8.6515	171.5775
AVG. AMAAR	3.787	124	0.0000	379.6697	181.2144	578.1251

Table 9**One-Sample T Test Phase 2004-2007**

2004-2007	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper

Raw Return	8.318	196	0.0000	34.8148	26.5609	43.0688
AVG.MAAR	8.066	196	0.0000	32.6512	24.6681	40.6344
AVG. BHAR m1	5.568	196	0.0000	28.1206	18.1597	38.0815
AVG. BHARm2	4.721	196	0.0000	23.8967	13.9151	33.8784
AVG. BHARm3	3.876	196	0.0000	22.1093	10.8585	33.3601
AVG. BHARm6	3.11	196	0.0020	19.3035	7.0615	31.5454
AVG. BHARy1	2.057	196	0.0410	17.9566	0.7415	35.1717
AVG. BHARy2	1.416	196	0.1580	31.2538	-12.2816	74.7892
AVG. BHARy3	0.371	196	0.7110	7.0420	-30.3776	44.4615
AVG. AMAAR	8.506	196	0.0000	499.4030	383.6207	615.1853