



Short Run and Long Run Performance of Indian Initial Public Offerings (IPOs) during 2007-2012

Kompalli Sasi Kumar

Associate Professor-Finance, Siva Sivani Institute of Management, Kompally, Secunderabad– 500 014,

Abstract : Post Issue Performance of Initial Public Offerings (IPOs) is a matter of concern to many stakeholders in the capital markets. Especially pricing performance of IPOs in terms of under pricing or over pricing is a specific issue for long term stay in the securities. It has been observed over a long period of time in the Indian Stock Markets that during the consistent boom periods, retail investors are participating in the IPOs for listing day gains. This is not a good sign for the long term survival of the markets, keeping this into consideration SEBI initiated various measures in the Initial Public Offering (IPO) market viz., Introducing Anchor Investors, ASBA, Allotment of Shares within a week etc., This paper examines the short run and long run performance of 211 Indian Initial Public Offerings (IPOs) during 2007-2012. This paper examines the performance of IPOs in the short run as well as in the long run with the help of aftermarket price performance indicators like Market Adjusted Abnormal Returns (MAAR), Wealth Relatives (WR), Buy and Hold Abnormal Returns (BHAR) and to understand the factors affecting the long run performance of IPOs the study run a multiple regression analysis with the various factors like offer size (OS), ex-ante uncertainty (Ex-ante), post-issue promoter holding (PIPH), subscription rate (SUB), age of the IPO firm (AGE) initial return (UP), leverage ratio (LEV), and IPO activity period (TIME) etc., Post-IPO price performance has been studied with reference to both listing price and offer price up to 36 months from the listing day. The results suggest that the investors who are investing in IPOs through direct subscription are earning a positive market-adjusted return throughout the period of study. But investors who have bought shares on the IPO listing day are earning negative returns up to 12 months from the listing date and expect to earn positive market-adjusted return thereafter.

Key Words: Underpricing, Overpricing, Wealth Relative, Market Adjusted Abnormal Returns, Buy and Hold Abnormal Returns.

Initial Public Offering (IPO)

IPO stands for Initial Public Offering and means the new offer of shares from a company which was previously unlisted. This is done by offering those shares to the public, which were held by the promoters or the private investors prior to the IPO. In the case when other investors or Promoter held the shares the stake holding comes down to the extent their shares are offered to the

public. In other cases new shares are issued to the public and the shares, which are with the promoters stay with them. In both cases the share of the promoters in the total capital comes down.

An IPO is the first sale of stock by a company to the public. A company can raise money by issuing either debt or equity. If the company has never issued equity to the public, it's known as an IPO. An Initial Public Offer (IPO) is the selling of securities to the public in the primary market. This Initial Public Offering can be made through methods such as the fixed price method, book building method or a combination of both. Book building is a process introduced in India in 1999, which enables the company to discover the price and demand of its securities.

An IPO may be through a 100% book building process or a 75% book building process. In the latter, the remaining issue is made through a fixed price method. In this method, the issuer company mentions the fixed issue price of its shares in the prospectus. Here, no bidding takes place.

Pricing of IPOs

Under pricing

The pricing of an initial public offering (IPO) below its market value, when the offer price is lower than the price of the first trade, the stock is considered to be underpriced. A stock is usually only underpriced temporarily because the laws of supply and demand will eventually drive it toward its intrinsic value.

Overpricing

Overpricing is measured as the difference between the offer or opening price for the IPO's stock and its closing price after the first day of trading scaled by the offer price. When the opening price exceeds the closing price, the IPO is said to be overpriced.

Why Are IPOs Underpriced?

IPO under pricing continues to be a global phenomenon despite a vast amount of research that attempts to explain it. Theories based on information asymmetry suggest that high-quality issuers deliberately

underpriced their IPOs to signal their quality to outside investors, hoping that it will be too costly for low-quality issuers to mimic. Under pricing also helps to overcome adverse selection problems. Since uninformed investors tend to get a higher allocation of overpriced shares, they will stop participating in IPOs if issues are not, on average, underpriced. In the book-building framework, the theory of partial adjustment suggests that investment banks only partially adjust IPO offer prices upward when they receive positive information about the value of the issue. They purposely leave money on the table to reward investors who truthfully reveal their information about the issue and threaten access to future deals for those that do not. Some studies suggest that investment banks under price IPOs to protect their reputation. When new issues are priced lower than they should be, investment bankers reduce their legal liability by lowering the chance of price declines. There is also evidence that greater under pricing leads to more aftermarket trading volume, which increases the revenue of investment bankers when they subsequently become the market-makers for these IPO firms.

Review of Literature

Rock (1986) has provided the information asymmetry model as one of the basic model to explain the IPO under pricing. His model attributes the under pricing of IPOs to information asymmetry between the informed and uninformed investors. Due to this asymmetry, informed investors compete only for the "good" issues, thereby creating an adverse selection problem where the probability of uninformed investors of obtaining "bad" issues was larger. This was also referred to "the winner's curse". Rock conjectured that a discount on the offer price was required to attract uninformed investors which he called it as under pricing. Therefore his model implies a positive relationship between the magnitude of under pricing and the risk of an issue. Several empirical studies, including Beatty and Ritter (1986), Koh and Walter (1989), Keloharju (1993), and Michaely and Shaw (1994), have found evidence consistent with the winner's curse explanation.

Keasey and Short (1992) examined the level of under pricing of IPOs in the UK, during 1984-1988. They determine the extent to which the level of under pricing of IPOs on the UK Unlisted Securities Market (USM) can be explained by factors related to the level of ex ante uncertainty surrounding IPOs. They use age of firm, per cent of equity retained by pre-offering shareholder, inverse of gross proceeds, net proceeds, industry classification, change in market index and quality of broker as explanatory variables. The level of under pricing is 14 per cent, and it is related to few variables. The results of the paper indicated that the level of under pricing of IPOs on the USM is found to be significantly related to only a few of the factors designed to capture ex ante uncertainty. Specifically the level of under pricing is significantly related to per cent of equity retained in the firm, the amount of money raised on

flotation and presence of earning and forecast. In the long run, the evidence is that of underperformance, i.e., negative returns accrue to the investors holding these IPOs. Numerous studies in various countries have confirmed underperformance after one year (Aggarwal and Rivoli, 1990), three years (Ritter, 1991 and Loughran et al., 1994), five years (Loughran and Ritter, 1995) and six years (Loughran, 1993) Ibbotson (1975) studied the negative relation between initial returns at the IPO and long run share price performance for a sample of US IPOs issued during the period 1960-69. He reported that there was a general positive performance in the first year, negative performance in the next three years and a general positive performance in the fifth year. The distribution of returns was highly skewed, indicating that these investments were individually very risky.

Miller (2000) proposed that initial public offering, even though risky typically underperform the indices for the first few years after offering. This can be shown by the high divergence of opinion raising the initial market price, and by this divergence of opinion declining over time. With time, the valuation of the price setting marginal investor come closure to the average investor's valuation. In this article he explains that firms with the greatest underperformance are those with the short operating history, low sales, low prestige underwriter, low institutional ownership, high volatility, high under pricing at the time of issuance, listing on regional exchanges, and those in certain industries. Jakobsen and Voetmann (2005) examined the long-run security performance of 142 IPOs and 413 SEOs from Denmark during the period 1983-1998. The volatility-adjusted buy-and-hold returns show that IPOs and Seasoned Equity Offerings (SEOs) under performed over a five-year period by 43.7 per cent and 38.1 per cent, respectively. The under performance is more evident for equity offerings in a hot issue period compared to a cold issue period. They found that after five years the buy and- hold returns of IPO and SEO stocks underperformed the market by 27.3 per cent and 21.4 per cent, respectively. By applying the new approach, they found that after five years the same stocks underperformed by 43.7 per cent and 38.1 per cent.

Gao, Mao and Zhong (2006) examined the relation between return volatility and IPO long-term performance of 4,057 IPOs obtained from the Thomson Financial Securities Data Company (SDC) New Issue database from January 1, 1980, to December 31, 2000. They found that IPOs with higher early market return volatility have significantly lower long-term performance one, two, and three years after issuance. This relation is much stronger in IPO markets than in non-IPO markets (where short-selling restrictions are less stringent). Their results support Miller's (1977) argument that in IPO markets, which feature severe short sales constraints, divergence of opinion among investors leads to inflated early aftermarket prices, and hence results in underperformance in the long run.

Kirkulak (2008) examined long run returns of Japanese IPOs in particular venture capital (VC)-backed and non-VC-backed. His main research focus was on the performance of VC-backed companies. He presented a comprehensive long-run performance analysis. As such, it provides evidence using two performance methods: cumulative abnormal returns (CARs) and buy-and-hold return (BHARs). The paper used updated data from 1998 through 2001. He found that Japanese IPOs underperform in the long-run. The fads hypothesis was applicable to explain the poor long-run performance. The results suggested that VC-backed companies performed significantly worse over a three-year time horizon than non-VC-backed companies.

Seshadev Sahoo and Prabina Rajib: The paper presents fresh evidence on IPO performance, i.e., short-run underpricing and long-run underperformance for 92 Indian IPOs issued during the period 2002-2006. It is reported that on an average the Indian IPOs are underpriced to the tune of 46.55 per cent on the listing day (listing day return vis-à-vis issue price) compared to the market index. Another contribution of this paper is the evaluation of the long-run post-issue price performance of Indian IPOs. The long-run performance of IPOs up to a period of 36 months are measured by using the two most promising evaluation techniques, i.e., wealth relative (WR) and buy-and-hold abnormal rate of return (BHAR), both being adjusted with market index, CNX-Nifty. Further, the results evidence that the underperformance in most pronounced during the initial year of trading, i.e., up to 12 months from the listing date followed by over-performance. To get possible explanations for long-run underperformance for Indian IPOs, factors like under pricing rate (listing day return), offer size, leverage at IPO date, ex-ante uncertainty, timing of issue, age of IPO firm, rate of subscription, promoter groups retention, and price-to-book value (as proxy for growth) are considered. Evidence is found, that initial day return, offer size, leverage at IPO date, ex-ante uncertainty, and timing of issue are statistically significant in influencing underperformance. However, there is no evidence favourable to the age of the IPO firm, rate of subscription, promoter group's retention, and price-to-book value impact on the long-run underperformance. Sampada Kapse and Manju Raisinghan, 2013: The paper evaluates the under pricing of Indian IPOs for three years (i.e. 2008, 2009 & 2010). The study was undertaken to find out the trend of under pricing of Indian IPOs, relation between the market condition and the under pricing, market efficiency and under pricing and demand for IPOs and under pricing. Under pricing of IPOs existed in Indian market. Market was not efficient as investors who were not able to invest at the time of IPO issue earned on the first day of the listing. The results show that Indian IPOs give excess abnormal return in the sample period and for the selected companies even if overall market factor is controlled.

Need for the Study

The study examines the initial public offerings offered by various companies and determines the performance of the price of these IPOs, followed by use of various indicators that are relevant in quantifying and understanding the pricing performance of the IPOs of the selected companies in the short run (listing day) as well as in the long run (1 month, 6 months, 12 months, 24 months and 36 months).

This study is significant to show that whether the price of the IPOs are underpriced and what is the impact of these pricing strategy in the short run and the long run.

Objective of the Study

To understand and examine the pricing performance of initial public offerings in the short run (listing day) and long run (1 month, 3months, 6months, 12months, 24months and 36months).

Scope of the Study

- Analysis of 211 IPOs from in the period 2007 to 2012.
- Measurement of performance with reference to average return with the same day (1month, 3months, 6months, 12months, 24months, 36months)
- Project emphasis more in fluctuation of share price after public offering is retained.

Limitations of the Study

1. The data is analyzed for a limited period from 2007 to 2012 which may not give complete idea about the performance of IPOs in short and long run.
2. Study analysis the performance only in comparison to the retention of index, other effects of market are not taken into consideration.

Research Methodology

Short-run After-market Price Performance

To examine the degree of under pricing of the Indian IPOs, we calculate market-adjusted initial returns for all IPOs. Market-adjusted abnormal return (MAAR) for the listing day is calculated as the difference of initial return calculated for the security (i) on day one to the benchmark return on that day. Miller and Reilly (1987) calculated MAAR using the formula as given in Eq. (1). The MAAR for the IPO stock (i) on day 1 is calculated by using Eq. (1).

$$MAAR_{i1} = \left[\frac{(1 + R_{i1})}{(1 + R_{m1})} - 1 \right] \times 100 \text{ ----- (1)}$$

Where, MAAR_{t1} is the market-adjusted abnormal rate of return for the stock *ion* day 1, *R_{i1}* reflects the percentage change in list price *vis-à-vis* offer price. *R_{m1}* is calculated as the percentage change in closing market index value on the listing day to market index on the date of closure of issue. The initial day price

performance of each IPO has been calculated by using Eq.(1). The S & P CNX Nifty3 (hence after Nifty) closing value has been used to calculate the market index return.

Methodology for Computation of Long-run Abnormal Returns

Motivated by the existing international practice, we use both WR and BHAR to evaluate long-term performance for a period of 36 months from the date of listing. BHAR and WR are calculated with reference to both issue price and list price.

Wealth Relatives

The performance of a group of IPOs on using the wealth relatives is evaluated for a specific point of time. Levis(1993) studied the long-run performance of 712 IPOs issued in the UK for the period 1980-88 by calculating the wealth relatives (WR), which he defined as follows:

$$WR_{it} = \frac{1 + \frac{1}{N} \sum_{i=1}^N R_{it}}{1 + \frac{1}{N} \sum_{i=1}^N R_{mt}} \quad \text{----- (2)}$$

Where, R_{it} is the return of the individual IPO stocks on day t from the offer day; R_{mt} is the market index return for Nifty for the corresponding time period. We calculate the wealth relatives for different time periods, i.e., listing day, at one month, six months, 12 months, 24 months, and 30 days' time from the listing day. Wealth relatives have also been evaluated for the IPOs issued each year. The total size of IPOs in the portfolio for discussion is represented by N . The WRs of more than one indicates better performance of IPOs over the market index, while a value of less than one indicates underperformance of IPOs.

Buy and Hold Abnormal Returns

Market-adjusted BHAR has been computed with reference to both offer price and list price. Through this method, we assess the change in the wealth of the investors for the sample IPOs by assuming that the same amount of money is passively invested in the initial day and held for a specified period (excluding initial day) and then compare these with a market benchmark. The market-adjusted BHAR as the excess return for the IPOs over and above the market return is computed as:

$$BHAR_{it} = \prod_{t=1}^T (1 + R_{it}) - \prod_{t=1}^T (1 + R_{mt}) \quad \text{----- (3)}$$

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:

$$\overline{BHAR} = \frac{1}{N} \sum_{i=1}^N BHAR_{it} \quad \text{----- (4)}$$

A positive BHAR for a specific time period is interpreted as a better performance for the IPOs compared to the benchmark return for the same period. The advantage of this method is that 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.

Factors affecting Long-run Price Performance

Multivariate regression (OLS) is used to test the influence of the explanatory variables on the long-run underperformance, measured by BHAR. While identifying predictors, we focus on those variables that have some theoretical hypothesis and proven predictive power for explaining underperformance. These include offer size (OS), ex-ante uncertainty (Ex-ante), post-issue promoter holding (PIPH), subscription rate (SUB), age of the IPO firm (AGE) initial return (UP), leverage ratio (LEV), and IPO activity period (TIME). Besides, our study also incorporates IPO characteristics intrinsic to the nature of the firms, i.e., offer price– to-book value ratio (P/BV). The empirical OLS regression model stands as follows:

$$BHAR_{12} = \alpha_0 + \beta_1(UP) + \beta_2(OS) + \beta_3(PIPH) + \beta_4(LEV) + \beta_5(Ex-ante) + \beta_6(SUB) + \beta_7(AGE) + \beta_8(P/BV) + \beta_9(TIME) + \epsilon \quad \text{----- (5)}$$

The methodology is explained in terms of analysis of after-market price performance, i.e., performance on the listing day, followed by an estimation of long-term pricing performance over a period of 36 months from the date of listing. Wealth relatives (WR) and Buy and Hold Abnormal Returns (BHAR) is used to evaluate the long-run after-market returns for IPOs. The predictive influence of the firm and issue-specific factors on underperformance, i.e., long-run price performance, is then explained. The report presents fresh evidence on IPO performance, i.e., short-run under pricing and long-run underperformance for 211 Indian IPOs issued during the period 2007-2012.

Description of Regression Variables

Dependent Variable:

BHAR- The BHAR for each IPO is estimated on using Eq. (3) for the periods, i.e., listing day, one month, three months, six months, twelve months, twenty four months, and thirty six months. BHARs are also estimated with reference to both list price and offer price. Average BHARs (equal weight for each IPO) for each period is estimated on using Eq. (4).

Independent Variables:

Under price (UP)- Under price is the initial day return being computed as MAAR by following Eq.(1). It estimates the return earned by the initial day investors by investing directly through prospectus.

Offer size (OS) - Offer size is the amount of capital the company wants to raise through IPO. Offer size is also referred as capitalization of the IPO firm with respect to offer price, estimated as the product of offer price with number of shares offered through IPO.

Post-issue promoter holding (PIPH)- Defined as the percentage of shares being owned and retained by the promoter and the promoters group, i.e., group of insiders (promoter, manager CEO, venture capitalists and employees) in the post-issue scenario.

Leverage ratio (LEV) - Leverage is calculated as book value of long-term debt to the paid up equity capital of the firm at the IPO date. Pre-IPO debt-equity ratio signals the financial risks of the firm.

Ex-ante uncertainty (Ex-ante)- Ex-post standard deviation of the market price for initial twenty trading days (inclusive of listing day) have been used as proxy

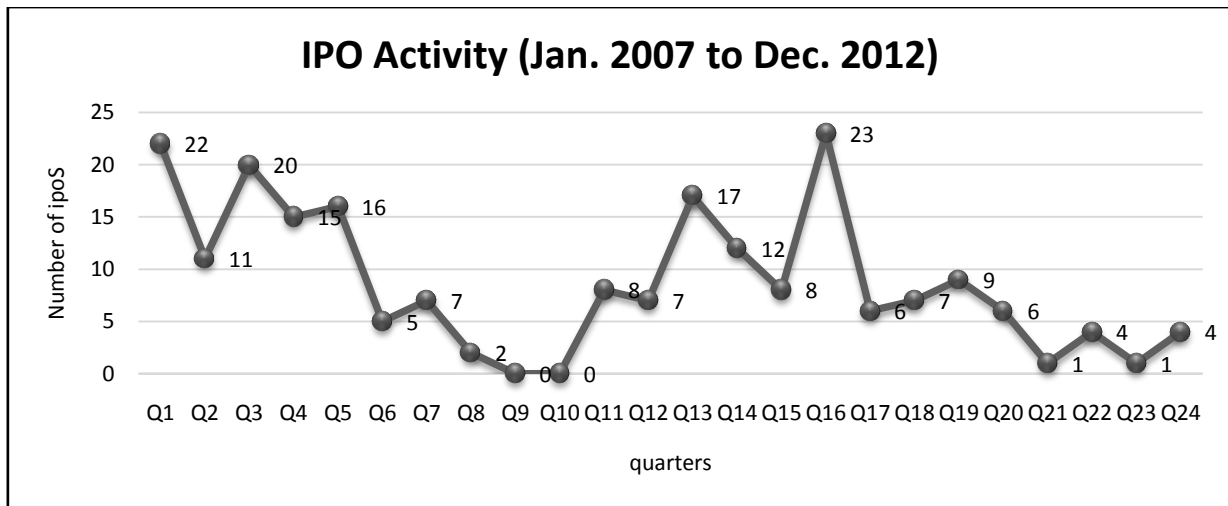
for ex-ante uncertainty for the after-market performance of IPOs. It indicates the volatility of the IPOs in the post-listing scenario.

Times subscribed(SUB) - Indicates magnitude of response of the investors for an IPO. Estimated as the ratio of application size to the issue size (in volume), popularly referred as over subscription rate.

Age of IPO firm (AGE) - Age is estimated as the difference between the date of incorporation and the date at which the company goes public and has been rounded to whole numbers in years. Age reflects the magnitude of operational history of the IPO firm.

Price-to-book Value ratio (P/BV)- P/BV ratio is estimated as the ratio of offer price to the book value of the firm (per share) at the IPO date. Book value as net of total assets available to shareholders (book value of total assets minus outside liabilities) to the number of shares outstanding at IPO date. P/BV ratio is used as a proxy for overly optimistic growth for IPO.

IPO activity Period(TIME)- Timing of IPO is regressed with the buy-and-hold return. Dummy variable 1 is used as proxy for IPO issued during hot IPO period, and 0 is used for cold IPOs.



Data Analysis and Interpretation

Table 1 presents the details of number of IPOs underpriced, overpriced during 2007 to 2012, there were 173 securities which were underpriced from 211 securities issued. Under pricing (or) Overpricing of issues is identified by making comparison between issue price and listing price of various issues in the market. Literature reveals that IPOs Under pricing and Overpricing is happening due to four primary reasons viz., Information Asymmetry, Institutional Reasons, Ownership and Control Issues, Behavioral Reasons, Risk and Uncertainty and Divergence of Opinion etc.,

Table 1 : No of Issues Underpriced, Overpriced During 2007-2012

YEAR	NO. OF ISSUES	UNDERPRICE D	OVERPRICE D
2007	72	57	15
2008	26	20	6
2009	19	19	0
2010	57	49	8
2011	27	21	6
2012	10	7	3
Total	211	173	38

Table 2 -Market Adjusted Abnormal Returns

Year	MARKET ADJUSTED RETURNS			ABNORMAL
	Mean	Median	Max.	Min.
2007	0.0452	-0.0405	1.0351	-0.4012
2008	0.0292	0.0332	0.9943	-0.3838
2009	0.0316	-0.0182	0.6517	-0.2386

2010	0.0164	0.0037	0.5979	-0.3763
2011	0.0115	-0.0506	1.0766	-0.6958
2012	-0.0039	-0.0245	0.1109	-0.0718

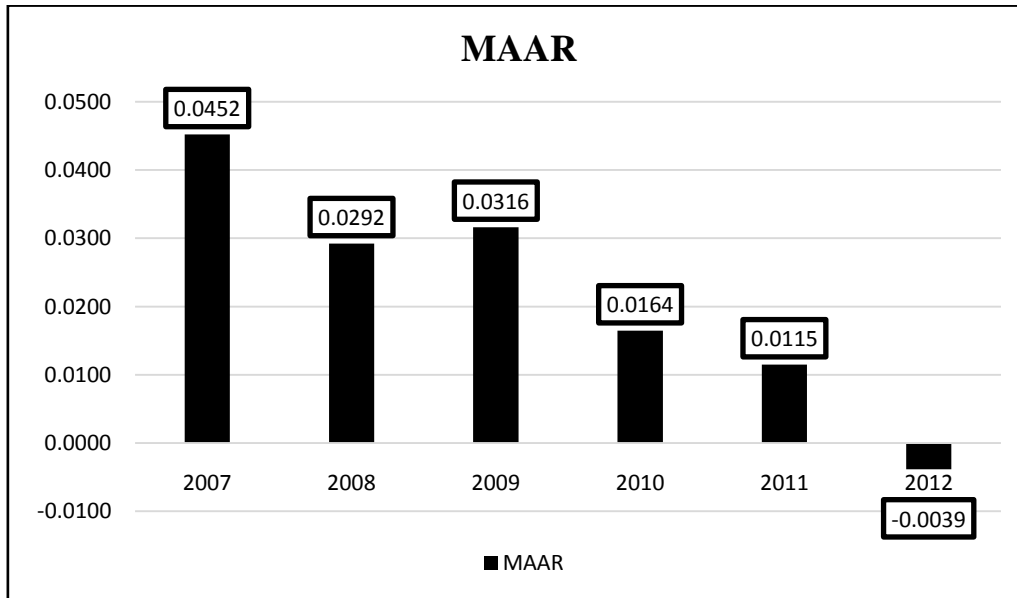


Table 2 Market Adjusted Abnormal Returns (MAAR) shows the performance of IPO on the initial day i.e. first trading day. From the above table it can be inferred that average MAAR for the year 2007 to 2011 is positive

which means the IPOs are performing better than the market. There is a profit potential on first day of initial public and positive return for the investor. So IPOs generally performed better on initial day thus giving good return.

Table 3 - Wealth Relatives

YEAR	NO. OF ISSUES	WEALTH RELATIVES					
		FIRST DAY	1 MONTH	6 MONTHS	12 MONTHS	24 MONTHS	36 MONTHS
2007	72	0.990	0.960	0.903	0.844	0.193	0.748
2008	26	1.027	0.913	0.779	0.585	0.853	0.613
2009	19	1.032	0.977	0.948	0.908	0.525	0.562
2010	57	0.995	0.959	0.952	0.842	0.785	0.713
2011	27	1.011	0.777	0.672	0.670	0.292	0.507
2012	10	0.998	1.016	1.157	0.854	NA	NA

Wealth Relatives of more than one indicates better performance of IPOs over the market index, while a value of less than one indicates underperformance of IPOs. From the table 3 it can be inferred that for the first day IPOs issued in the years 2008, 2009 and 2011 performed better than the market index, whereas IPOs issued in the year 2007, 2010 and 2012 underperformed than the market index. As is evidence from the table 3,

the performance of the IPOs on the listing is better than in the long run except only in the year 2012. As the period increases i.e. 1 month, 6 months, 12 months, 24 months and 36 months, the value of the wealth relatives goes on decreasing i.e. the performance of the IPOs is decreasing as compared to the market index. This clearly indicates the most of the IPOs are underpriced due to which the returns are high on the initial day but decreases in the long run.

Table 4 - Buy and Hold Abnormal Returns (BHAR)

YEAR	NO. OF ISSUES	MEAN BUY AND HOLD ABNORMAL RETURNS (BHAR)					
		FIRST DAY	1 MONTH	6 MONTHS	12 MONTHS	24 MONTHS	36 MONTHS
2007	72	-0.013	-0.026	-0.006	-0.209	-0.422	-0.514
2008	26	0.029	-0.084	-0.082	-0.276	-0.368	-0.625
2009	19	0.057	-0.009	0.060	-0.001	-0.175	-0.185
2010	57	-0.005	-0.036	-0.033	-0.125	-0.128	-0.150
2011	27	0.011	-0.157	-0.163	-0.111	-0.461	-0.371
2012	10	-0.004	0.032	0.323	-0.213		

A positive BHAR for a specific time period is interpreted as a better performance for the IPOs compared to the benchmark return for the same period. The advantage of this method is that the terminal values of both of the investment strategies, i.e., investment on a portfolio of IPO and market index, are compared. Table

4 indicates that mean BHAR for 1 month all the years except 2012 is negative, for 6 months the mean BHAR is positive only for years 2009 and 2012, for 12 months mean BHAR is negative for all the years, for 24 months and 36 months also the mean BHAR is negative for all the years. This shows that the stocks are not performing better than the market in the long run.

Table5 -Descriptive Statistics of Variables

Variables	Mean	Median	Max. Value	Min. Value	Standard Deviation	Skewness	Kurtosis
UP	0.03	-0.02	1.08	-0.70	0.28	1.06	2.09
OS	524.26	124.62	15199.44	23.25	1561.31	6.77	52.83
PIPH	0.54	0.57	0.90	0.00	0.21	-0.65	-0.22
AGE	16.43	12.50	102.00	2.00	15.61	3.28	13.31
P/BV	5.18	3.20	122.95	0.08	9.98	8.87	96.52
SUB	0.74	0.79	1.00	0.06	0.19	-1.15	1.11
LEV	1.40	0.65	33.38	0.00	3.40	6.55	50.25
Ex-ante	19.10	10.16	133.84	0.17	22.14	2.28	5.95

The above table summarizes firm characteristics for 211 IPOs issued during the period 2007-2012. Underprice (UP) is expressed in terms of percentage. Offer size (OS) is estimated in INR crore, while post-issue promoter holding (PIPH) is scaled in percentages. The age of the IPO firm (AGE) is reported in years. Variables such as issue price-to-book value (P/BV), subscription rate (SUB), and leverage (LEV) are denoted in times. Ex-ante uncertainties (Ex-ante) as the measure of standard deviation of post-listing price behavior are evaluated in percentages.

The mean offer value of the IPOs issued during the period 2007-2012 is INR 524.26 crore. The lowest and the highest offer size was INR 23.25 crore and INR 15199.44crore respectively. Large differences in maximum and minimum offer size indicate a wide variation in the distribution of this variable.

Average PIPH is 54 per cent with a median value of 57 per cent. Skewness and Kurtosis values suggest the near normal distribution for the variable. The low percentages of dilution through IPOs and holding of high percentages of equity in the post-IPO scenario reflect the promoter group's confidence in the IPO firms. The average age for the Indian IPO firms is 16.43 years. The median age is 12.50 years for the sample IPOs. P/BV ratio reflects the fundamental valuation multiples for the firm at the time of issue. It is also widely presumed as growth proxy for the IPO firm. As

shown in the table, P/BV ratio varies from 0.08 to 122.95 times, with a standard deviation of 9.98.

On an average, the IPOs got subscribed 0.74 times. The median value for the over-subscription rate is 0.79 with a standard deviation of 0.19. The mean SUB value is less than the median value indicating that a lesser number of issues are subscribed at a higher rate. Further, a significant difference between the maximum and the minimum value of SUB along with a large standard deviation suggests wide variations.

Leverage is estimated as the ratio of book value of long-term debt to paid-up equity capital of the firm. The debt component in the capital mix indicates the exposure of the IPO firm towards risk capital. Pre-IPO leverage signals financial risk and hence affects valuation of the IPOs.

Above table indicates that the mean value of leverage is 1.40 times. Median values of 0.65 indicate that the average IPO firms do not have a risky capital structure at the time of becoming public.

Ex-ante uncertainty is used as proxy for risk surrounding the IPOs. Ex-post standard deviation of the market price for the initial 20 trading days is used as proxy for ex-ante uncertainty in the regression analysis. The data for ex-ante in the table report a mean value of 19.10. Though the highest value is 133.84, a low median value

of 10.16 indicates lesser variability in the post-listing prices.

Multivariate Regression Model

Table 6 - Model: OLS, using observations 1-211

Dependent variable: BHAR

<i>Variable</i>	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>
Const.	-0.336644	0.253027	-1.3305	0.18488
Underprice	0.356775	0.169843	2.1006	0.03693
Offer Size Rs.	1.49073e-05	1.25833e-05	1.1847	0.23755
Post-issue promotion holding	0.10981	0.227793	0.4821	0.63029
Leverage Ratio	0.00146751	0.0112683	0.1302	0.89651
Ex-ante uncertainty	-0.00188614	0.00138132	-1.3655	0.17364
Times subscribe	-0.00439458	0.195817	-0.0224	0.98212
Age of IPO firm	0.000195855	0.00282448	0.0693	0.94479
Price to book value	-0.00212824	0.0022716	-0.9369	0.34995
IPO activity Period	0.0955451	0.161846	0.5903	0.55562

Mean dependent variable	-0.215034	S.D. dependent variable	0.580590
Sum squared residual	68.42363	S.E. of regression	0.584909
R-squared	0.028773	Adjusted R-squared	-0.014932
F(9, 200)	1.644617	P-value(F)	0.104784
Log-likelihood	-180.2312	Akaike criterion	380.4624
Schwarz criterion	413.9335	Hannan-Quinn	393.9936

<i>Variable</i>	<i>Coefficient</i>	<i>p-value</i>	<i>Interpretation</i>
Constant	-0.3366	0.1849	Significant
Underprice	0.3568	0.0369	Insignificant*
Offer Size Rs.	0.0000	0.2376	Significant
Post-issue promotion holding	0.1098	0.6303	Significant
Leverage Ratio	0.0015	0.8965	Significant
Ex-ante uncertainty	-0.0019	0.1736	Significant
Times subscribe	-0.0044	0.9821	Significant
Age of IPO firm	0.0002	0.9448	Significant
Price to book value	-0.0021	0.3500	Significant
IPO activity Period	0.0955	0.5556	Significant

Note: * indicate significance at 5% level.

Above table establishes that UP, PIPH, LEV, Ex-ante, SUB, Age, P/BV and TIME document significant predictive relationship with under performance. Amongst the significant variables, Ex-ante, SUB and P/BV show negative association with under performance, while UP, PIPH, LEV, Age and TIME are positively related with underperformance. Statistically, the most significant variable in our regression model is Under price (MAAR), which has a positive sign, and thus has positive impact on the long-run IPO market performance. The second most important variable in the above table is the post-issue promotion holding. The coefficient is positive and is significant at 5 per cent indicating that IPOs with high PIPH underperform compared to IPOs with low PIPH.

In a multiple regression model R-squared is determined by pairwise correlations among *all* the variables, including correlations of the independent variables with each other as well as with the dependent variable. An R squared value of 2.9% shows that in the above model the

independent variables influence the dependent variable for 2.9% whereas the rest other factors are influencing.

Findings

A common explanation for the gap between the initial and close-of-the-first-day prices is that firms going public are risky ventures and investment banks are prudent to set initial prices low. An alternative explanation for under pricing is that it is in the interests of some of the parties to the sale -- mainly the institutional investors, venture capitalists, and underwriting investment banks -- to have a low initial price. Managers who serve on boards of directors can deter under pricing by monitoring the efforts of other players and making the case for higher prices when the IPO is being presented.

CONCLUSION

This paper examines the after-market price performance for initial public offerings issued during the period

2007-2012. We present fresh evidence on IPO performance anomaly, i.e., initial day under price and long-run under performance for a broad set of 211 Indian IPOs.

Using both wealth relatives (WRs) and buy-and-hold abnormal return (BHARs) as price performance measure, it is estimated the long-run performance for the sample IPOs up to a period of 36 months from the date of listing. We find that the IPOs significantly underperform the market benchmark up to a period of 12 months from the date of listing and vanish thereafter. In conclusion, we find fresh evidence on IPO price performance anomaly, i.e., under pricing followed by underperformance.

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