Price Performance of Initial Public Offerings (IPOs): Evidence from Indian Capital Market from 2007-2014

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Abstract
This paper is based on the belief that Initial Public Offerings (IPOs) are underpriced on the initial listing day and thereafter underperform compared to the market. It focuses on the evaluation of performance of IPOs from listing day to a period of three years subsequent to its listing. Further, it presents evidence on IPO performance for 172 Indian IPOs issued during the period 2007-2014 listed on National Stock Exchange (NSE). It is observed that, on an average the Indian IPOs are underpriced to the tune of 12.05 per cent on the listing day as compared to the market index (S&P CNX Nifty). The long-run performance of IPOs was measured using Wealth Relative (WR) and Market Adjusted Excess Return (MAER). Further, the results showed that the IPOs underperform markedly between one to three years of listing. Factors like listing day return, rate of subscription, listing delay, timing of issue, type of company, offer size, uses of proceeds, age of the company, offer price and minimum order quantity were considered for analysing the influence on IPO’s return. Oversubscription had significant influence on IPOs performance throughout the period. However, there was no evidence favourable to the credit rating on listing day return.

Keywords: IPO, Underprice, Market Adjusted Excess Return, Wealth Relative and Credit Rating

Introduction
Undoubtedly, the Initial Public Offerings (IPOs) are one of the most researched areas in finance as it attracts lot of public interest. Three main areas of interest of IPOs are: the short run underpricing of IPOs, the hot issue market phenomenon and the long run performance of IPOs. Short run underpricing is a situation when the issuer offers shares to the investors at prices considerably below the subsequently revealed market value. The underpricing of IPOs contradicts the efficient market hypothesis. Yet it seems to be persistent in majority markets.

All the relevant literature concludes that average IPOs are undervalued at the offer price as the first day market price is the indication of intrinsic value or fair value of the stock. Empirical evidences all over the global capital market indicate that on an aggregate basis IPOs generate positive abnormal listing day return (i.e. underpriced) followed by negative abnormal return for a reasonably long period say one year to three years (Purnanandam & Swaminathan, 2004).

The purpose of this paper is to evaluate the post-issue share price performance of IPOs issued and listed on National Stock Exchange (NSE), Mumbai, during the period of 2007 to 2014. Post-IPO price performance has been studied in comparison to offer price up to 3 years from the listing day. The study also explores whether different characteristics known at the time of IPO are good predictors for subsequent share price performance.

Literature Review
Aggarwal and Rivoli (1990) reported that there are two reasons behind positive abnormal return on IPO. First explanation is that, underwriters systematically price IPOs below their intrinsic value. The second possibility is that IPOs are subject to over valuation in early aftermarket trading. The tested by the researchers in their research pertain to second possibility. Empirical evidence proves that IPOs provide positive abnormal return in the short run but end up in a loss in the long run.

An empirical research by Ritter (1991) studied the time and industry dependence of the long run performance of initial public offerings. As per the author’s findings, investing in the IPO at the end of the first day trading and holding them up to 3 years results in to 83 cents for each dollar invested. Moreover,
the evidence indicates that the offering price is not too low, but the first after market price is high. That is the reason that, it is an unresolved issue that there is a long run under performance and short term underpricing phenomena.

Purnanandam and Swaminathan (2004), to examine the underpricing of IPO’s reality studied more than 2000 firms from a time period of 1980 to 1997. The result indicates that the median IPO was significantly overvalued compared to valuation based on industry peer price multiples. The study reveals that overvalued IPOs provide first day high return but later on provide low long run stock adjusted return.

Ghosh (2005), in a study titled, “Underpricing of Initial Public Offerings: The Indian Experience” has attempted to identify the factors explaining underpricing of Initial Public Offerings of 1842 companies of Bombay Stock Exchange for a period of 1993 to 2001. The findings indicate that uncertainty plays a role for vicious underpricing in the Indian primary market. It finds that IPOs with large issue size and with seasonal offerings experience less underpricing. Opposite to evidence found in international context, underpricing was found less during hot period compared to slump period in Indian market.

Research by Aggarwal, Liu and Rhee (2008) studied after-market pricing behaviour of IPOs issued in the Hong Kong market during 1993-1997. They studied the after-market performance of the IPOs in relation to the subscription rate and found that IPOs with high investor demand realize a high initial excess return, but a negative long run return, while the reverse is true for the low demand IPOs. They further argue, that in the early phase of trading, the IPOs are unable to be priced at their intrinsic values, but eventually their true values are reflected in their pricing.

Deb and Marisetty (2010) found that the IPOs after the introduction of grading are associated with lower underpricing. Further they found out that (i) the high grade issues are associated with better IPO pricing and (ii) retail investors respond to IPO grading with increased subscription of then high grade issues.

Kumar (2010) examined the efficiency of IPO issuing mechanisms using a sample of Indian IPOs that entered the primary market during 2003-2007 by taking into thoughtfulness the total costs the issuers have to incur (including both direct as well as indirect costs). He found that from a total cost point of view, there was not much difference in issuer’s fare (neither better nor worse) using either book building or the fixed price offers. However, results indicated that the issue expenses associated with book building were more than those associated with fixed price offers after controlling for issue size and firm specific characteristics.

An empirical research by Sahoo and Rajib (2010) studied the performance of 92 IPOs. It noted that on an average Indian IPOs were underpriced to the extent of 46.55 percent on the listing day compared to the market index. They tested long run performance of the IPOs by considering 36 months period after their issuance. Study observed underperformance of IPO in the initial year of trading i.e. up to 12 months and after that over performance was observed.

Khurshed et al. (2011) argued that positive grading influences the subscription pattern of the institutional investors, which in turn, positively impacts the retail subscription. This close link between the institutional and retail investors’ demands is attributed to the evidence that retail investors follow the institutional investors’ bids, which is possible due to the high transparency of the book building in India.

Bansal & Khanna (2012) analysed that there was significant difference between the magnitudes of level of underpricing of IPOs that priced through the book build with those priced through the fixed price option and IPOs price through book build were more underpriced than fix price option IPOs.

Jain and Padmavathi (2012), concludes that underpricing was the result of investors’ high willingness to pay, high demand of the issue, high firm value and high fluctuations in the market returns. The result shows that IPOs of high value firms were more underpriced in India. Also, underpricing was high when index was highly volatile in the market.

Seal & Matharu (2012) tried to estimate the long run performance of IPOs and Seasoned Equity Offerings (SEO) s in India with the help of event study methodology wherein stock returns were examined around the date when new information about the performance of a company was announced for a period from 1999 to 2005. It was found that the average 5-year Buy and Hold Return for IPOs was 156.79% as compared to the average return of SEOs to be 427.33% from the size matched firms which clearly demonstrates the
long term underperformance of IPOs.

Younesi et al. (2012) examined the IPO performance in Malaysia for the year 2007-2010. The results show that underpricing exists on the first day of trading. Empirical results also show that none of the return determinants which included age, size, total units offered, offering price and KLCI index movement had effect on IPO initial return.

Saravanan and Chandran (2014) explored underpricing on listing day of 127 IPOs issued during 2008 to 2012 on NSE, India. Market adjusted return for sample issues were 7.5%, which is lesser than return experienced for other time duration. The analysis showed that there was significant relationship between degree of underpricing and age of the firm. Issue size, listing delay and market index return on the day of listing did not show significant relationship with degree of underpricing.

Ramesh and Dhuome (2015) examined the price performance of the Indian IPOs listed on NSE, using a sample of 150 IPOs that entered the primary capital market during May 2007 to December 2011. Short run and long run price performance was studied by considering the gap of 1 month, 3 months, 6 months and 1 year, 2 years and 3 years respectively. The findings reveal that overpricing exists in the Indian primary capital market. Secondly, overpricing was more prevalent in the long run than in the short run.

Lakshmi and Saraswathi (2016) studied the pre and post analysis of initial public offerings of the listed companies in NSE in India’s top 30 listed companies for a period 2005-2015. Their results show that there was significant under performance of IPOs. There was no significant difference of return on capital employed, profitability, market to book ratio and return on asset on performance of the firms during the study period.

Research Methodology

Research Objectives
1. To study price performance of IPOs on listing day as well as in a 3 years period from listing day.
2. To analyze the relationship between the factors affecting IPO performance on listing day and the long run.
3. To study the impact of IPO grading on IPO listing day performance.

Research Design

The present study is descriptive in nature and aims to examine the short term and long term performance of IPOs in the Indian capital market.

Sampling Frame

The sample for the study included all Indian firms that went public from 1st January, 2007 to 31st December, 2014, with their IPOs listed on National Stock Exchange. 289 IPOs were issued during the period of the study. Short and long term performance was analysed for IPOs issued during above mentioned period.

For comparing IPOs return with market return, Nifty was used as a benchmark representing the market. The closing values on different dates were considered in order to calculate market-adjusted return. For measuring the performance of various companies, the time period was divided into short term and long term. Returns on listing day assumed under short term whereas returns up to one week, one month, three months, six months, one year, two years and three years were considered for measuring returns in long run on the basis of studies conducted in other parts of the world. Market Adjusted Excess Return (MAER) was used to evaluate short run and long run performance of IPOs.

Data Collection

The study is based on secondary data. Sample data for IPOs issued during January 2007 to December 2014 was collected for the variables under consideration. The information regarding offer price, date of issue, size, listing date, age, industry and oversubscription of IPOs was taken from the company prospectus. Closing values of NIFTY at different time intervals and data related to pricing of IPOs in secondary market have been taken from the websites of NSE and Money Control.

Table 1: Sample Size for IPOs Issued during Jan 2007 to Dec 2014
Table 1 shows the criteria calculation for deciding final sample size used for data analysis for IPOs issued during Jan 2007 to Dec 2014. Final sample size for the purpose of analysis comprising of 172 firms till one year of listing, 168 firms after two year of listing, 166 firms after three year of listing and 101 for IPO grading analysis.

Techniques of Data Analysis

Various financial and statistical techniques were applied to analyze the secondary data.

Financial Techniques

a) Initial Pricing Performance of IPOs

The initial Raw Return on IPOs is computed as the difference between the closing price on the first day of trading and the opening offer price, divided by the offer price.

\[
R_i = \frac{(P_1 - P_0)}{P_0} \times 100
\]

where, \( R_i \) = Initial return or raw return for stock i

\( P_1 \) = Closing price on the first day of trading

\( P_0 \) = Opening offer price

Market return for corresponding period is computed as follows:

\[
M_i = \frac{(M_1 - M_0)}{M_0} \times 100
\]

where, \( M_i \) = Market return on the first day of trading

\( M_1 \) = Closing value of NIFTY on the first day of trading

\( M_0 \) = Closing value of NIFTY on the offer closing date

Miller and Reilly (1987) calculated MAER is computed as follows:

\[
MAER_i = \left[ \frac{(1 + R_i)}{(1 + M_i)} - 1 \right]
\]

where, \( MAER_i \) = Market Adjusted Excess Return on the listing day

b) Long Term Pricing Performance of IPOs

To evaluate long-term performance of Indian IPOs, long-term returns on the IPO issue price are calculated. The following standard formula is used to calculate returns at different time intervals.

\[
R_{it} = \left( \frac{P_t}{P_{o_i}} - 1 \right) \times 100
\]

where, \( R_{it} \) = Raw return of firm i at time t

\( P_t \) = Price of the share of firm i at time t

\( P_{o_i} \) = Offer price of share of the ith firm

\[
R_{mt} = \left( \frac{I_m}{I_{mo}} - 1 \right) \times 100
\]

where, \( R_{mt} \) = Return on Nifty during period t

\( I_m \) = Nifty at time t

\( I_{mo} \) = Nifty on the offer day
MAER_t = R_t - R_{mt}

where, MAER = Market adjusted excess return for stock (i)

To analyse the long term performance, another measure Wealth Relative (WR) employed by Levis (1993) was used for analysis. The magnitude of this measure is an indication of the performance of IPOs viz-a-viz the market. Value of wealth relative greater than unity implies that IPOs outperformed the market in that period. WR_t for a sample of n stocks from offer date, to date “t” is calculated using the formula:

\[ \text{WR}_t = \left\{ \frac{1 + (\sum_{i}^{n} r_{it}) + (N)}{1 + (\sum_{i}^{n} r_{mt})/N} \right\} \]

where, \( r_{it} = \frac{R_{it}}{100} \)

\( r_{mt} = \frac{R_{mt}}{100} \)

N = total number of IPOs in the sample

### Statistical Techniques

One sample t-test, Independent sample t-test and regression analysis were used to carry out the analysis. All the statistical work and analysis of data has been done on SPSS and Microsoft Excel.

### Hypotheses

\( H_1 \): Indian IPOs are underpriced in the short run.

\( H_2 \): Indian IPOs underperform in the long run.

\( H_3 \): There is significant difference between the raw returns on initial day of IPO and the market returns.

\( H_4 \): There is significant difference between the long term post listing IPO raw returns and the market returns.

\( H_5 \): There is significant association between the level of underpricing and various independent variables

\( H_6 \): There is significant association between the long term performance and various independent variables

\( H_7 \): There is association between IPOs listing performance and IPO grading

### Table 2: Summary of Regression Variables for Short and Long Run

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>MAER</th>
<th>Expected Outcome on Short Run/Initial Return</th>
<th>Expected Outcome on Long Run Return</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offer size (OS) in units</td>
<td>Offer size (OS) in Rs.</td>
<td>Uses indicated in draft prospectus</td>
<td>Offer Price (OP)</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>+</td>
<td>-</td>
</tr>
</tbody>
</table>

Source: Compiled on the basis of literature review

### Description of the Variables

The study includes the following variables:

- Market Adjusted Excess Return (MAER): The returns of the IPO over and above the market returns for the same period is the market adjusted return.
• Offer Size (OS): Issue size is the amount which a company wants to raise by offering equity hares to the public

• Uses: Number of uses of IPO proceeds listed in the prospectus has been taken as one of the important proxy for ex-ante uncertainty for an IPO issue.

• Offer price (OP): The price at which a company’s shares are offered to the market for the first time, which might be at par or at a premium or discount. In case of Book building issue, the issue price is decided by the registrar after receiving all the applications for the shares. When they begin to be traded, the market price may be above or below the issue price.

• Subscription: An IPO subscription is an offer by a buyer to purchase yet to be issued stocks. The subscription is expressed in terms to the times, by which the issue is subscribed. The subscription represents the demand of the IPO among the investors in the market.

• Listing Delay: Defined in terms of time lag between the closing date of the offer and listing of the issue at the Stock Exchange.

• Age: The difference of the time in years from the year of incorporation of the company and the year when the company came with the IPO in the market.

• IPO activity period: 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 (periods in which there are a lot of IPOs), and 0 is used for cold IPOs (periods in which there are a few IPOs only). The period of sample selection 2007-2014, is represented by the 36 quarters. If more than 5 IPOs have been issued in a quarter, then we have treated that quarter as high activity period. In other words, a quarter with 5 or less than 5 issues is treated as low activity period.

• Industry: Dummy for the companies representing high technology: (Biotech, pharma, telecom media, entertainment, IT/ITES) takes a value of 1 otherwise 0.

• Minimum order quantity: The minimum number of shares investor can apply while bidding in an IPO.

The empirical OLS regression model using MAER for testing hypothesis 5 & 6 at different time interval dependent variable is as follows:

\[
MAER = \alpha + \beta_1(TS) + \beta_2(LD) + \beta_3(IPO\_TIME) + \beta_4(HI\_TECH) + \beta_5(OS\_NO) + \beta_6(OS\_RS) + \beta_7(USES) + \beta_8(AGE) + \beta_9(OP) + \beta_10(MIN\_ORDER)
\]

**Data Analysis and Interpretation**

**Short Run Performance of Indian IPOs**

It has been found in majority studies that investors who purchased IPO on the offer day have experienced high returns on the first day of trading, suggesting that these IPOs may have been priced at values much below their intrinsic value. This phenomenon is well known as ‘Underpricing’. Shah (1995) explained that underpricing was found to be 105.23 per cent in Indian IPO market. It was considered to be 72.34 per cent in a study by Krishnamurti (2002) and 72 per cent in a study by Jaitly (2004).

**Table 3: Short Run Performance (Initial Returns) of Indian IPOs**

<table>
<thead>
<tr>
<th>Time Interval</th>
<th>Sample Size</th>
<th>Mean</th>
<th>t Value</th>
<th>MAER Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>On Listing Day</td>
<td>172</td>
<td>12.05</td>
<td>3.017</td>
<td>.003*</td>
</tr>
</tbody>
</table>

**Source:** Based on calculations of one sample t-test

Table 3 shows the existence of underpricing for the Indian IPOs listed on the National Stock Exchange of India during the period from 2007 to 2014 for sample size of 172 IPOs. One sample t test is applied to check the significance of IPOs listing day performance. As it appear in Table 6, the IPOs showed the average of Market Adjusted Excess Return (MAER) of 12.05 per cent with NSE- Nifty. The extent of underpricing in Indian IPOs was found to be statistically significant at 1 per cent level for raw return as
well as for market adjusted excess return. Underpricing of IPOs on listing day is lower as compared to previous literatures but in line with the study by Bansal and Khanna (2012), where MAER was reported to be 3.02%.

**Long Run Returns of Indian IPOs**

Table 4: Overall Long Run Returns of Indian IPOs (Including Initial Returns)

<table>
<thead>
<tr>
<th>Time Interval</th>
<th>Sample Size</th>
<th>Mean</th>
<th>t Value</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>After one week of listing</td>
<td>172</td>
<td>9.8916</td>
<td>2.314</td>
<td>.022**</td>
</tr>
<tr>
<td>After one month of listing</td>
<td>172</td>
<td>5.3859</td>
<td>1.131</td>
<td>.260</td>
</tr>
<tr>
<td>After three month of listing</td>
<td>172</td>
<td>-2.7518</td>
<td>-.576</td>
<td></td>
</tr>
<tr>
<td>After six month of listing</td>
<td>172</td>
<td>1.1476</td>
<td>.208</td>
<td></td>
</tr>
<tr>
<td>After one year of listing</td>
<td>172</td>
<td>-4.4371</td>
<td>-.689</td>
<td>.492</td>
</tr>
<tr>
<td>After two year of listing</td>
<td>168</td>
<td>-27.5632</td>
<td>-4.972</td>
<td>.000*</td>
</tr>
<tr>
<td>After three year of listing</td>
<td>166</td>
<td>-36.4075</td>
<td>-4.307</td>
<td>.000*</td>
</tr>
</tbody>
</table>

*Source: Based on calculations of one sample t-test*

*Note: Values marked with * and ** indicate significance at the 1%, and 5% level.*

Table 4 shows that the raw returns as well as MAERs have declined over the entire period under study. These remained positive up to the first six months. It can be observed from the above analysis that underpricing trend of short term returns failed to continue in the long run for Indian IPOs. In fact, IPOs were underperforming in the subsequent period of trading. The underperformance of Indian IPOs was found to be statistically significant at 5 per cent level for market adjusted excess return of return after one week of listing, after two years of listing and after three years of listing. Results of MAER in long run were in line with study done by Bhatia and Singh (2012) where return after three years of listing was -25.64%.

**Wealth Relatives (WR) for Long Run Performance**

Table 5: Wealth Relatives for Indian IPOs at Different Time interval

<table>
<thead>
<tr>
<th>Time Interval</th>
<th>WR</th>
<th>Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>On Listing Day</td>
<td>1.121816</td>
<td>172</td>
</tr>
<tr>
<td>After one week of listing</td>
<td>1.099832</td>
<td>172</td>
</tr>
<tr>
<td>After one month of listing</td>
<td>1.054539</td>
<td>172</td>
</tr>
<tr>
<td>After three month of listing</td>
<td>0.972692</td>
<td>172</td>
</tr>
<tr>
<td>After six month of listing</td>
<td>1.011314</td>
<td>172</td>
</tr>
<tr>
<td>After one year of listing</td>
<td>0.954206</td>
<td>172</td>
</tr>
<tr>
<td>After two year of listing</td>
<td>0.721588</td>
<td>168</td>
</tr>
<tr>
<td>After three year of listing</td>
<td>0.685621</td>
<td>166</td>
</tr>
</tbody>
</table>

*Source: Based on calculations of Wealth Relatives*

Table 5 shows that WR were more than 1 for listing day, after one week of listing, after one month of listing, after three months of listing and after one year of listing. So, IPOs can be said to have for these time period outperformed in the market. Later, the WR was found to be less than 1 at the end of one year and IPOs can be said to have underperformed in the market.

**Stock Return and NIFTY Return in Short Run**

Table 6: Independent t-test Result for Stock Return and NIFTY Return in Short Run

<table>
<thead>
<tr>
<th>Time Interval</th>
<th>Sample Size</th>
<th>Mean</th>
<th>t Value</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>On Listing Day</td>
<td>172</td>
<td>12.05315</td>
<td>2.942</td>
<td>.003*</td>
</tr>
</tbody>
</table>

*Source: Based on calculations of independent t-test*

*Note: Value marked with * indicates significance at 1% level of significance.*
Table 6 shows the result of independent t-test for raw return of stock on listing day of IPO and NIFTY return on same day comparison to issue date. Based on significance value is less than 0.01, it is concluded that there is significant difference between raw return on listing day of IPO and market return at 1 per cent significance level.

**Stock Return and NIFTY Return in Long Run**

Table 7: Independent t-test Result for Stock Return and NIFTY Return in Long Run

<table>
<thead>
<tr>
<th>Time Interval</th>
<th>Sample Size</th>
<th>Mean</th>
<th>t Value</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>After one week of listing</td>
<td>172</td>
<td>9.89158</td>
<td>2.243</td>
<td>0.026**</td>
</tr>
<tr>
<td>After one month of listing</td>
<td>172</td>
<td>5.38590</td>
<td>1.098</td>
<td>.273</td>
</tr>
<tr>
<td>After three months of listing</td>
<td>172</td>
<td>-2.75184</td>
<td>-.539</td>
<td>.591</td>
</tr>
<tr>
<td>After six months of listing</td>
<td>172</td>
<td>1.14765</td>
<td>.187</td>
<td>.852</td>
</tr>
<tr>
<td>After one year of listing</td>
<td>172</td>
<td>-4.43706</td>
<td>-.625</td>
<td>.533</td>
</tr>
<tr>
<td>After two years of listing</td>
<td>168</td>
<td>-28.21944</td>
<td>-4.686</td>
<td>.000*</td>
</tr>
<tr>
<td>After three years of listing</td>
<td>166</td>
<td>-37.72340</td>
<td>-4.176</td>
<td>.000*</td>
</tr>
</tbody>
</table>

**Source:** Based on calculations of independent t-test

**Note:** Values marked with * and ** indicate significance at the 1%, and 5% level of significance.

Table 7 shows the result of independent t test for raw return of stock at different time intervals of IPO and NIFTY return for the same period. Raw return of stock and NIFTY return is significantly different for after six month of listing and after two years of listing at 5 per cent significance level. There is no significant difference between the return of stock and market return after one month of listing, after three months of listing and after six months of listing.

**Casual Relationship between Underpricing and Different Potential Factors**

Table 8: Results of the Multivariate Regression Analysis with MAER in Short Run

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>MAER_ID</th>
<th>Coefficient</th>
<th>t Value</th>
<th>Significance</th>
<th>F Value</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td></td>
<td>593.454</td>
<td>4.094</td>
<td>.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TIMES_SUBSCRIBED</td>
<td></td>
<td>1.166</td>
<td>8.830</td>
<td>.000*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LISTING_DELAY</td>
<td></td>
<td>.124</td>
<td>.476</td>
<td>.635</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IPO_ACTITIVITY_TIME</td>
<td></td>
<td>-25.945</td>
<td>-1.972</td>
<td>.050***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HI_TECHNOLOGY</td>
<td></td>
<td>-5.557</td>
<td>-.575</td>
<td>.566</td>
<td>8.677*</td>
<td></td>
</tr>
<tr>
<td>LN_OFFSIZE_NUM</td>
<td></td>
<td>-10.210</td>
<td>-.897</td>
<td>.371</td>
<td>(.418)</td>
<td></td>
</tr>
<tr>
<td>LN_OFFSIZE_RS</td>
<td></td>
<td>1.650</td>
<td>.147</td>
<td>.883</td>
<td>.647</td>
<td></td>
</tr>
<tr>
<td>LN_USES</td>
<td></td>
<td>-17.271</td>
<td>-1.680</td>
<td>.095***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LN_AGE</td>
<td></td>
<td>-3.265</td>
<td>-.763</td>
<td>.447</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LN_OFFERPRICE</td>
<td></td>
<td>-44.825</td>
<td>-4.355</td>
<td>.000*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LN_MIN_ORDER</td>
<td></td>
<td>-31.286</td>
<td>-2.346</td>
<td>.020**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Source:** Based on calculations of multiple regression analysis

**Notes:** Values marked with *, ** and *** indicate significance at the 1%, 5% and 10% level of significance.

Table 8 presents the statistical results of multiple regressions for the Market Adjusted excess Returns (MAERS) from IPOs with the help of examining the casual relationship between underpricing and different potential factors. It considers a set of 10 explanatory variables (independent variables) as mentioned in table 8. These variables together explained 41.8 per cent of variation in MAERs. F value was found to be 8.667 for MAER. These were found to be statistically significant at 1 per cent level. Results in table 8 indicate that the variables including oversubscription rate, IPO activity time, IPO uses, offer price and minimum order quantity are statistically significant in explaining MAER. But the explanatory power of this model was observed to low. An investment in IPOs depends on many other qualitative and quantitative
factors such as EPS, post issue equity holding pattern, underwriter reputation etc. Thus better explanation of pricing requires a detailed analysis of all the factors affecting underpricing.

This explanatory power was almost similar when compared with evidence reported by Jaskiewicz et al. (2005) estimated R2 value of 16.3% and Agarwal et al. (2008) estimated R2 value of 21%.

Table 9: Results of the Multivariate Regression Analysis with MAER as Dependent Variable in Long Run at Different Time Interval from 1 Week to 3 Years after Listing

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>MAER_1W Coefficient</th>
<th>MAER_1M Coefficient</th>
<th>MAER_3M Coefficient</th>
<th>MAER_6M Coefficient</th>
<th>MAER_1Y Coefficient</th>
<th>MAER_2Y Coefficient</th>
<th>MAER_3Y Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>458.539</td>
<td>335.783</td>
<td>198.835</td>
<td>132.912</td>
<td>296.489</td>
<td>264.176</td>
<td>230.946</td>
</tr>
<tr>
<td>TIMES_SUBSCRIBED</td>
<td>1.179*</td>
<td>1.289*</td>
<td>1.118*</td>
<td>1.3*</td>
<td>1.055</td>
<td>0.868*</td>
<td>0.706**</td>
</tr>
<tr>
<td>LISTING_DELAY</td>
<td>0.026</td>
<td>0.067</td>
<td>0.142</td>
<td>0.116</td>
<td>-0.103</td>
<td>0.259</td>
<td>0.48</td>
</tr>
<tr>
<td>F Value</td>
<td>9.3*</td>
<td>8</td>
<td>5.684*</td>
<td>5.983*</td>
<td>2.532*</td>
<td>3.165*</td>
<td>1.721***</td>
</tr>
<tr>
<td>R (R2)</td>
<td>0.605(.366)</td>
<td>0.576 (.332)</td>
<td>.511(.261)</td>
<td>.521(.271)</td>
<td>.369(.136)</td>
<td>.405(.164)</td>
<td>.311(.097)</td>
</tr>
</tbody>
</table>

Source: Based on calculations of multiple regression analysis

Notes: Values marked with *, **, *** and **** indicate significance at the 1%, 5%, 10% and 15% level.

To investigate the possible determinants that affect the long run performance of 172 IPOs, table 9 presents the results of regression analysis with MAER_1W, MAER_1M, MAER_3M, MAER_6M, MAER_1Y, MAER_3Y and MAER_3Y as dependent variables and it considers a set of 10 explanatory variables. For one week, one month, three months, six months, one year and three year subsequently, to IPOs, the value of R-square for MAER were 36.6%, 33.2%, 26.1%, 27.1%, 13.6%, 16.4% and 9.7% respectively which was almost in tune with the evidence in literature and F value was also found statistically significant for all time intervals at 1 per cent significant level and 10 per cent significant level for three years after listing. Explanatory power of model was decreasing in long run after listing of IPO similar to Bhatia and Singh (2012). This explanatory power was almost similar when compared with Sahoo and Rajib (2010) estimated R2 value of 21.60% after one year of IPO listing.

**Association between IPOs Listing Performance and IPO Grading**

IPO Grading is provided by SEBI approved rating agencies including CRISIL, CARE and ICRA. IPO Grading is designed to provide investors an independent, reliable and consistent assessment of the fundamentals of IPO Issuer Companies. As IPO Grading is decided much earlier than the issue price or issue dates are finalized (usually on the IPO filing) and they just tell about the fundamentals of the company.

Table 10: Frequency Distributions of the IPO Grading of the Companies

<table>
<thead>
<tr>
<th>IPO Grade</th>
<th>Frequency</th>
<th>Valid Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8</td>
<td>7.9</td>
</tr>
<tr>
<td>2</td>
<td>31</td>
<td>30.7</td>
</tr>
<tr>
<td>3</td>
<td>39</td>
<td>38.6</td>
</tr>
<tr>
<td>4</td>
<td>20</td>
<td>19.8</td>
</tr>
</tbody>
</table>
For the purpose of the study, 101 IPOs were selected, which were issued during 2007 to 2014 through National Stock Exchange (NSE) and possess IPO grades at the time of issue. The frequency distribution of the companies with their IPO Grading is shown in Table 10. The frequency distribution indicates that most (38.6%) of the companies had the IPO Grade three followed by 30.7% of the companies having grade two and 19.8% of the companies with grade four and companies with grade one is lowest in number (7.9%).

Table 11: Results of the Bivariate Regression Analysis - Impact of IPO Grading on MAER in Short Run

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Dependent Variable</th>
<th>R2</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPO Grading</td>
<td>MAER_ID</td>
<td>0.046(0.02)</td>
<td>0.645</td>
</tr>
</tbody>
</table>

Source: Based on calculations of bivariate regression analysis

The regression model is applied to analyze the impact of IPO grading on the market adjusted excess return of the listing day. The regression results shown in Table 11, indicate that the impact of IPO grades is not statistically significant on the market adjusted excess return on the listing day which is supporting the study of Miryala (2016), thus providing evidence that grading of IPOs is not showing any importance in the returns generated by different graded IPOs for short-run.

Conclusions

The results obtained from the study provide important information to investors intending to invest in IPOs. We find that IPOs were underpriced on the listing day for the study period due to the over-expectations of the investors. Afterwards, there was a declining trend in return. It can be concluded that Indian IPOs provide evidence of very high abnormal returns over the three years after the issue IPOs. Raw return was significantly different from market return on listing day and in long run. Investors are losing interest because of low return in holding IPOs for long term.

Pre-IPO firm-specific characteristics such as age and industry of company cannot be relied upon for judging the long term and short term performance. However, number of times subscribed, offer size, offer price and timing of the issue need to be analysed carefully. Empirical study shows that credit rating was not showing significant relationship to IPO performance in short run. On the basis of the empirical findings, IPOs give listing returns but we suggest that the long term investors should exercise caution before investing in IPOs.

References


Miryala, N. IPO Grading: Is There Any Value Addition?.


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