

**IMPACT OF IPO GRADING ON LISTING RETURNS AT THE NATIONAL STOCK EXCHANGE (NSE) IN INDIA****Mr. Kedar Mukund Phadke<sup>1</sup>,**

Research Scholar  
Assistant Professor  
National Institute of Construction Management and Research (NICMAR)  
Near Farmagudi Circle Bus Stop  
Farmagudi, Ponda Goa 403 401

**Dr. Manoj S. Kamat<sup>2</sup>**

Advisor, Goa Industrial Development Corporation  
Plot No. 13-A-2, EDC Complex,  
Patto Plaza, Panjim Goa 403 001

**ABSTRACT**

Significant listing day returns for IPOs is a phenomenon that is observed when companies go public. Using a larger time frame (2007 – 2014) we attempt to determine the extent to which IPO grading has impacted the first-day marginally adjusted return on opening (MAARO) and the extent to which individual grades impact MAARO. The results indicate that grading helped increase pricing efficiency and reduced opening day returns. We fail to reject the null hypothesis that the level of underpricing for the individual grades or a combination of grades reduces with better grades. Our results are mixed compared to a study by Poudyal (2008) who finds that securities with higher IPO grades tend to exhibit under-pricing to a lesser extent.

JEL Classification: G12, G14, G15, G18

**Keywords:** Initial Public Offerings, Grading, Underpricing, NSE, MAARO, Bookbuilt

**1. Introduction**

An “Initial Public Offering” (IPO) is the offering that a not yet publicly listed company carries out to obtain capital from the equity markets. A firm raises capital in the primary markets for various reasons such as acquisition, expansion, capital projects etc. There already exists abundant literature on why a firm may decide to go public, or the issue of over/underpricing related to IPO’s. For the purpose of this paper, we try to determine the extent of underpricing amongst graded and ungraded IPOs in the Indian markets. Prior studies such as Ritter (2002), Aggarwal et al. (2002), Faugeron-Crouzet et al. (2003), Guo (2005), Banerjee et al. (2011) on IPOs in the many countries with liquid markets have demonstrated that there is a strong evidence of underpricing *i.e.* the existence of a difference between the offer (subscription) price and the listing price on the first day of the secondary market. This clearly demonstrates that many firms by virtue of underpricing *i.e.* where the listing price exceeds the offer price, and “leave a lot of money on the table” due to imperfect pricing. This would mean that all market participants do not receive information in a

manner that would suggest information symmetry. In order to remove the presence of information asymmetry, the Indian stock market regulator, SEBI, mandated the grading of all IPOs by a credit rating agency from May 1, 2007. The decision to have all book built issues to be graded i.e. mandatory IPO grading decision by SEBI lived a very short life since this decision was revoked by SEBI in December 2013.

There are many IPO underpricing models for instance Rock (1986) and Benveniste and Spindt (1989) that are designed around information asymmetry and confirm that higher information asymmetry results in higher underpricing. In order to reduce underpricing, firms resort to highlighting the salient aspects of the firm and/or its IPO. This can include factors like that of; underwriter's reputation, presence of venture capitalists in the pre-issue funding, group affiliation, quality of the board of directors, and credit rating among others. Among the above, the grading certifications are found to have some impact on the IPO pricing efficiency.

This paper takes a larger time frame (2005–2014) and with a larger sample size for an emerging country like India, it is attempted to determine the extent to which IPO grading has impacted the first-day Marginally Adjusted Return on Opening (MAARO). More specifically, we find whether individual grades impact the first-day Marginally Adjusted Return on Opening-day (MAARO). Secondly we find whether the level of underpricing i.e. mean MAARO for the individual grades (or a combination of grades) improves with better IPO grades.

## 2. Does IPO grading really work? Recent evidence

There is a lot of conflicting evidence around this subject. The earliest study on this subject was by Deb and Marisetty (2010). In this paper they argue that such objective, independent and exogenous certifying mechanism provides a better opportunity to test the well established *certification hypothesis*, especially in the context of emerging markets with institutional voids. Their study using 163 Indian IPO's concluded that grading does help and results in lower underpricing and positively influences retail investors. They also concluded that grading does not affect long run performance of the IPOs. Seshadev (2016) on the other hand using a dataset of 116 IPOs issued during 2007-2011, concludes that higher graded IPOs are less underpriced, and invite more subscription across different investor group. It is also concluded that grading has little impact on post listing price volatility and those non-institutional retail investors are poor in reading different grade values.

The study by Poudyal (2008) reveals that securities with higher IPO grades tend to exhibit underpricing to a lesser extent. They also find that, with higher IPO grades, the subscription rate of the IPOs improves across all class of investors, including retail investors. Khurshed et al. (2011) with a larger sample found no impacts of grading in reducing the level of underpricing. It is argued that higher grades influence institutional investors which in turn influence the retail investors towards subscribing the IPO. The difference in opinions between Deb and Marisetty (2010) and Khurshed et al. (2011) could perhaps be attributed to the lower sample size used in the study by Deb and Marisetty (2010) or it could be as a result of the state of the markets. Hot markets play a larger role in reducing underpricing as well as the fact that institutional investors are very active which in turn influence the retail investors. The results from a working paper by Joshy and Agarwalla (2012) indicate that grading has only a limited influence on the IPO demand of retail and institutional investors. The low grade issues appear to have weaker demand from investors relative to the ungraded IPOs. But there is no evidence to support IPO pricing improvement due to the introduction of IPO grading.

We expect that IPO grading implemented in 2007 by SEBI should reflect in the level of underpricing and that we should see reduced underpricing when MAARO is compared between issues prior to April 2007 and post that period. A simple indicative rating on a 5-point scale should help retail investors with making better decisions when investing in IPO's. If we have similar findings, our results would be in line with the research done by Deb and Marisetty (2010). We also expect that as grades increase, the extent of underpricing to reduce. If there is enough statistical evidence to this, our results would be in line with the research done by Poudyal (2008) and Seshadev (2016).

### 3. Grading and bidding in the Indian IPO market

The IPO is assigned a grade on a five-point scale from 1 to 5; 1 being the lowest and 5 being the highest grade. Grades are assigned based on the fundamental characteristics of the issuing firm relative to the listed firms in India as well as that of the IPO. Fundamentals would include things such as the industry prospects, the firm's financial position, quality of its management and governance, the risks and prospects of its new projects, and the firm's regulatory compliance. One thing to note is that the issue price of the IPO is not taken into account when the rating agencies issue a grade.

Some of the prominent credit rating agencies in India are the CRISIL, CARE, and ICRA. The documents used by these rating agencies are those provided by the issuer as well as from other sources. The grading process usually takes about 3-4 weeks and cost the issuer around 6-7 lacs. It is possible that the issuer may not like the grade assigned by the rating agency. In that case, the issuer can approach another credit rating agency. An issuer has to provide all grades received by credit rating agencies in the red herring prospectus. The investor categories, recognized by the regulator, for allotment are Retail Investors (retail), Non-Institutional Investors (NIIs) and Qualified Institutional Buyers (QIBs). As of 2015, the proportion of the issue size reserved for these categories are 35%, 15% and 50%, respectively.

Bidding for the IPOs is carried out through a network of terminals available with the members of national level stock exchanges, designated as bidding centers. The terminals at the center display the category-wise demand at different bid prices at periodic intervals not exceeding thirty minutes. This frequency of updates allows a prospective bidder to benefit from the almost real-time demand schedule of IPOs. As such, the bidding process in India is very transparent thereby reducing the information asymmetry as helping pricing efficiency.

### 4. Data & techniques

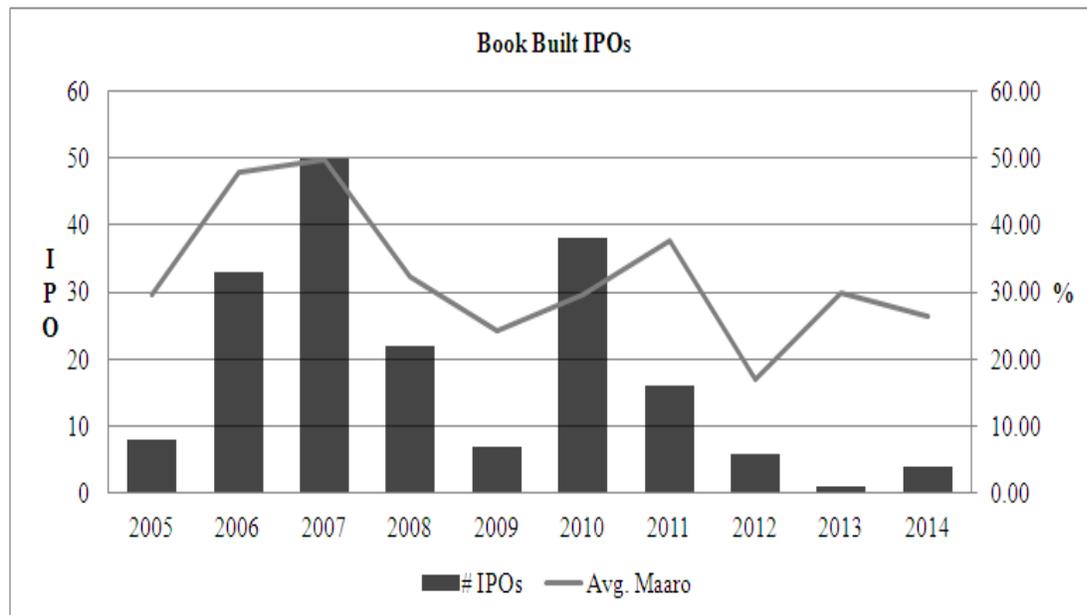
A universe of IPOs of firms listed from Jan 2000 until Dec 2014 on the National Stock Exchange (NSE) is under study. We exclude all SME IPOs as well as any Follow-On public offerings also referred to as Secondary Equity Offerings (SEO). Access to listing information as well as historical listing for each issue is retrieved from the *Capitaline* database. From this sample period, there are 185 IPO issues selected for analysis which include 91 IPO's issued between October 2005 and April 2007 as well as 94 IPO's issues issued after April 2007. Table 1 indicates the time-trends of the IPOs during the 2005-2014 periods.

Year	Issue Size (Mn.)	Avg. Issue Size (Mn.)	Avg. Maaro	# IPOs
2005	40,261.74	5,032.72	29.61	8
2006	120,912.99	3,664.03	47.98	33
2007	418,879.69	8,377.59	49.85	50
2008	257,427.31	11,701.24	32.19	22
2009	101,889.10	14,555.59	24.17	7
2010	366,811.10	9,652.92	29.71	38
2011	43,662.44	2,728.90	37.63	16
2012	24,817.91	4,136.32	17.04	6
2013	9,994.73	9,994.73	29.99	1
2014	8,617.37	2,154.34	26.45	4

185

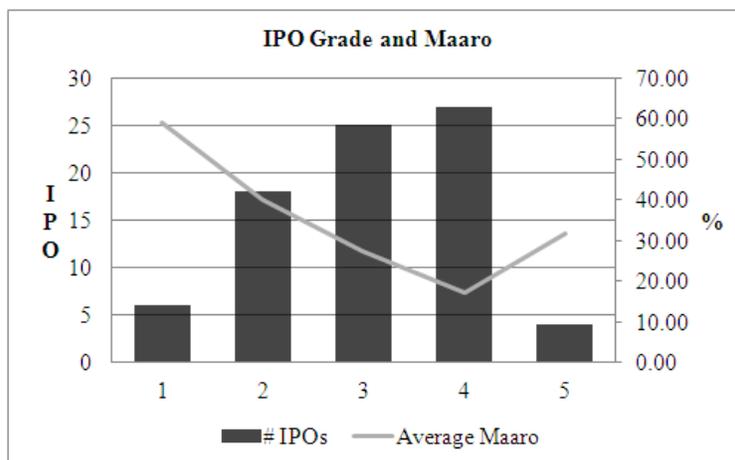
**Table 1:** Trends in Issue Size and MAARO. Source: *Capitaline*.

IPOs before October 2005 are not included in the sample primarily due to an important change in the book building process; replacement of discretionary allocation with proportionate allocation in September 2005.



**Fig. 1:** Trends in IPO Underpricing over the Period 2005-2014. Source: *Capitaline*.

To proceed with the second objective, and to find whether the level of underpricing i.e. mean MAARO for the individual grades (or a combination of grades) improves with better IPO grade, we only consider 80 graded IPO post the April 2007 period. From these 80 IPOs, we group IPOs in grades 1 & 2 as well as 4 & 5. The grouping yields us 24, 25 and 31 IPOs in Grades 1 & 2, grade 3 and grades 4 & 5 respectively.



**Fig. 2:** Relationship between Assigned IPO Grade and MAARO. Source: *Capitaline*.

As shown in Fig 2 above, the mean MAARO for individual grades decreases as the grading on the IPO's improve. However, the mean MAARO for IPO's with grade 5 show an increase. This could be because of the low sample of IPO's that we had with that grade. The distribution of Grades and the Average MAARO per grade is shown in Table 2 below.

**Table 2:** Number of IPO's assigned grades between 1 and 5. Source: *Capitaline*.

Grade	No. of IPOs	Average Maaro	Year							
			2007	2008	2009	2010	2011	2012	2013	2014
1	6	58.85		1	1		3	1		
2	18	40.28	1	1	1	11	4			
3	25	27.46	1	4	2	11	6	1		
4	27	17.39	1	2	3	15	2	2		2
5	4	31.65				1	1	1	1	
	80		3	8	7	38	16	5	1	2

Historical listing information obtained from the *Capitaline* portals include transaction dates, prices (open, low, high, adjusted close), volume, and number of trades, net turnover, and market capitalization. From these attributes, the stock return was calculated and from the NIFTY history, the market return was calculated. The difference between the stock return and market return was then recorded as abnormal return. The IPO listing data from *Capitaline* yielded information that included the IPO issue type, open and close dates, the number of times the issue was subscribed, offer price, listing closing price (unadjusted), issue size, grading assigned by CARE, ICRA, CRISIL, FITCH and BRICK. Additional attributes were included to determine if an IPO was still active or delisted from the exchange.

To determine underpricing, for each IPO, two measures of underpricing were calculated. First, the raw underpricing, defined as the difference in percentage between the official price of the share after the first day of listing and the offer price; and second, the adjusted underpricing, defined as the difference between the raw underpricing above and the market index return measured between the beginning of the public offering and the day of the first trading. In this analysis, the

market index is historical NIFTY. The technique for calculating 'Marginally Adjusted Return on Opening (MAARO)' is calculated in three steps. In step 1, the raw returns which is the percentage difference between the offer price and listing price is calculated. In step 2, the percentage difference on an index is calculated. In this case, we are using the NIFTY as a proxy. In step 3, we calculate the difference between step 1 and step 2. This is done in order to adjust the raw returns for any volatility in the markets between the offer date and the listing date.

$$\text{Stock Return SR} = ((P - O)/O) * 100 \text{ --- (1)}$$

Where SR = Stock Raw Return

P = Closing price of the stock on day of listing (day 1)

O = Offer Price

$$\text{Market Return MR} = ((IL - IO)/IO) * 100 \text{ --- (2)}$$

Where IL = Closing Index on day 1 of listing

IO = Closing Index on day of offer

$$\text{MAARO} = (((1 + SR)/(1 + MR)) - 1) * 100 \text{ --- (3)}$$

## 5. Testable hypothesis

For this research paper, there are two areas that we focus on. Did the grading process reduce the level of underpricing as compared to periods prior to April 2007 (after introduction of IPO grading)? To test this, we hypothesize that the level of underpricing reduced post April 2007 period and second area of focus is to determine if there is statistical evidence of underpricing decreasing due to better grades. Two testable hypotheses are framed to test the above;

**H<sub>1</sub>:** Mean MAARO for all graded IPOs post April 2007 is less than that of IPOs issued prior to April 2007

**H<sub>2</sub>:** The level of underpricing i.e. Mean MAARO for the individual grades (or a combination of grades) improves with better IPO grades.

## 6. Results and discussions

Many important results in statistical analysis follow from the assumption that the population being sampled or investigated is normally distributed with a common variance and additive error structure. When the relevant theoretical assumptions relating to a selected method of analysis are approximately satisfied, the usual procedures can be applied in order to make inferences about unknown parameters of interest. Towards achieving results on non-normalized data, MAARO was transformed using Box-Cox (1964) transformation. The Shapiro-Wilk test will be used to determine if the data is normally distributed. To determine inferential statistics on equality of variances for two or more groups, we utilize the Levene's test. For a post-hoc test, since our data did not meet the homogeneity of variances assumption, we have used the Games Howell test which is generally recommended.

### 6.1 Impacts of IPO Grading on Listing Returns Pre and Post-Grading

We analyze the listing returns of IPO's and compare the MAARO between pre-2007 and post-2007 periods. There was a presence of one outlier each in the data during the pre-2007 and post-2007 period, as assessed by inspection of a box plot for values greater than 1.5 box-lengths from the edge of the box. Normalized values for marginally adjusted average returns for pre-2007 and post-2007 graded issues were normally distributed, as assessed by Shapiro-Wilk's test ( $p > .05$ ). Data are

mean  $\pm$  standard deviation, unless otherwise stated. There were 105 ungraded and 80 graded IPO issues considered for the pre-2007 and post-2007 periods.

Independent samples *t*-test was run to determine if there were differences in MAARO between IPOs issued prior to 2007 and post 2007 graded issued. Under-pricing was lower in the case of post-2007 graded issues ( $29.51 \pm 31.07$ ) than pre-2007 issues ( $45.70 \pm 45.92$ ). The variance for pre-2007 issues (2108.41) was almost twice than that of post-2007 graded issues (965.06). The assumption of homogeneity of variances was violated, as assessed by Levene's test for equality of variances ( $p = .002$ ). Mean MAARO for the pre-2007 ungraded issues was 16.19 (95% CI, 5.00 to 27.38) higher than mean MAARO for post-2007 graded issues. There was a statistically significant difference in under-pricing between pre-2007 and post-2007 graded IPO issues,  $t(181) = 2.86, p = .005$ , and therefore, we can reject the null hypothesis and accept the alternative hypothesis.

From our tests, we conclude that the introduction of IPO grading certainly helped reduce the level of underpricing. This can be seen from the difference in the mean MAARO before and after the introduction of the mandatory IPO grading by SEBI. There was a reduction in the listing day returns by almost 35% which is significant. Our results are in line with the findings by Deb and Marisetty (2010) and Seshadev (2016).

## 6.2 Impacts of IPO Grades on Listing Returns Post-2007

In this section we check whether the level of underpricing *i.e.* Mean MAARO for the individual grades (or a combination of grades) improves with better IPO grades. There was one outlier each for the grades and data was normally distributed for each group, as assessed by the boxplot and Shapiro-Wilk test ( $p < .05$ ). Data are mean  $\pm$  standard deviation, unless otherwise stated. Mean MAARO increased from combined grades 4 & 5 ( $n=31, 18.13 \pm 19.50$ ) to grade 3 ( $n = 25, 30.72 \pm 34.38$ ) to combined grades 1 & 2 ( $51.06 \pm 40.81$ ), in that order. The assumption of homogeneity of variances was violated, as assessed by Levene's test for equality of variances ( $p = .023$ ). The mean MAARO was statistically different for the different grades, Welch's  $F(2, 41.358) = 7.031, p < .0005$ .

Games-Howell Post-hoc analysis revealed that the decrease in the mean MAARO from combined grades 1 & 2 ( $n = 24, 51.06 \pm 40.81$ ) to grade 3 ( $n = 25, 30.72 \pm 34.38$ ), a decrease of 20.34 (95% CI, -1.46 to 42.09), was not statistically significant ( $p = .072$ ) while a decrease in the mean MAARO from combined grades 1 & 2 ( $51.06 \pm 40.81$ ) to combined grades 4 & 5 ( $n = 31, 18.13 \pm 19.50$ ), a decrease of 32.93 (95% CI, -10.69 to 55.16), was statistically significant ( $p = .003$ ). Since the comparison of mean MAARO between grades 1 & 2 with grade 3 was not statistically significant, we do not reject the null hypothesis which states that the level of underpricing *i.e.* Mean MAARO for the individual grades (or a combination of grades) reduces with better grades.

From our tests using a combination of grades for comparison, we notice that although the mean MAARO for grade 3 was lower than that of grades 1 & 2 combined, the difference was not statistically significant. However, the difference between mean MAARO of grades 1 & 2 combined with that of grades 4 & 5 combined was statistically significant.

## 7. SUMMARY AND CONCLUSIONS

Based on the Independent samples *t*-test run, we observe that under-pricing was lower in the case of post-2007 graded issues as compared to pre-2007 issues a decrease in the listing day returns of 35%. There was a statistically significant difference in under-pricing between pre-2007 and post-2007 graded IPO issues. Our findings are similar to those of Deb and Marisetty (2010) who concluded that grading does help and results in lower underpricing.

The reason for our findings to not concur with that of Khurshed et al. (2011) could be because of our sample which excluded any IPO that fell under the SME as well as any SEO categories. We can

reject the null hypothesis and accept the alternative hypothesis which states that Mean MAARO for all graded IPOs post April 2007 was less than that of IPOs issued prior to April 2007. There was a reduction in the listing day returns by almost 35% which is significant. Our results are in line with the findings by Deb and Marisetty (2010) and Seshadev (2016). We conclude that IPO grading has indeed helped pricing efficiencies.

The second objective was to test if the mean MAARO decreases as the grades got better. The One-way ANOVA test and Games-Howell post-hoc analysis reveals that the decrease in the mean MAARO from combined grades 1 & 2 to grade 3 was not statistically significant while a decrease in the mean MAARO from combined grades 1 & 2 to combined grades 4 & 5 was statistically significant. We reject the alternative hypothesis and not reject the null hypothesis which states that the level of underpricing *i.e.* mean MAARO for the individual grades or a combination of grades, reduced with better grades. We find evidence that the mean MAARO drops when compared between combined grades 1 & 2 with grade 3, and mean MAARO drops by relatively higher values when compared between combined grades 4 & 5 with grade 3. Poudyal (2008) finds that securities with higher IPO grades tend to exhibit under-pricing to a lesser extent. Our results do not exactly reflect the findings by Poudyal (2008) because we are using a combination of grades for comparison as opposed to individual grades. The other reason for this finding could also be because of the small sample of 5 IPO's with grade 5.

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