Mandatory IPO Grading: Does It Help Pricing Efficiency?

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Abstract

The paper examines the market impact of a unique IPO certification recently introduced in India mandatory grading of IPOs by a credit rating agency. The grading was expected to improve the IPO pricing efficiency by providing comprehensive issue-related information to the market, especially to the retail investors. The results 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. This is contrary to the evidence reported by some earlier studies. This suggests the failure of grading as an IPO certification.

Keywords: IPO underpricing, IPO grading, IPO certification, Emerging markets

JEL classifications: G12, G14, G32

1 Introduction

The Indian stock market regulator, SEBI, mandated the grading of all IPOs by a credit rating agency from May 1, 2007.[1] SEBI is the only regulator in the world to mandate the grading of IPOs. According to SEBI, "The grade represents an assessment of the fundamentals of that issue relative to the other listed equities in India".[2] The grade is expected to provide incremental, readily interpretable and independent information about IPOs to investors and thus claims to help them better assess the investment potential of IPOs.

The above claim possibly is based on two strands of evidence about financial markets. First, it is well known that the IPO market faces significant information asymmetry. Several IPO underpricing models are built around information asymmetry (for example, Rock 1986; Benveniste and Spindt 1989). Under these models, the underpricing expected is higher when the information asymmetry is greater. This incentivizes firms to reduce the extent of underpricing through credible signaling of their underlying quality. One of the signaling mechanisms available to firms is the external certifications. Such signaling mechanisms reported to be used by issuers include: (a) underwriter's reputation (b) presence of venture capitalists in the pre-issue funding (c) group affiliation (d) quality of the board of directors, and (e) credit rating, among others. These certifications are found to have some impact on the IPO pricing efficiency. For instance, association with venture capitalists (Barry et al. 1990, Megginson and Weiss 1991) and underwriter reputation (Carter and Manaster 1990) are found to reduce underpricing. Credit rating, a certification mechanism very close to IPO grading is also reported to reduce underpricing in the US market (An and Chan 2008). The grade, acting as a certification, is expected to help the judgment of retail investors, especially, in the

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[1]Prior to the introduction of mandatory grading, the regulator had introduced optional grading of IPOs in April 2006.

[2]Frequently Asked Questions on IPO Grading, retrieved from http://www.sebi.gov.in/faq/ipo.html on July 31, 2012.

context of IPOs by small and unknown firms. Second, there is evidence that individual investors often fail to objectively assess IPOs as they suffer from behavioral biases (for instance, Ljungqvist et al. 2006). The grade could help them to make a more objective judgement as it claims to compress the various issue related information into an 'easy-to-use' symbol. These suggest that the impact of the grade on IPO bidding and pricing could largely depend on the degree to which the rational investors regard grades as a unique source of incremental price-relevant information. If indeed, grading provides unique, unbiased and accurate issue information, it could impact the demand for IPOs and improve their pricing efficiency.

The introduction of the mandatory grading, however, was not uniformly welcomed in the Indian market on the following grounds. First, it was contended that investors who are unable to understand and analyse the issue information would also be unable to understand the meaning of the grades. A popular financial daily wrote "Indeed, assigning grades to new issues can lull investors into a false sense of security about the risks and rewards of equity investing and can make equity look safer than it is".[3] Second, there were concerns whether the rating agencies would have enough incentives to strive for objective grades. Whereas the reputation of a credit rating agency could be examined with the actual defaults of debt securities, it would be difficult to ascertain the truthfulness of IPO grades due to the volatile nature of equity. Third, the investment banking community maintained that the grading would increase the issue costs. Fourth, analysts asserted that without a comment on the issue price, IPO grading has very little relevance. On the other hand, retail investors generally welcomed the idea of IPO grading. They possibly felt that the grading would reduce their dependence on issue advertisements and brokers. However, they demanded to include the issue pricing also into the scope of grading.

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[3]Sebis Primary Folly, The Economic Times, March 26, 2007. Retrieved from http://articles.economictimes.indiatimes.com/2007-03-26/news/27679465_1_disclosure-norms-small-investors-capital-market-regulator-sebi on August 17, 2012.

The available evidence on the impact of the IPO grading is conflicting. Whereas Deb and Marisetty (2010), one of the earliest studies on the grading, found that the IPOs after the introduction of grading is associated with lower underpricing, Khurshed et al. (2011) found no such role for grading in the underpricing. Further, Khurshed et al., with a larger sample, found no support for the two key findings of Deb and Marisetty -(i) the high grade issues are associated with better IPO pricing and (ii) retail investors respond to IPO grading with increased subscription of the high grade issues. Khurshed et al., instead, argued that the grading positively 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, they have attributed to the evidence of retail investors following the institutional investors' bids, which is possible due to the high transparency of the book building in India.[4] However, the submission of bids by the retail investors towards the end of the bidding window significantly improves their ability to assess the probability of receiving allotment. Such an assessment also helps them to reduce the opportunity cost of funds underlying the application. This behavior would be more salient during the hot periods due to the greater subscription levels and the availability of more investment opportunities.[5] These motives of the retail investors imply that 'the retail demand following the institutional demand' cannot be fully attributed to the information asymmetry faced by the former. It is somewhat surprising that the IPO grades influence the demand of the relatively more informed institutional investors rather than that of the individual investors. If the institutional demand is influenced by the IPO grade, then it is critical to examine whether it necessarily improves the pricing efficiency in a market like India, where institutions dominate price discovery and market

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[4]It is also common for retail investors to submit their bids to agents appointed by the brokers, who in turn accumulates the bids and submits them later to the collection agency. These bids are often entered into the bidding terminals much later. Hence, the date-time stamp displayed in the bidding platform need not necessarily match the date-time of the actual bids by retail investors.

[5]Before the introduction of ASBA (application supported by blocked account) in May 2010, the retail investors had to deposit the bid value at the time of the issue. This is likely to have an impact on IPO underpricing as argued by Fung et al. (2004)

demand. Partly the results of Deb and Marisetty may be attributed to the market phase covered by relatively small sample of graded issues (48) and to the relatively hot period covered by the study where they did not control for the market conditions.

Overall, the available research on the IPO grading is somewhat conflicting and leaves a number of important questions not adequately addressed. This paper is a modest attempt to resolve some of the contentious findings on the impact of IPO grading, given its status as a unique certification in the emerging markets.

The results suggest that the grading has not significantly impacted the pricing of IPOs in India. The demand for IPOs, on the other hand, seems to be influenced by the IPO grades. The low grade IPOs appears to have weaker market demand and IPOs with high grades experience stronger demand, compared to the ungraded IPOs. No significant change in the bidding approach of retail investors is observed after the introduction of IPO grading. These results together tend to suggest that the IPO grading as a certification mechanism has not performed its expected role. The reasons for the failure of the IPO grading need to be examined at a deeper level.

The remaining sections of the paper are organized as follows. Section 2 details some unique features of the Indian IPO market and the IPO grading. Section 3 develops the hypotheses related to the expected role of IPO grading. Section 4 describes the sample data and discusses the trends in underpricing and demand for IPOs, based on key firm, issue and market characteristics. Section 5 presents the important results and Section 6 concludes.

2   Grading and Other Unique Features - Indian IPO Market

The IPO grades are assigned on a five-point scale. The lowest grade (Grade-1) denotes poor issue fundamentals and the highest grade (Grade-5) strong

fundamentals, relative to the listed firms in India. The grade is expected to only reflect the various issue fundamentals, 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. The scope of the issuer fundamentals considered in the grading could vary across issuers or agencies. The grade is not expected to take the issue pricing into account and thus does not constitute an assessment of the fairness of the IPO price.

The grade is assigned by one of the credit rating agencies. The agency is expected to use the information disclosed by the issuer and those obtained from other sources. An issuer dissatisfied with the grade, assigned by one agency, can approach another. However, the issuer is bound to disclose all the assigned ratings for its IPO. The IPO grade along with the rationale given by the rating agency has to be displayed in every advertisement of the issue, including the issue prospectus and the abridged prospectus. The rating rationale gives the key findings and conclusions about the various aspects considered in assigning the grade.[6] The red herring prospectus must carry the IPO grade. The cost of the grading is borne by the issuer, which brings in fears of conflicts of interest that are reported to surround the credit rating (for instance, Smith and Walter 2001).

Apart from the IPO grading, several features make the Indian IPO market unique. First, unlike in most markets the investment bankers in India, do not have the discretion to allocate the issue.[7] The IPO allocation in India is done strictly on a pro-rata basis with pre-assigned quotas for different categories.[8] In that sense, the current version of the book building in India is closer to an auction with quotas, as suggested by Jagannathan et al. (2010). The investor categories, recognized by the regulator, for allotment are retail investors (retail), non-institutional investors

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[6]Every grade report explicitly mentions that the grade is not an opinion on the issue pricing.

[7]The allocation discretion enjoyed by the investment banker is claimed to be at the core of the pricing efficiency achieved with book building (Sherman 2000). A study by Bubna and Prabhala (2011), which compared the IPO underpricing under two different book building regimes in India; one with allocation discretion and the other without, found that underpricing was lower with discretion.

[8]The investment bankers enjoyed discretion in allocation for bookbuilt issues till September 2005.

(NIIs) and qualified institutional investors (QIBs).[9]. As of 2012, the proportion of the issue size reserved for these categories are 35%, 15% and 50%, respectively.

Second, the book building in India is relatively more transparent. Bidding is carried out through a network of terminals available with the members of national level stock exchanges, designated as bidding centers. At the centers, bids are submitted on-line by investors or their agents. The terminals at the center display the category-wise demand at different bid prices at periodic intervals not exceeding thirty minutes. This allows a prospective bidder to benefit from the almost real-time demand schedule of IPOs. This transparency is claimed to have led to a unique behavior by the retail investors where they tend to follow the institutional investors' demand pattern (Khurshed et al. 2008). Hence, the impact of the book building transparency could reduce the information asymmetry for the retail investors and improve the overall pricing efficiency.

Third, the participation of retail investors in the book building is significant. The retail and the NII together are eligible for allocation of not less than 50% of the issue. Sometimes, the retail investors are offered discounts up to 5% on the price, which motivates individuals to apply within the threshold application amount of the retail category. Whether the sizeable presence of retail investors critically influences the pricing efficiency is an important question in itself. There is a dominant view that it is the institutional investors who are relatively informed.[10] This suggests despite their significant presence the retail may not contribute significantly to the price discovery in the book building.

These market features could possibly have an impact on the role of IPO grading, or any other similar certification mechanism in the Indian market.

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[9]Retail represent applicants whose total bid value of shares is up to ₹ 200,000, NIIs are who bid for above ₹ 200,000, and QIBs represent the institutional investors. Between October 2010 and September 2005, the Retail category was defined as those who bid for shares up to ₹ 100,000

[10]The overall financial literacy of individuals in India is relatively low compared to the global standards (for instance, Agarwalla et al. 2012). However, it is reasonable to assume that the IPO bidders belong to a higher literacy group within the population.

3 Testable Hypotheses and Methodology

3.1 Testable Hypotheses

The nature of the IPO grading suggests that it can be regarded as an additional certification of the IPO fundamentals. This approach had been adopted by the earlier papers on this issue (Deb and Marisetty 2010, Khurshed et al. 2011). The literature on information asymmetry and the role of certification in IPO pricing gives support to hypothesize the following expected influences associated with the introduction of IPO grading.

First, it is reasonable to expect that the QIBs are less likely to be dependent on the IPO grades in their bidding compared to the retail investors as they have greater access to information and better analytical skills. Hence, we expect no significant impact of grades on the demand of IPOs from the institutional investors. The retail investors, on the other hand, are more likely to be influenced by the grades and therefore, we expect a significant influence of grades on their demand for IPOs.

Second, if the IPO grade provides incremental price-relevant information and summarizes the bulky public information, into an easy-to-use form, it could potentially improve the IPO pricing efficiency. This is expected as the IPO grading could potentially reduce the information asymmetry and make the availability of IPO related information more homogeneous. Both these outcomes are claimed to reduce IPO underpricing over time (refer to Ljungqvist 2004, for a detailed discussion on these issues).

Third, if the grading reduces information asymmetry, then it could nudge the pricing of all IPOs towards their respective fair price in a rational market and all issues, irrespective of their grades, should have similar levels of risk-adjusted

underpricing. This could reduce the cross-sectional variation of underpricing with the introduction of the grading.

Fourth, by acting as a certification mechanism, if grading helps to reduce underpricing, then its role would possibly be more evident in the case of the relatively small firms and firms belonging to relatively nascent industries, as these firms are documented to suffer from greater information asymmetry.

We also examine whether there are any significant changes in the overall bidding approach of the major investor categories after the introduction of the IPO grading.

3.2 Methodology

The possible influence of IPO grading on the demand for issues from various investor categories is examined with cross-sectional regressions. The regressions take the following form,

$$NTS_i = \alpha + \Sigma\beta.X_i + \delta.D_{GRADE} + \epsilon_i \tag{1}$$

where, NTS_i is the number of times IPO i is subscribed by an investor category (retail or QIB), and X_i is a set of variables to reflect the firm and issue characteristics, and market conditions around the time of the issue (as explained later in this section). D_{GRADE} is a dummy variable to reflect the issue grade. The economic and statistical significance of the grade related dummy would indicate the influence of grade on the demand for IPOs.

The impact of grading on IPO pricing efficiency is examined with the following cross sectional regressions (as given below) involving net underpricing as the dependent variable. The independent variables reflect the key firm, issue and market characteristics along with dummy categorical variables to reflect the grades.

$$UP_i = \alpha + \Sigma\varphi.X_i + \gamma.D_{GRADE} + \eta_i \tag{2}$$

where, UP_i is the market adjusted return on IPO of stock i defined as below.

$$UP_i = \frac{\text{Listing Day Closing Price}}{\text{Issue Price}} - \text{Market Return from issue date to listing} \tag{3}$$

The market return is proxied by the return on Sensex, one of the most popular equity indices in India. Primarily, the regressions examine whether the grade, which is expected to convey the issue characteristics, has any direct influence on the pricing efficiency.

The independent variables X_i included in the above regressions attempt to capture the ex-ante information asymmetry surrounding an IPO, as the underpricing and issue demand are believed to reflect the information asymmetry. The issue and firm size are widely believed to proxy for investors' ex-ante uncertainty. The length of the history of a firm's operating performance is another proxy usually employed to capture the degree of information asymmetry (for a discussion on these proxies, refer Ljungqvist 2004). The extent of ownership retained by the promoter is found to offer some explanation for underpricing. As the information asymmetry surrounding different industries could significantly vary, the regressions also control for the industry effects, as often employed in the empirical analysis of IPO underpricing. The study also control for the clustering of IPOs, which is believed to significantly influence the demand and underpricing of issues (for instance, Helwege and Liang 2004). The definitions of the variables employed in the regressions are summarized in Table 1.

4 Data and Preliminary Findings

4.1 Data

The IPO related data are taken from the Prime database[11] and the firm-level financial data from the Prowess database[12]. The sample comprises all the 352 IPOs over the six year period between October 2005 and September 2011. One of the IPOs is removed from the sample due to the unavailability of its post listing price. 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[13]. Moreover, the Indian IPO market has significantly evolved on many fronts, such as the institutional profile, issue pricing, allocation, disclosures, and listing norms etc. in the last decade. These changes would make comparison of the IPO pricing efficiency or bidding patterns over a long period of time unreliable in India.

4.1.1 Overall Characteristics of the Sample

A brief description of the sample IPOs is provided in Table 2. The sample represents a total issue size of ₹ 1,36,250 crores, which averages about ₹ 19,464 crores per year and ₹ 415 crores per issue. The sample period corresponds to one of the most active phases for IPOs in India and accounts for nearly 79% of the issue volume and 84% of the issue value during the decade ending September 2011. Most of the IPOs are offered through book building method (86%).

The median of the overall subscription of IPOs is about seven times and the mean about 14 times. This suggests that that there are many highly subscribed issues. For instance, eight IPOs are subscribed more than 100 times. The category-wise

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[11]An Institution providing the time series of public issue related data in India.
[12]Database of firm financials maintained by the Centre for Monitoring Indian Economy (CMIE).
[13]The change regulation was effective for draft offer documents filed with SEBI on or after September 19, 2005.

subscription also has many extremes. The retail has subscribed three IPOs more than 100 times and the QIBs have crossed the '100 times' mark in as many as 16 issues. The mean subscription levels peaked in 2007, which is also the peak IPO activity year. The subscription level has significantly declined towards 2011. Among the investor categories, the demand from the QIBs appears to be greater than that of the retail for most of the years.

4.1.2 IPO Clustering

It appears that there is clustering of IPO activity in India, as reported from other markets. The monthly issue volume, issue size and its 3-monthly moving average over the period are given in Figure 1. The maximum IPO volume (18 issues) is in February 2007 and the maximum issued amount is in October 2010 (₹ 17,674 crores).[14] There are no IPOs in seven months out of the 73 covered by the data and another seven months have only a single issue each. The time period between 2007 and 2008, as well as the time period between 2010 and 2011 appear to fit the description of a "hot phase" in the Indian IPO market.

Given the apparent IPO clustering and the documented evidence of the potential influence of the market conditions on issue pricing, the study attempts to control for market conditions in the regressions. Each month in our dataset is classified as a "cold" or a "hot" month based on the 3-month centered moving average of the number of IPOs during that month relative to the average number of IPOs during the period. The moving average takes care of any seasonality in the issue of IPOs. The top one-third months are classified as hot months and the remaining months as cold months. Out of the total 73 months, 18 months are classified as hot months. There is greater demand for IPOs during the hot period (median subscription about 10 times) relative to the cold market (median subscription 3.5 times).

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[14]The maximum issue size in October 2010 was contributed by a large IPO of a public sector firm.

By the issued amount, the IPOs appear to be concentrated around two sectors: power, and 'construction and real estate'. These two industries together accounted for about 47% of the total issued amount. By the number of issues, 'construction and real estate' was the dominant issuer, with about 16% share of the IPOs. The industry clustering suggests the need to control for industry in the regressions.

4.1.3 Characteristics of the Graded IPOs

The final sample has 181 graded issues. The distribution of the IPO grades and a brief profile of the graded issues are given in Table 3 & Table 4, respectively. As given in Table 3, only about one-fifth of the graded IPOs have been given the high grades (4 or 5) and about one-tenth are graded at the lowest level (1). Lowest grade IPOs accounted for a large share of the IPOs during the year 2007. By issue amount, nearly 60% of the IPO is high grade and only 1% is in the lowest grade. This skewness could possibly be due to a link between firm size and grades. Overall, the distribution of the grades suggests no significant bunching in the IPO grades. It appears that the issuers, who are larger, relatively low-levered, and having a greater return on equity tend to receive the highest grading. This pattern could be expected as grading focuses solely on the fundamentals of the firm.

As given in Table 4, high grade IPOs seem to attract greater overall subscription. Across the entire sample, the median QIB and retail demand appears to be greater for the high grade IPOs. For instance, the median QIB subscription of 'Grade 4' issues is about 20 times, compared to 1.1 times of the 'Grade 1' IPOs. However, the retail seems to have greater demand for low grade IPOs compared to the QIBs. For instance, the median 'Grade 2' IPOs is subscribed 3.3 times by the retail compared to 1.1 times by the QIB. Partly, the lower QIB subscription of low grade IPOs could be due to the internal investment restrictions on issuer features such as firm size, leverage, profitability, etc. It appears that compared to the large variation in institutional

subscription across grades, the retail subscription does not vary as much. These features of the subscription pattern suggest, at least, that the IPO demand of retail and QIB are not always similar.

4.1.4   Features of IPO Underpricing

A comparison of the pricing efficiency, as reflected in the underpricing, is given in Table 5. All the issues in the sample period are not underpriced. A sizeable number (about 36%) of the issues are found to be overpriced relative to their first day closing price. Nearly two third of the overpriced IPOs are issued in cold market conditions. IPO underpricing appears to have significantly declined over the sample period. The 2005 average first-day underpricing of 25% has declined to about 5% in 2011. The apparent improvement in the pricing efficiency could be attributed to a number of developments in the Indian market such as a broadened investor base, improved information disclosure by issuers, more effective aggregation of issue related information, and improved regulation. While there are many significant regulatory and structural changes in the market over this period, the higher underpricing of the earlier years could also be due to the greater time gap between the issue and listing and the associated cost of tied-up funds. For instance, the average time period between issue date and listing date in 2005 is 26 days, the corresponding figure in 2011 is only 18 days.

It appears that larger IPOs achieve a more efficient pricing in India. The average underpricing of IPO groups varying in issue size and firm age are given in Table 5. The top one-third of IPOs by size (issues of ₹ 150 cr. and above) have an average underpricing of about 13% as against 32% of the bottom one-third (issues below ₹ 60 cr.). The larger issues are documented to have lower information asymmetry world over. The age of the firm does not seem to have any significant unconditional influence on the IPO pricing efficiency. The underpricing appears to be greater

during the hot periods than the cold periods. For example, IPOs during the hot months experience average underpricing of about 29% compared to about 15% during the cold months. This pattern is similar to the finding from markets including US (for instance, Helwege and Liang 2004). Table 6 gives the average underpricing of IPOs grouped by the overall and category-wise subscription levels. IPOs which have attracted the top one-third overall subscription (subscribed more than 14.24 times) have significantly greater underpricing than the IPOs with bottom one-third overall subscription (subscribed less than 2.48 times). This relatively higher underpricing of the IPOs with greater investor demand can be understood as a hot market phenomenon having greater investor sentiment.

The grade-wise average underpricing is given in Table 7. The average underpricing seems to decline with higher grading, except in the case of Grade 5. However, the Grade 5 sample has only three IPOs, which makes it somewhat less reliable. The median underpricing does not show a declining trend with higher grading. Hence, the averages are being influenced by large underpricing values of a few IPOs.

These univariate relationships suggest that IPOs which are larger or issued in cold markets have lower underpricing and grading has no conspicuous influence on the underpricing.

5   Findings and Discussion

5.1   Grading and IPO Demand

We adopt a robust regression procedure to analyse the influence of IPO grading on the demand due to the presence of many outliers in the subscription data. The results of the robust regressions involving the demand (Equation 1) of the retail and QIB investors are given in Table 9. Panel A gives the results where the demand of the other

investor category is not included among the regressors and Panel B gives the results where the demand of the other investor category is included among the regressors. The overall results suggest that both the institutional and retail demand for IPOs is apparently influenced by the grades. The coefficient of the grade dummy for the low grade IPOs (D(1), D(2) & D(3)) is negative for both the retail and QIB demand. The significance of the coefficients of grading is greater in the case of the QIBs.

For the QIB category, the results (given in Panel A of Table 9) indicate that the demand is weaker for the relatively low grade IPOs, compared to the high grade or ungraded IPOs. The coefficient of the grade dummy is positive for the high grade IPOs. These results are intuitive as the institutional investors are believed to be relatively more informed and rigorous in their investment approach, compared to their retail counterparts. It is also likely that the institutional investors have investment policy constraints that restrict their investments in IPOs having poor fundamentals. The other variables with significant impact on the IPO demand of this category are the issue-related fundamentals: RONW, group affiliation, issue size, and market conditions. As suggested by the coefficient of the 'hot-cold' dummy ($D(hot)$), the demand for IPOs is greater during the hot period. These variables carry their expected signs.

On the other hand, the demand from the retail investors (as given in Panel A of Table 9) for both the low and high grade IPOs appears to be negative relative to the ungraded IPOs. The negative coefficient of the grade dummy is significant only for 'Grade 2' and 'Grade 3' IPOs. As the relatively low grade IPOs have poor fundamentals and are risky, the appetite for such IPOs ought to be lower, especially when these risk-return characteristics are revealed to the market. The weaker demand for the low grade IPOs, compared to the ungraded IPOs, tentatively suggests a guidance role for the IPO grade in the case of the retail investors.

While the coefficient of the dummy representing the high grade issues (D(4/5)) is insignificant for the retail category, its negative sign merits some explanation. It is found that the high grade IPOs are larger issues by amount. For instance, the average issue size of the overall sample is about ₹ 388 crores and the average size of 'Grade 4' and 'Grade 5' issues is about ₹ 1,346 crores. These issues are oversubscribed by the retail only to a lower degree compared to the average issue. The correlation between retail demand and issue size, if anything, is only negative (-0.08, given in Table 8). These outcomes are possibly due to the limited investible funds available with them. The institutional investors' demand, on the contrary, is positively correlated with the issue size (correlation of 0.36, given in Table 8). The institutional investors have far more funds to invest, and hence may invest more aggressively in the high grade IPOs, as indicated by the positive coefficient of the grade dummy in that case. Generally, the very large issues are unlikely to top the demand, when measured as the 'number of times subscribed'. Hence, employing the 'number of times subscribed' as a measure of the demand from the investor categories itself is not without problems in capturing the true relative issue demand .[15]

On the impact of the grade on IPO demand, Deb and Marisetty (2010) had found that it is the retail subscription, which is influenced by the grades. This study finds that the demand of both the retail and institutional investors are influenced by the IPO grades. The contrasting results could be due to the difference in their approach. Firstly, they did not control for market conditions and industry. Secondly, their sample had only 48 graded issues and a large number of them were issued during a relatively cold period. In a related paper, Khurshed et al. (2011) found that it is the demand of the institutional investors which is significantly influenced by the IPO grade. They found that the institutional demand is weaker for relatively low grade issues and stronger for the high grade issues. However, they did not find any significant role for the IPO grading in the retail demand. The insignificance of the

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[15]For instance, the IPO of Coal India Ltd., a very popular issue in India, with an issue size of about ₹ 15,200 cr. was subscribed only about 15.2 times compared to the sample average of 18 times.

grades in the retail demand, Khurshed et al. had linked to the claim of the retail bids following the QIB bids, due to the high transparency of the book building in India (Khurshed et al. 2008).

The similarity in the independent variables, which significantly influence the IPO demand of both the institutional and retail category, is mostly intuitive and is in line with the moderate positive correlation of 0.43 (correlation of the key variables are given in Table 8) between the retail and institutional subscription. The differences in the influence of grades on the IPO demand reported in this paper, compared to the earlier papers could possibly be due to the influence of outliers in the data. The robust regression employed in this study takes care of the outliers.

Based on the evidence of the mutual influence of retail and institutional demand, we modify the cross-sectional demand regressions (given in Equation 1) by adding the demand of the other category as a regressor. The results of these regressions are given in Panel B of Table 9. The demand of each of the investor categories apparently influences the demand of the other, as indicated by the significance of the associated coefficients (QIB-NTS and Retail-NTS). On inclusion of the demand of institutional investors, the coefficients of the grade dummy turns insignificant in the case of the retail demand.

Overall, these results tend to suggest that the IPO grade has some degree of influence on the investor demand. The impact appears to be stronger in the case of the institutional investors. The direction of the impact for both the categories suggests the following. First, the low grade issues experience weaker demand compared to the ungraded issues. Second, the high grade issues experience greater demand from the QIBs compared to the ungraded IPOs. It is apparently puzzling to see why the grade leaves a greater impact on the demand of the more informed institutional investors, rather than the retail category. Hence, it is crucial to examine, whether the institutional and retail demand for IPOs of firms with characteristics similar to

the cohort of firms in a certain grade is indeed different with the IPO grading, under similar market conditions. This would allow for a more reliable judgment about the influence of IPO grading on the investor demand.

5.2 Grading and Bidding Behavior

If grading had effectively supplemented or improved the quality of issue related information, available to the retail investors, it would have allowed bidders to take a more informed IPO investments decisions. Such an outcome could influence the bidding behavior of the investors, such as - (a) the proportion of individual bids at cut-off (b) bidders' degree of distinction of IPOs with bright future prospects from their poor counterparts. One would expect effective IPO grades to reduce the number of bids submitted by the retail investors without a price quote (bids at cut-off).[16] If the IPO grades perform their expected role, then it would also enable the investors to better distinguish among issues with differing future prospects. Some of our tentative results from an ongoing extension of this study are as follows.

First, the proportion of individual investors bidding for IPOs at cut-off price for the graded IPOs is apparently no different from that for IPOs without grade. About 62% of the individual investors' bids continue to be at cut-off price.[17] Second, the retail demand of IPOs, with varying levels of post-listing returns, seems to be by and large unchanged for the graded issues compared to the ungraded ones. The median subscription for the different deciles of post-issue returns realized by IPOs is given in Figure 2. The retail demand pattern possibly implies that the IPO grade did not possibly enable the retail investors to be wiser on their IPO investments. These results are only tentative as a more rigorous analysis is required for reliable

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[16]In India, the retail investors are allowed to bid at 'cut-off price', which leads to bidding for shares without quoting a price. This is allowed on the assumption that many retail investors might not have the wherewithal to quote a price. If the IPO grading reduces information asymmetry, for the retail investors, then more retail investors could be able to form an opinion about the IPO price.

[17]About 31% of the total bids are submitted at cut-off. Assuming a total individual investor quota of 50%, and an almost equal level of subscription by individual and institutional investors, this translates into 62% of individual bids.

conclusions. These findings about the bidding behavior suggest a less influential role of grading in the IPO market.

5.3   Grading and IPO Underpricing

The possible impact of the grading on underpricing is examined with cross-sectional regressions involving the underpricing (as given in Equation 2).   Two sets of regressions are estimated (i) with only a single dummy variable to distinguish the graded issues from the ungraded ones, and (ii) with multiple dummy variables to distinguish across the grades. The significance of the grade dummies could imply the influence of grading on the IPO pricing.

The results of the regressions involving a single dummy are given under Model 1 in Table 10. The results indicate that whereas the grading is expected to be negatively related to the underpricing, the related dummy variable is not significant (D(grade)). This seems to suggest that grading has no significant influence on the pricing of IPOs. This insignificance of the grading has been reported earlier by Khurshed et al. (2011). However, our results contrast with that of Deb and Marisetty (2010) who had found that the IPO grading helps to significantly reduce the underpricing in India. The differences might be due to the larger sample employed in this study. Their sample of 182 IPOs, with only 48 graded IPOs, covered only the period between April 2006 and March 2009. Moreover, they had not controlled for the varying market conditions existed in their sample period, where a significant number of their graded IPOs were issued during cold market conditions with generally lower underpricing.

The results further suggest that the only significant factors which influence the underpricing are the issue size ($ln(Size)$) and demand for IPOs ($ALL - NTS$). Larger issues appear to be able to achieve better pricing, as expected. This could be attributed to its lower information asymmetry. The market demand of IPOs, captured by the number of times the IPO are subscribed ($ALL - NTS$) suggests

that IPOs with greater market demand have higher underpricing. This somewhat counter-intuitive result can be understood as IPOs which experience high demand during a hot period are often listed at a premium. This is possibly due to the unmet demand in the primary market. During hot markets, investors often exhibit a greater inclination to own assets, irrespective of their price. The greater underpricing of IPOs during hot markets is also reported from elsewhere (for instance, Helwege and Liang 2004).

The study further examined whether, among the graded cohort, IPOs with higher grades have lower underpricing compared to those with relatively lower grades. The results of the cross sectional regressions with the actual grades as categorical variables are given under Model 2, in Table 10. The insignificance of all the grade dummies $(D(1), \ldots, D(4/5))$, reinforces the evidence about the no role of grading on the underpricing. As in the case of Model 1, the most significant factor influencing underpricing is the demand of IPOs.

It was expected that IPO grading would help to alleviate the information asymmetry around the IPOs. It is interesting, therefore, to examine whether grading has any impact on the pricing of relatively small IPOs, where the information asymmetry is believed to be high. The study examined this issue through cross-sectional regressions involving the IPOs of only small firms. All the firms which belong to the bottom one-third when ranked by the pre-issue assets are taken as the sample of small firms. This corresponds to firms with asset size up to ₹ 90 cr. The results of these regressions are given in Table 11. The insignificance of the grade related dummies suggests that there is no relative improvement in the pricing of graded small firm IPOs, compared to the ungraded IPOs of small firms. The only significant explanatory variables of underpricing are the subscription and age of the firm. These results, once again, imply that grading has no significant role on IPO pricing.

6   Conclusions and Future Directions

'IPO Grading' was introduced in India to provide comprehensive fundamental issue related information in an 'easy-to-use' format to investors and thus increase the pricing efficiency of IPOs.

Overall, these results tend to suggest that the IPO grading had only a limited impact on the bidding of investors for IPOs in India. It appears that the grading influences investor demand for IPOs.   High grade issues experience greater subscription from both the institutional and retail investors, and the low grade issues, on the other hand, tend to attract lower subscription. The grading which was expected to guide the retail investors, however, appears to be less significant for their demand. An indicator of the informativeness of grading, the proportion of bids submitted at cut off by the retail investors, remains very high.

The efficiency of IPO pricing, however, appears to be uninfluenced by the IPO grades. The underpricing of the issues is unrelated to their grade. Graded issues, which are expected to have lower information asymmetry, do not have a relatively lower underpricing compared to ungraded issues or high grade issues do not have lower underpricing compared to the low grade issues. These results contrasts with the finding of Deb and Marisetty (2010) that the grading leads to lower underpricing. The insignificant role of grading on IPO pricing in India, primarily, suggests that grading has not performed its expected role as a certification of the underlying issue quality. It is perhaps not appropriate to argue (Khurshed et al. 2011) that the significance of IPO grading in the institutional investor demand is evidence enough for the contributory role of the grading.

However, several significant issues need to be carefully addressed before assigning a significant positive role to the IPO grading for its apparent influence on investor demands.

First, while the demand of even the more informed institutional investors appears to be influenced by the IPO grade, it does not translate itself into lower underpricing. On the contrary, for issues experiencing greater demand, the issuers leave more money on the table, when judged by the price on listing. While this can be attributed to the irrational investor demand during hot market phases as documented in the literature, the grading has not helped to improve the pricing outcome in the market. It is possible that the grades significantly influence the IPO demand of market participants through their reliance on grading. But it would not help to improve IPO pricing if grades are noisy and do not reflect the true issue fundamentals. However, such noisy high grades still might tempt the relatively rational institutional investors to aggressively bid for the high grade IPOs, where the retail investor follow their demand. It is perhaps not appropriate, therefore, to argue that that IPO grading has worked positively in the Indian market as suggested by some of the earlier papers.

Second, it is critical to examine, whether the institutional and retail demand for IPOs is indeed different with IPO grades, for issues having characteristics similar to the cohort of issues in a certain grade. This would help evolve a more reliable judgment about the role of IPO grading. This step also assumes significance as the IPO grading is apparently tough due to the residual nature of the equity cash flows. As against IPO grading, credit rating has a set of reasonably measurable criteria, the failure of which can be easily spotted by the market. This weak tractability of post-issue IPO performance may not sufficiently incentivize the agencies to assign grades objectively and thus erodes its role as a credible signal.

The researchers are currently examining these aspects of the IPO grading as part of an ongoing research.

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Figure 1: Trends in IPO volume and value

IPO Volume is the number of IPOs per month and IPO Value is the total value of issues during a month. MA no. of issues and MA issue size are 3-monthly centered moving average of the issue volume and issue value, respectively.

IPO Volume Trend

IPO Value Trend
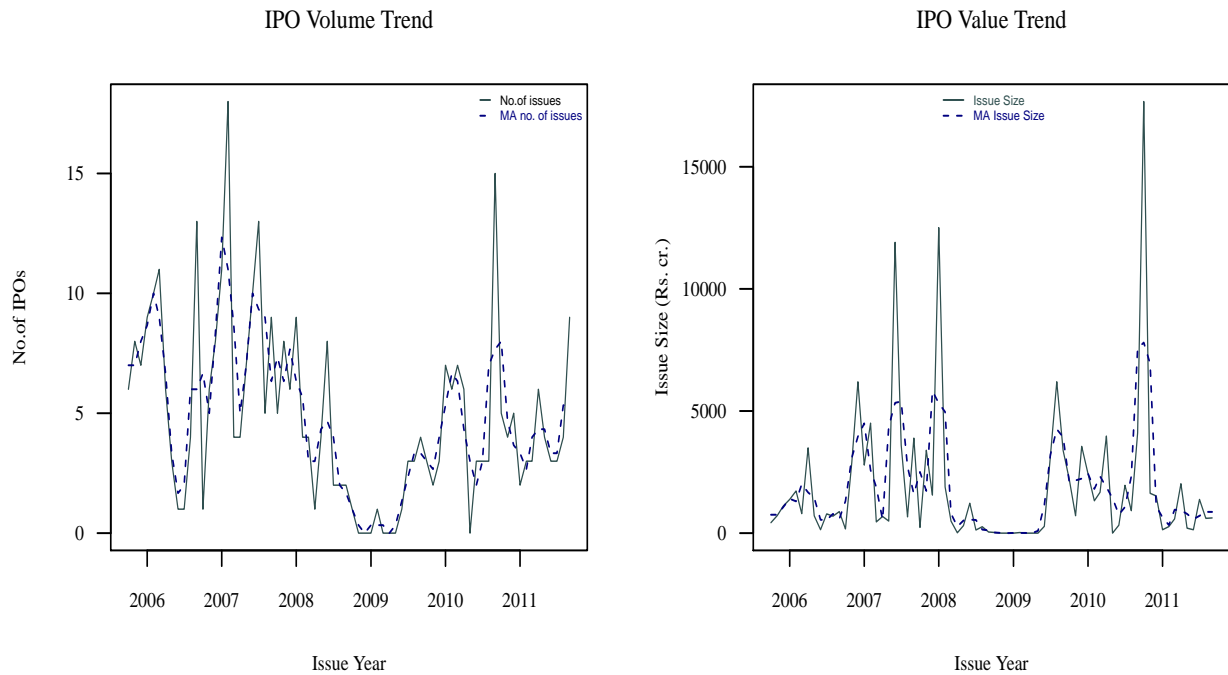
Figure 2: IPO demand and post-listing stock returns

The figures indicate the median IPO subscription levels of the institutional and retail investors. The subscription levels denote the ratio of the number of shares bid by the category to the total number of shares eligible for the category. The net return is as per Equation 3 for the listing day returns.
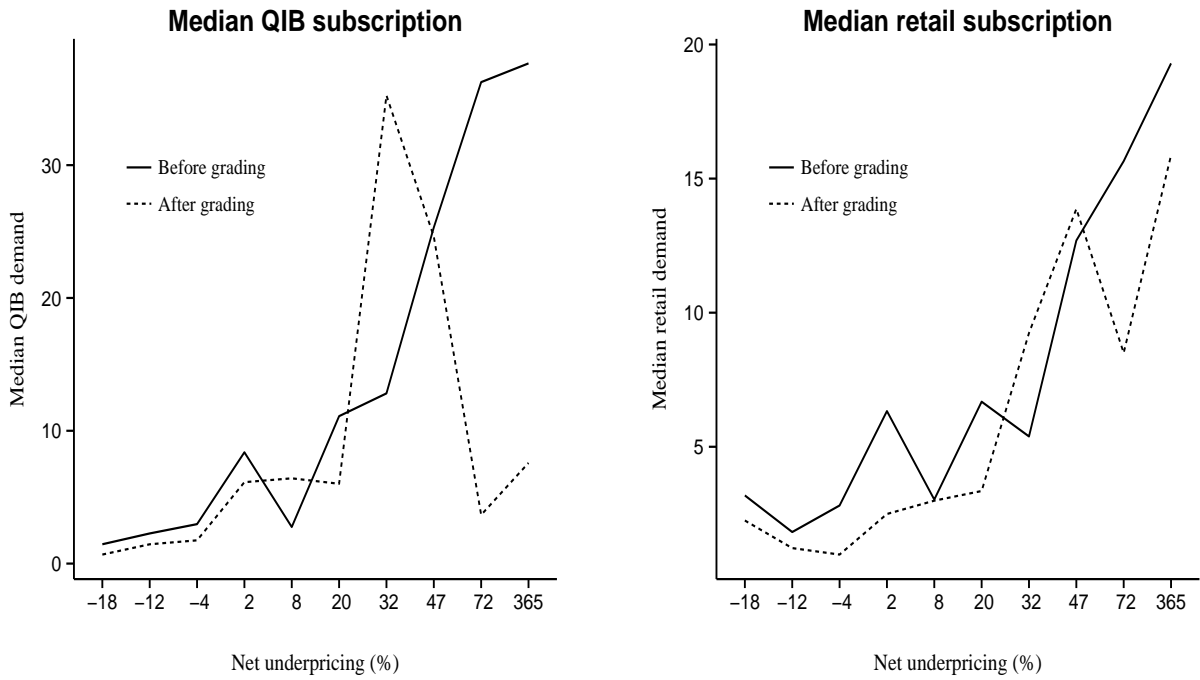
Table 1: Definitions of the independent variables in the regressions

Variable	Brief description
Firm-related variables:	
$ln(Size)$	Log of the total value of an IPO
$ln(Assets)$	Log of the book-value of the assets of the issuer
DE	Debt/equity based on book value of pre-issue debt and equity
RONW	Pre-issue PAT/Net worth
Holding	Post-issue promoter holding / Total number of shares
Age	No. of years since incorporation at the time of IPO
D(group)	Dummy indicating whether affiliated to a business group
Market related variables:	
D(hot)	Months with top 1/3 number of issues hot, otherwise cold
ALL-NTS	No. of times subscribed by all investor categories
Retail-NTS	No. of times subscribed by retail
QIB-NTS	No. of times subscribed by QIB
Issue Related variables:	
D(grade)	Whether graded or not
D(1), D(2), D(3) or D(4/5)	Actual grade assigned to the issue used as a category ('Grade 4' and 'Grade 5' are combined)
D(bookbuilt)	Dummy whether issue is bookbuilt (otherwise, fixed price)

Table 2: Summary statistics of IPOs

The table gives the summary statistics of the sample of IPOs. Average listing time is the time between issue date and listing date. Retail investors are those who bid up to ₹ 200,000 (₹ 100,000 till October 2010) worth of shares worth of shares. The QIB represents the qualified institutional buyers. The two graded issues in 2006 are the IPOs voluntarily graded by the issuers (grading was optional till April 30, 2007). Bookbuilt are the IPOs offered through book building.

Year	No. of IPOs	Issue Size (₹ Cr.)		No. of issues			Avg. listing time (days)	Subscription levels			
		Total	Average issue	Book Built	Fixed price	Graded		Mean overall	Median overall	Median-Retail	Median-QIB
2005	21	2,260	108	16	5	0	26.1	18.9	15.3	12.4	15.2
2006	73	19,862	272	56	17	2	26.7	16.2	7.3	6.1	8.2
2007	100	34,179	342	87	13	23	26.6	29.6	10.6	6.7	8.7
2008	37	16,904	457	33	4	36	25.5	9.6	2.2	2.2	1.7
2009	20	19,544	977	20	0	20	25.6	8.1	2.0	2.0	2.1
2010	64	37,535	586	62	2	64	19.6	15.3	6.9	3.8	4.7
2011	37	5,966	161	36	1	37	22.2	3.4	1.5	2.7	0.5
Overall	352	1,36,251	387	310	42	182	24.7	17.5	5.4	4.0	5.1

Table 3: Distribution of the IPO grades

The two graded IPOs in 2006 were graded voluntarily by the issuers, the remaining were graded under the mandate of the regulator. The three firms given 'Grade 5' were Coal India Ltd., the largest public sector coal mining firm in India; MOIL, the largest public sector Manganese ore producer; and L&T Finance Holdings Ltd., the finance arm of the largest engineering and construction firm in India.

Grade	No. of IPOs	Years					
		2006	2007	2008	2009	2010	2011
1	21	-	6	5	2	2	6
2	62	2	5	11	4	23	17
3	62	-	7	16	8	21	10
4	34	-	5	4	6	16	3
5	3	-	-	-	-	2	1

Table 4: Brief profile of the graded IPOs

The Avg. issue size is the mean issue size of the IPOs in each grade, Avg. assets is the book-value of pre-issue assets, Debt-equity ratio is based on book value of pre-issue debt and equity, RONW is the pre-issue PAT/Net worth, and Holding is the post-issue promoter holding. The subscription levels represent the ratio of the number of shares applied to the total number if shares available to each category, Retail represents the retail investors and QIB denotes the qualified institutional buyers.

Grade	Avg. issue size (₹ Cr.)	Avg. pre-issue assets	Firm indicators (median)				Median subscription levels			Mean subscription levels		
			Debt/Equity	RONW	Holding		Overall	Retail	QIB	Overall	Retail	QIB
1	50.5	145.8	0.8	12.8	56.4		1.8	3.0	1.1	6.6	8.3	3.5
2	99.0	199.3	0.8	24.1	55.1		2.1	3.3	1.1	5.8	7.2	4.9
3	440.3	2,017.9	0.7	18.9	59.1		2.6	2.5	1.9	16.5	11.5	20.8
4	944.9	8,285.3	0.8	18.8	75.6		15.1	3.5	20.1	25.8	8.7	35.9
5	5,894.0	9,428.9	0.1	21.9	82.6		15.2	9.6	24.6	25.6	14.7	25.2

Table 5: Underpricing of IPOs over years

The Bottom 1/3 IPOs by size corresponds to issues below ₹ 60 cr.by size, middle 1/3 corresponds to issues between ₹ 60 - ₹ 150 cr., and top 1/3 issues of ₹ 150 cr. and above. By age, Bottom 1/3 corresponds to firms of less than 10 years history, Middle 1/3 corresponds to firms with a history of 10-15 years, and Top 1/3 represents firms with a history of 15 years and above. The Hot market indicates whether the issue month falls into the top one-third underpricing for each group in percentage. The difference in the Cold market). The underpricing figures are the average first-day underpricing for each group in percentage. The difference in the yearly underpricing between the 'Top 1/3' and 'Bottom 1/3' by issue size is statistically significant at 5% level for the issue size except for 2005 and 2008. It is statistically significant for firm age at the 1% level except in 2009, where it is significant at the 2% level.

Year	Overall 1-day	Issue Size			Age of firm			Market status	
		Bottom 1/3	Middle 2/3	Top 1/3	Bottom 1/3	Middle 2/3	Top 1/3	Hot	Cold
2005	25.3	30.0	18.1	37.0	9.8	42.6	21.6	25.3	-
2006	25.9	39.9	10.2	21.9	40.7	16.6	25.0	36.3	14.5
2007	33.0	41.7	32.0	24.4	44.9	16.4	46.0	29.4	46.4
2008	13.3	22.5	7.7	7.9	4.6	15.8	18.4	-	13.3
2009	8.3	54.8	-5.5	3.0	12.3	9.3	2.8	-	8.3
2010	14.2	25.2	24.8	5.3	8.5	26.3	11.3	18.4	11.8
2011	5.2	-4.4	19.2	-8.3	9.9	9.1	-4.9	-	5.2
Overall	21.3	32.0	20.0	13.0	24.0	18.0	23.0	29.0	15.0

Table 6: Subscription and underpricing

The overall subscription groups are as follows, Bottom 1/3 represent issues subscribed below 2.5 times; Middle 1/3 are subscribed between 2.5 and 14.3 times; and Top 1/3 are issues subscribed 14.3 times and above. The retail subscription groups are as follows, Bottom 1/3 are issues subscribed below 2.5 times; Middle 1/3 are subscribed between 2.5 and 8.7 times; and Top 1/3 are issues subscribed 8.7 times and above. The QIB subscription groups are as follows, Bottom 1/3 are issues subscribed below 1.7 times; Middle 1/3 are subscribed between 1.7 and 14.4 times; and Top 1/3 are issues subscribed 14.4 times and above. The underpricing figures are the average first-day underpricing for each group in percentage. The difference in the yearly underpricing between the 'Top 1/3' and 'Bottom 1/3' is statistically significant at 10% level for the 'Overall subscription' (except in 2011, where it is significant at 12% level), 1% level for the retail category (except for 2008, where it is significant at 5% levels) and 1% level for the institutional category (except 2008, where it is significant at 10% levels).

Issue Year	Overall Subscription			Retail Subscription			QIB Subscription		
	Bottom 1/3	Middle 2/3	Top 1/3	Bottom 1/3	Middle 2/3	Top 1/3	Bottom 1/3	Middle 2/3	Top 1/3
2005	17.3	8.4	37.3	-	13.1	29.1	2.7	8.9	41.9
2006	24.5	14.9	41.5	21.0	19.5	37.9	25.4	17.5	36.3
2007	-3.5	9.7	64.8	-2.6	13.6	65.7	8.7	16.8	58.2
2008	9.4	6.7	54.0	9.5	-0.9	40.3	12.4	11.9	20.7
2009	9.8	9.6	3.8	8.1	8.4	-	11.0	7.2	3.8
2010	-4.3	20.2	27.6	-4.5	23.6	27.2	6.0	9.7	25.5
2011	6.2	1.3	12.9	19.6	-14.1	3.4	-2.1	36.9	12.9
Overall	5.4	12.0	46.0	7.0	13.0	44.0	8.1	15.0	40.0

Table 7: Grades and underpricing

The sample size underlying the grades 1 to 5 have 21, 62, 62, 34, and 3 observations, respectively. The two IPOs in 2006 were graded voluntarily by the issuers. The underpricing figures are the average first-day underpricing for each group in percentage.

Issue year	Grade 1		Grade 2		Grade 3		Grade 4		Grade 5	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
2006	-	-	99.7	99.7	-	-	-	-	-	-
2007	59.6	31.1	-0.7	3.2	48.4	33.6	31.2	24.6	-	-
2008	6.6	-15.2	31.3	16.3	4.7	3.2	2.9	1.4	-	-
2009	66.1	66.1	9.2	4.7	-8.2	-4.0	10.3	6.0	-	-
2010	-7.6	-7.6	21.6	18.7	12.1	6.2	7.2	6.9	28.9	28.9
2011	7.2	7.4	6.1	-23.9	5.2	-0.6	-3.5	1.9	4.7	4.7
Overall	26.2	4.1	19.2	11.4	10.5	2.1	9.8	4.8	20.9	21.7

Table 8: Correlation across key variables

ln(Size) is the natural log of the total issue size; *ln(Assets)*, is the log of the book-value of the assets of the issuer; *DE*, is the debt to equity ratio based on pre-issue book value of debt and equity; *RONW* is pre-issue PAT/Net worth; *Holding* is post-issue promoter holding/total number of shares; *Age* is the number of years since incorporation of the issuer at the time of IPO; and *ALL-NTS, Retail-NTS, & QIB-NTS* are the number of times subscribed by all investor categories, Retail and QIB, respectively. ***, **, and * represent correlations significant at 1%, 5% and 10%, respectively.

Variable	ln(Size)	ln(Assets)	DE	RONW	Holding	Age	ALL_NTS	QIB_NTS
ln(Assets)	0.795 ***							
DE	0.167 ***	0.337 ***						
RONW	-0.018	-0.094 *	-0.050					
Holding	0.405 ***	0.381 ***	0.141 **	0.114 **				
Age	0.196 ***	0.356	0.036	-0.044	0.189 ***			
ALL_NTS	0.258 ***	0.240 ***	-0.038	0.096 *	0.125 **	0.070		
QIB_NTS	0.360 ***	0.330 ***	-0.028	0.060	0.182 ***	0.083	0.949 ***	
Retail_NTS	-0.079	-0.037	-0.067	0.082	0.017	-0.020	0.536 ***	0.426 ***

Table 9: Grading and demand for IPOs – regressions

The dependent variable in all the cross-sectional regressions is the number of times an issue is subscribed by an investor category ($NTSi$), measured as the ratio of the number of shares bid to the number of shares eligible for the category. All the 351 IPOs during the sample period are included in the regressions. Panel A regressions does not have the demand of the other investor category among the regressors and Panel B regressions include the demand of the other investor category as regressors. $ln(Size)$ is the natural log of the total issue size; DE, is debt/equity based on pre-issue book value of debt and equity; $RONW$ is pre-issue PAT/Net worth; *Holding* is post-issue promoter holding/total number of shares; *Age* is the number of years since incorporation of the issuer at the time of IPO; QIB-NTS and $Retail$-NTS are the number of times subscribed by, QIB and Retail respectively; $D(grade)$ indicates whether the issue is graded or not; $D(hot)$ is a dummy to indicate whether the issue month falls into the top one-third months when ranked by the number of issues; $D(bookbuilt)$ indicates whether the issue was offered through book building; and $D(1)$, $D(2)$, $D(3)$, $D(4/5)$ represents issues graded as 'Grade 1', 'Grade 2', 'Grade 3', and 'Grade 4' or 'Grade 5' respectively, used as categorical variables. Coefficients significant at 10% or below are given in bold type.

| | Panel A | | | | Panel B | | | |
| | Retail demand | | Institutional demand | | Retail demand | | Institutional demand | |
Parameter	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	3.83	0.35	-7.23	0.18	**7.76**	0.01	**-12.26**	0.00
ln(Size)	0.09	0.81	**1.38**	0.01	**-0.86**	0.00	**2.02**	0.00
DE	-0.20	0.40	-0.50	0.11	0.13	0.45	-0.34	0.17
RONW	**0.04**	0.00	**0.03**	0.00	**0.04**	0.00	0.00	0.45
Holding	**-0.04**	0.06	0.02	0.51	**-0.05**	0.00	**0.05**	0.03
Age	0.01	0.75	0.04	0.23	0.00	0.86	0.04	0.17
QIB-NTS					**0.12**	0.00		
Retail-NTS							**0.70**	0.00
D(group)	-0.16	0.86	**-2.69**	0.03	0.24	0.72	**-1.69**	0.07
D(hot)	0.58	0.43	**2.58**	0.01	**0.92**	0.09	**1.37**	0.07
D(bookbuilt)	0.83	0.45	1.90	0.19	0.55	0.51	1.27	0.26
D(1)	-2.32	0.12	**-3.84**	0.05	-0.09	0.94	**-2.56**	0.10
D(2)	**-1.69**	0.08	**-3.45**	0.01	0.12	0.87	**-3.31**	0.00
D(3)	**-2.95**	0.00	**-3.86**	0.00	-0.71	0.33	**-2.12**	0.03
D(4/5)	-1.48	0.23	**3.11**	0.06	-0.11	0.90	**2.76**	0.03
Industry control	Yes		Yes		Yes		Yes	
Adjusted R-square	0.11		0.13		0.26		0.20	
No. of valid obs.	321		321		321		321	

Table 10: Grading and underpricing - regressions

The dependent variable in all the cross-sectional regression models is the net underpricing (UPi) as defined in Equation 3. 'Model 1' is the regression involving all the IPOs during the sample period. 'Model 2', involves only graded IPOs and has dummies to capture the IPO grades. *ln(Size)* is the natural log of the total issue size; *DE*, is debt/equity based on pre-issue book value of debt and equity; *RONW* is pre-issue PAT/Net worth; *Holding* is post-issue promoter holding/total number of shares; *Age* is the number of years since incorporation of the issuer at the time of IPO; *ALL-NTS* is the number of times subscribed by all investor categories; D(grade) indicates graded issues; *D(1), D(2), D(3), D(4/5)* represents issues graded as 'Grade 1', 'Grade 2', 'Grade 3', and 'Grade 4' or 'Grade 5' respectively, used as categorical variables; *D(group)* is a dummy indicating whether the issuer is affiliated to a business group; *D(hot)* is a dummy to indicate whether the issue month falls into the top one-third months when ranked by the number of issues; and *D(bookbuilt)* indicates whether the issue was offered through book building. Coefficients significant at 10% or below are given in bold type.

Variable	Model 1 *(All IPOs; Dummy - Graded)*		Model 2 *(Graded IPOs; Dummy - Actual Grades)*	
	Coefficient	p-value	Coefficient	p-value
Constant	**0.591**	0.037	0.083	0.728
ln(Size)	**-0.058**	0.022	-0.034	0.368
DE	-0.005	0.743	0.018	0.470
RONW	0	0.242	0.002	0.304
Holding	-0.002	0.314	-0.002	0.493
Age	0.002	0.328	0.001	0.593
ALL-NTS	**0.009**	0	**0.008**	0
D(grade)	-0.051	0.317		
D(1)			0.052	0.626
D(2)			-0.064	0.584
D(3)			-0.101	0.469
D(4/5)			0.160	0.619
D(group)	0.012	0.852	0.079	0.413
D(hot)	0.022	0.662	0.065	0.393
D(bookbuilt)	0.029	0.696	0.051	0.719
Industry control	Yes		Yes	
Adjusted R-squared	0.30		0.16	
No. of valid obs.	351		181	
Residual standard error	0.369		0.347	

Table 11: Grading and underpricing of small firms - regressions

Firms in the bottom one-third, when ranked by pre-issue assets are taken as the set of small firms (pre-issue assets up to ₹ 90 cr.). The dependent variable in all the cross-sectional regression models is the net underpricing (UPi) as defined in Equation 3. Data employed to estimate both the models comprise the small firm IPOs during the sample period. 'Model 1' is estimated with a dummy to the represent the graded issues and 'Model 2' is estimated with the actual IPO grades as the categorical variable representing the grades. *ln(Size)* is the natural log of the total issue size; *DE*, is debt/equity based on pre-issue book value of debt and equity; *RONW* is pre-issue PAT/Net worth; *Holding* is post-issue promoter holding/total number of shares; *Age* is the number of years since incorporation of the issuer at the time of IPO; *ALL-NTS* is the number of times subscribed by all investor categories; *D(grade)* indicates the graded issues; *D(1), D(2), D(3), D(4/5)* represents issues graded as 'Grade 1', 'Grade 2', 'Grade 3', and 'Grade 4' or 'Grade 5' respectively, used as categorical variables; D(group) is a dummy indicating whether the issuer is affiliated to a business group; *D(hot)* is a dummy to indicate whether the issue month falls into the top one-third months when ranked by the number of issues; and *D(bookbuilt)* indicates whether the issue was offered through book building. Coefficients significant at 10% or below are given in bold type.

Variable	Model 1 *(All IPOs;* *Dummy - Graded)*		Model 2 *(Graded IPOs;* *Dummy - Actual Grades)*	
	Coefficient	p-value	Coefficient	p-value
Constant	64.31	0.25	64.78	0.26
ln(Size)	-13.52	0.28	-13.43	0.30
DE	-4.09	0.67	-4.08	0.68
RONW	0.04	0.55	0.04	0.56
Holding	-0.58	0.29	-0.60	0.30
Age	**2.29**	0.01	**2.30**	0.01
ALL-NTS	**1.54**	0	**1.53**	0
D(grade)	-13.10	0.37		
D(1)			-12.38	0.61
D(2)			-13.73	0.41
D(3)			-14.50	0.56
D(4/5)			-4.31	0.95
D(group)	5.16	0.85	5.66	0.84
D(hot)	-2.92	0.84	-3.29	0.83
D(bookbuilt)	12.72	0.42	12.69	0.44
Industry control	Yes		Yes	
Adjusted R-squared	0.25		0.22	
No. of obs.	104		104	