Tie-in-Agreements in IPOs: Evidence from India

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Abstract

Using data from the unique Indian IPO market where different investor categories receive separate quota of shares and where the market is considerably transparent, this paper examines manipulation in IPOs. We find that the nature of the tie –in agreements in India appears to be different from those discussed for US IPOs. Since underwriters have no discretion in allocation we find that tie-in agreements are not associated with institutional investors, but rather with quasi institutional (high net-worth) investors. Further, such tie in agreements is also more likely to be associated with poor quality offerings managed by small and less reputed underwriters. Our evidence is consistent with several stories that have appeared in the Indian financial press which alleges wrong doing in IPOs.

1. Introduction

In late 2011 Securities and Exchange Board of India (SEBI, hereafter), based on its internal investigation, passed orders on 7 IPOs firms and debarred these companies and their directors from accessing the capital market till further order. The investigation followed extremely poor after – listing performance of their stocks and allegation of collusion and irregularities in the primary and secondary markets. The investigation led to a number of changes in the IPO regulation including a controversial one which required IPO firms to provide safety mechanism for small retail investors should the stock price fall below a certain threshold in the ensuing six months after listing.[1] SEBI also has taken a number of other steps in the wake of dwindling investor confidence in IPOs.[2] SEBI's investigation found evidence of irregularities concerning concealment of material information in the offer document, improper use of proceeds and irregular bidding/trading by *affiliated investors* during both the offer and post listing period.[3] Prior to SEBI's investigation there was considerable debate on tie-in-agreements (we use tie-in-agreement and manipulation interchangeably throughout the paper) in IPOs in the Indian financial press.[4]

The irony, however, is that Indian IPO market is, perhaps, one of the most transparent in the world (Neupane and Poshakwale 2012). Information on the participation of various investor categories is publicly available on a real-time basis during the offer period. Investors in Indian IPOs can examine demand of different investor categories prior to submitting their own bids. Hence, less informed investors can free ride on the information available to informed investors. Not surprisingly, Neupane and Poshakwale (2012) show that most of the retail and quasi-institutional participation take place at the end of the offer period and their

[1] The regulation requires IPO firms to refund to investors who apply, for up to 50,000 rupees in IPOs that fall sharply. The refund would be given if the stock fell more than 20% from its issue price within three months of listing, even as the broader market was stable or rising. If the broad market was also falling, the refund would occur if the stock lost 20 percentage points more than the market. This rule is applicable to IPOs raising 2.5 billion rupees, or around $46 million. The company's founders, or controlling shareholders, would have to buy the investors' shares back with their own money, without drawing on company funds. Sai Silk became the first firm to issue IPOs offering a safety net for retail investors: http://www.iflr.com/Article/3155376/Capital-markets/Sai-Silks-IPO-reveals-India-safety-net-intentions.html

[2] Other regulations included requiring underwriter managing the offer to provide their past IPO performance and making day trading more difficult and costly during the 10 days following the listing of the IPO.

[3] We discuss these irregularities in detail in Section 2.2.

[4] For instance see Sawardekar, S. "The Dark Underbelly of India's IPOs." In *The Wall Street Journal*. Mumbai (2011)., http://www.greenworldinvestor.com/2010/08/20/midfield-industries-dumping-seems-to-have-started-after-the-initial-ipo-pump/;

participation is significantly influenced by the early participation of institutional investors where investors bid for pre-determined quota of shares reserved for each investor category.

Further, in response to allegations of fraud and irregularities in the past, SEBI regulations do not allow allocation discretion and hence underwriters have limited discretion in setting offer prices once the offer price band has been established. Most of the studies on IPO irregularities in the US have primarily focussed on discretion that underwriters enjoy in pricing and allocation. Thus, the unique transparent setting of Indian IPOs and the limited discretion available to underwriters provides us with a unique context to explore tie-in-agreements in IPOs in a setting which is vastly different from those discussed in prior literature.

Allegations of IPO irregularities are not new in India. With the onset of financial liberalization and restrictions on the control on pricing of issues lifted in 1992, the Indian stock market witnessed significant growth in IPO volume. However, a large number of these companies were of a poor quality and vanished subsequently and were hence termed as fly-by-night operators. This led to significant downfall in IPO activity during the latter half of 1990s. While there were 1,500 IPOs in 1995, only 150 IPOs were issued during the 1998-1999 period. The introduction of bookbuilding and tech boom saw a revival of Indian IPO market during 1999-2000. In 2004 and 2005 irregularities in IPOs allocations surfaced again for a number of IPOs including the IPOs of Yes Bank, Priamid Retail and Bombay Rayong Fashion. SEBI unearthed a large scale multiple application case in YES Bank IPO and banned 13 investors from trading in the bank's shares with immediate effect. The consequence of this was modification in issuance procedure which included eliminating underwriter's allocation discretion, a feature of the bookbuilding mechanism since its introduction in early 1999.[5]

While there are anecdotes of tie-in-agreements and some limited investigation by SEBI, strong empirical evidence on these agreements remains scarce.[6] In fact strong empirical evidence on IPO manipulations remains scare in the IPO literature as data on participation of investors in IPOs are not available in the public domain and whatever empirical evidence in available is either through the use of proxies or proprietary data. Owing to the transparent

[5] The bookbuilding building mechanism introduced in 1999 allowed underwriters to allocate discretely in the institutional investor category while other two categories remained on pro-rate allocation basis.
[6] The earlier SEBI investigation was concentrated on IPOs issued in the 2004-05 period while the latest investigation has only examined IPOs issued in 2011.

nature of Indian IPO market and with it the availability of data on investors' participation, by investor categories, the focus of our study is to examine how widespread manipulation or tie-in-agreement is in the context of Indian IPOs. We aim to achieve this by analysing investor participation to identify peculiar pattern that would suggest irregularities both during the offer period as well as in the post listing period.

We begin our investigation by examining in significant detail the "*Orders*" as well as the characteristics of 7 IPOs on which SEBI passed its judgement in late 2011. Five common important features stand out for these banned IPOs: (a) significantly small participation from institutional investors; (b) relatively aggressive participation by other investor categories; (c) low reputation underwriters managing all of the all banned IPOs; (d) high volume of trading (both total as well as bulk sales) in the immediate post listing period and (e) poor stock market performance in the post–listing period. The level of institutional participation in these IPOs is significantly smaller than what we observe in the overall sample both in terms of subscription as well as the number of bids submitted. While most prior studies on IPO irregularities have examined collusion between underwriters and large institutional investors (Liu and Ritter 2010; Reuter 2006), Indian IPOs, it appears, may not necessarily only involve institutional investors. This finding does not come as a surprise given the unique setting of Indian IPOs. As discussed earlier, since underwriters do not have allocation discretion, irregularities such as spinning, laddering and profit sharing allocation, which involves allocating a large number of hot IPO shares to preferred clients, is less likely which potentially rules out the likelihood of collusion between underwriters and large institutional investors. Further, the poor performance of these banned IPOs in the post listing period suggests that tie-in-agreements may take an alternative form in India: an agreement to offload poor offerings in the primary market. Consistent with this notion of tie-in-agreement, we find that the participation of other investor categories in these IPOs is significantly higher than the participation of institutional investors.

Based on our insight from the analysis of 7 banned IPOs and by borrowing from Aggarwal, Purnanandam and Wu (2005), we develop three hypotheses for analysing tie-in agreements. We argue that tie-in agreement IPOs will exhibit higher turnover in the immediate post listing period due to trades by affiliated investor and/or the need to provide profitable exit to affiliated investors who participated during the offer period. Since tie-in agreement IPOs are mostly speculative and weak (in the Indian context), we also argue that the degree of flipping by informed institutional investors should be higher in these IPOs compared to IPOs without

such tie-in agreements. Finally, we hypothesize that tie-in agreement IPOs should exhibit poor listing and post-listing performance compared to other IPOs.

Although 227 IPOs are issued during our sample period of 2006-2011, we only include 119 small offerings, IPOs with gross proceeds of INR 1,200 million or less, in our all main empirical analysis. This follows the evidence from the 7 banned IPOs which all have smaller gross proceeds. In order to conduct the empirical analysis we first create a proxy to identify tie-in agreements. Based on the analysis of the 7 banned IPOs and taking into account the unique IPO mechanism in India, we consider significantly small institutional participation as a proxy for tie-in agreements.[7] Accordingly, we construct two IPO categories: (i) IPOs with 6 or fewer institutional bids and refer them as *Tie-in* IPOs (ii) IPOs with 10 or more institutional bids and refer them to as *Control* IPOs. Since the maximum number of bids received by banned IPO is 6, we use this figure as the cut-off for low institutional participation. This results in 64 *Tie-in* and 55 *Control* IPOs. Not surprisingly, we find that the median institutional subscription in *Tie-in* is only 0.41 times with 3 as the size of the median bid compared to 7.58 times subscription rate and 29 as the size of the median bid for *Control* IPOs. The participation of both quasi-institutional and retail investors, although lower than the C*ontrol* group, is much higher than the institutional participation in *Tie-in* IPOs. Quasi-institutional investors fully subscribe the median *Tie-in* IPO by the end of the penultimate date.

Our two first empirical analyses examines whether our proxy of tie-in agreement reasonably reflects the possibility of tie-in agreements in IPOs. Toward this end, we examine trading and institutional investor flipping in the post listing period. Our analysis of trading turnover, where we analyse both total trading as well as bulk sales transaction, exhibit significantly higher turnover for *Tie-in* compared to *Control* group IPOs. *Tie-in* IPOs exhibit a median total turnover of 7.42 times compared to a median turnover of 4.94 times for the *control* group IPOs on the first day of trading. The total turnover is, however, not significantly different during the first week and first month of listing. In terms of bulk sales trading, we not only find significantly higher bulk sales, but also find a significantly higher proportion of total trading is in the form of bulk sales in *Tie-in* IPOs. The median bulk sales turnover of 5.30 times for *Tie-in* IPO is 106.3% higher than the bulk sales turnover of the median *Control* group IPO. Further, bulk sales account for 72% of the total turnover for the median *Tie-in*

[7] We discuss this further in the Section 3.3.

IPO compared to 52% for the *Control* group. We find that the relative trading volume of *Tie-in* IPOs is significantly higher than *Control* IPOs. Thus, corroborating prior evidence (Aggarwal, Purnanandam and Wu 2005) the analysis on trading turnover shows that our proxy for tie-in agreements stands up to empirical scrutiny pretty well.

We follow this with analysis of institutional flipping in the immediate post listing period following our argument that tie-in agreement IPOs should see higher degree of institutional flipping than IPOs without such agreement. We find results that are consistent with our hypothesis. The median foreign institutional holding in *Tie-in* IPOs falls from 5.24% of shares outstanding at the time of allocation to 0.09% in the first reporting period post IPO listing. Interestingly, we also find that foreign institutional investors are the only significant participants in *Tie-in* IPOs, a feature that is consistent with the evidence of providing profitable exit to a foreign institutional subscriber in SEBI's investigation. Unlike *Tie-in* IPOs, firm in the *Control* group see participation from different domestic institutional investors who appear to hold on to their allocations in the post listing period. While we observe the participation of domestic institutional investors in 50 of the 55 *Control* group IPOs, the participation of domestic institutional investors is in only 18 of the 64 *Tie-in* IPOs.

We also examine listing and post listing returns for these IPOs and find that *Tie-in* perform significantly worse than *Control* IPOs. The median *Tie-in* IPO has a return of -4% on the listing day compared to a return of 21% for *Control* IPOs. The difference in returns persists and becomes larger over-time. The median first month market adjusted return for *Tie-in* IPOs is -28% compared to 19% for *Control* IPOs. The results are consistent with our hypothesis and reflect the nature of tie-in agreements in Indian IPOs. Weak and speculative offerings which have an extremely small probability of success are turned into successful offering through tie-in agreements between the promoters/underwriters with affiliated investors who promise to support the offering both in the subscription stage as well as in the post listing period in return for guaranteed benefits.

The paper makes important contributions to the IPO literature. First, to the best of our knowledge it is, perhaps, the first study that has examined IPO manipulation in the context of emerging market. This is important as institutions is emerging markets are not as strong as in the developed markets and hence this provides much more opportunities for engaging in manipulation and wrong doings. Our study also becomes an important addition to the relatively sparse literature on IPO manipulation. The second important contribution of our

study relates to the nature of manipulation that we examine. While past studies have looked at the underwriter and the informed (institutional) investor alliance (Liu and Ritter 2010; Nimalendran, Ritter and Zhang 2007; Reuter 2006; Ritter and Zhang 2007) involving allocation of high quality offerings, our study looks at manipulations associated with low quality offerings. We find that despite enhanced transparency and limited underwriter discretion, promoters and underwriters are still able to manipulate IPOs by colluding with affiliated investor.

Our study also highlights the need to have a better approach towards regulations which will enhance the welfare of the uninformed retail investors. Although SEBI has introduced additional IPO regulations in the wake of their investigation, we do feel that it falls short in protecting the welfare of retail investors. In this regard we argue that the following changes can significantly improve the welfare of retail investors. To begin with, regulation should be in place to null IPO offerings where institutional participation is below a certain threshold. Since institutional investors are initially reserved the largest number of shares, IPOs with significantly low institutional participation (say, for instance, in IPOs where institutional subscription is less than 50% of the shares offered) should not be allowed to proceed. Secondly, regulation should also be in place to make sure that undersubscribed portion of other investor categories (namely, institutional and quasi-institutional) are not re-allocated to retail investors. The current mechanism which allows reallocation of undersubscribed shares in other investor categories to retail investors has increased winners' curse for retail investors.

The remainder of the paper is organized as follows. Section 2 summarizes some of the key features of the Indian IPO market, discussed the banned IPOs and sets out our hypotheses. Section 3 discusses the data and the descriptive statistics. Section 4 presents and discusses the empirical evidence followed by a conclusion in Section 5.

2. Institutional settings, banned IPOs and hypotheses development

2.1 Institutional settings

The Indian IPO market exhibits a number of interesting unique features. In this subsection we briefly describe these features.[8] Firstly, IPO regulation requires Indian IPO firms to reserve and allocate separate quotas of shares for the three investor categories: institutional investors,

[8] For a detailed overview of the institutional setting of Indian IPOs, refer to Neupane and Poshakwale (2012).

retail investors and quasi-institutional investors.[9] In general, institutional investors receive about 50% of the shares on offer, while quasi-institutional and retail investors receive about 15% and 35% of the shares offered, respectively. A second important feature is the transparency of IPO mechanism (Neupane & Poshakwale, 2012). During the offer period, information on aggregate demand as well as the demand of various investor categories is available on a real-time basis on the stock exchange websites. This allows prospective investors to assess current IPO demand prior to submitting their own bids. Third, while it is referred to as bookbuilding, the current IPO mechanism in India is a uniform price auction mechanism. Underwriters do not have discretion in allocation of shares and shares are allocated on a pro-rata basis. [10] Underwriters, however, can re-allocate shares from under-subscribed investor category(ies) to oversubscribed category(ies). They have limited discretion in pricing as they are not bound to price at the market clearing price but are not allowed to set the offer price beyond the offer price range.

Insert Table 1 about here

2.2 Banned IPOs

In this sub-section we examine in detail the nature of irregularities that SEBI unearthed during its investigation of 7 IPOs issued during September and October 2011following which it banned several entities and individuals related to these IPOs. In the following paragraphs we discuss the features of these IPOs in relation to the irregularities mentioned in SEBI's '*Orders'* (judgements). The '*orders*' explains in detail the nature of irregularities seen before, during and after the listing of the IPO. SEBI's *orders* in respect of these 7 IPOs present evidence of irregularities in three key related areas (a) concealment of material information and improper use of IPO proceeds (b) manipulation in bidding during the offer period and (c) irregular trading in the immediate post listing period. We discuss each one of these

[9] Institutional investors are large investors registered with SEBI. Retail individual investors as those whose total bidding value does not exceed INR 100,000. All other investors who bid for more than INR 100,000 and do not fall in the institutional investor category are quasi-institutional investors. In some IPOs employees also receive shares. Since the beginning of 2009 a certain portion of the shares on offer are offered to anchor investors who are given the opportunity to invest prior to other investor categories.

[10] Prior to 2006 allocation discretion was allowed in the institutional investor category. All the firms in our sample are auction IPOs.

irregularities in the following paragraphs in conjunction with the descriptive statistics of the 7 banned auction IPOs as presented in Table 1. As presented, these firms are relatively smaller in size. The amount of proceeds raised by 4 out of the 7 firms is substantially less than the amount raised by median IPO of the overall sample and all these 7 IPOs are managed by low reputation underwriters. We discuss other statistics of the 7 IPOs in the relevant sections below.

(a) *Concealment of material information & improper use of IPO proceeds*

SEBI's investigation found concealment and misstatement of significant material information in the offer document, particularly in relation to the firms' liabilities. These banned IPOs failed to disclose significant amount of inter-corporate deposits (ICDs, loans) with a number of such transactions with related or affiliated firms. In case of PG Electroplast, for instance, ICDs worth 520 million INR amounting to 43% of the size of its IPO was not disclosed while Taksheel Solutions and Bharatiya Global Infomedia failed to disclose ICDs worth 320 million and 70 million respectively. As SEBI's investigation showed these ICDs were used in some instances to fund investor subscription during the offer period, but more importantly were used to divert/siphon off IPO proceeds away from the firm. Even where funds were used for the stated objectives they were paid to related parties at highly inflated prices. In case of OCA, for instance, INR 70 million was diverted to *Onelife Gas and Energy Infra ltd*, a group company, to set up corporate office. Similarly, RDB's uses of funds included purchasing plant and machinery and depositing security deposit with West Bengal State Electricity Distribution Company. Both the transactions never materialised and instead the funds were used to pay off ICDs.

(b) *Manipulation in bidding during the offer period*

One major irregularity identified by SEBI's in its investigation was the use of manipulative bids during the subscription period. As mentioned above, money raised from ICDs funded some IPO subscribers. In the case of PG Electroplast (PGE), for instance, *Chin Info, M.L. Commodities and Sunglight Pvt* received INR 9.4 million, 8.6 million and 4 million INR respectively to subscribe in the IPO. In case of Onelife Capital Advisors (OCA), 80 retail allottees and two non-institutional investors share the same postal addresses and their bank branch. Because of the transparent nature of Indian IPO mechanism (Neupane & Poshakwale) manipulative bids creating artificial demand can become influential as participation by some investors may entice others to participate in the offering.

Descriptive statistics on investor subscription in Table 1 shows that while the median overall IPO is subscribed 3.56 times, the banned IPOs have just barely managed to receive full subscription. More interestingly, the institutional participation in these IPOs is extremely limited with very few institutional bids. Notwithstanding the limited participation from institutional investors, both non-institutional and retail investors participate well and make these offerings a success. Our examination of institutional participation shows that, strangely, it is only foreign institutional investors (FIIs) who participate in these offering.[11] SEBI's investigation reveals that in case of PGE one of the FIIs was given profitable exit through the use of IPO proceeds.[12]

(c) *Irregular trading in the immediate post listing period*

SEBI's investigation also reveals widespread irregularities in the immediate post listing trading. Significant sums of money were diverted from IPO proceeds to certain individuals and entities to buy shares on the first day of trading and hence creating artificial demand for the stock. In case of PGE, the artificial buyers acquired 31.6% of the shares offered on the listing day pushing the share price to INR 415 from the offer price of INR 210. The price fell to INR 252 by the end of the first week of listing. In case of RDB Rasayans (RDB) whose share price plunged to INR 26.5 from the offer price of INR 85 saw 89% of the shares offered sold off on the day of listing. IPO proceeds channelled through ICDs were used to support the losses of first day bidders.

Table 1 presents post listing performance and as well trading of the banned IPOs along with that of overall median IPO. While PGE and OCA posted positive returns on the first day of listing, the others failed miserably. The other 5 IPOs were trading more than 75% below their offer price by the end of the first month of listing. The statistics on turnover is even more interesting. While the median first day total turnover for the overall sample is 3.85 times of the shares offered it is in excess of 10 times for all the banned IPOs. In order to increase transparency and provide information to the market, SEBI requires firms to publicly disclose transactions which accounts for more than 0.5% of the number of outstanding shares listed on the exchange. These transactions are referred to as *bulk sales.* While the median bulk sales as

[11] BSE/NSE provides information on institutional subscription in IPOs in the following categories: Financial Institutions and Banks (FIs), Mutual Funds (MFs), Foreign Institutional Investors (FIIs), Insurance Companies (ICs), Venture Capitalists (VCs) and Others.

[12] Two counter parties to the transaction namely, Dave Chetan and Overall Financial Consultants were provided IPO proceeds through ICDs to help the institutional investor sell of its entire stake on the date of listing.

a fraction of shares on offer for the entire sample is 1.99 times, the bulk sales for all the banned IPOs is more than 10 times.

The Indian financial press as well as discussions on IPO portals such as chittorgarh.com routinely talk about the functioning of IPO contractors or operators in the Indian IPO market.[13] These operators allegedly help promoters of small and weak offerings who struggle for subscription from institutional investors by getting into tie-in-agreements and artificially creating demand during both the bookbuilding as well as the post listing period in exchange of guaranteed returns. The evidence from SEBI's investigation in these 7 IPOs potentially suggests interplay of IPO operators through tie-in-agreements with promoters/underwriters.

2.3 Hypotheses development

The main objective of the study is to examine how widespread tie-in-agreements are as the 7 IPOs banned by SEBI were listed only during the September – October 2011 period. To this end we conduct the empirical analysis by developing hypotheses principally from Aggarwal, Purnanandam and Wu (2005) with a few modifications given the unique setting of Indian IPO market. One important distinction is the availability of information relating to investors' subscription publicly and on a real-time basis. Unlike for the US IPOs, there is much more information available publicly for Indian IPOs including the information on the participation of various investor categories. Since it is done on a pro-rata basis, allocation to different investor categories can also be easily ascertained.

In order to empirically examine whether IPOs are subject to tie-in-agreements we first consider proxies for such agreements. For this we rely on the characteristics of the 7 banned IPOs and find that two important patterns emerge from them. First, these IPOs are both smaller in size and raise small amount of proceeds. While it cannot be completely ruled out, the kind of manipulation that we are investigating are less likely to be in case of a larger offering. An important thing to note here is that bids in the institutional investor category can only be made by institutions that are registered by SEBI. It can be argued that operators may find it challenging to have affiliated institutional investors to make significant amount of manipulative bids in a larger offering.

[13] For instance see Sawardekar, S. "The Dark Underbelly of India's IPOs." In *The Wall Street Journal*. Mumbai (2011)..

Second, the 7 banned IPOs have very little institutional participation. Given that these offerings are small and speculative, it is not surprising to find weak institutional participation despite 50% of the shares reserved for them. This, however, brings to light an interesting aspect of tie-in-agreements in the context of Indian IPOs. Unlike in US, tie-in-agreements in India, perhaps, may not involve institutional investors. This signifies an important departure of our paper from prior studies on US IPO irregularities. Since underwriters do not have allocation discretion, irregularities documented in the context of US IPOs involving institutional investors such as spinning (Liu and Ritter 2010), laddering (Hao 2007) and profit sharing allocation (Reuter 2006; Ritter and Zhang 2007) are less likely to be widespread in the context of Indian IPOs. We thus consider IPOs with small offerings and limited institutional participation as proxy for firms subject to tie-in-agreements. Following Aggarwal, Purnanandam and Wu (2005) we develop the following hypotheses to examine the prevalence of tie in agreements.

(a) Post listing trading

Aggarwal, Purnanandam and Wu (2005) demonstrate theoretically and empirically that post listing trading is significantly higher for manipulated IPOs compared to non-manipulated ones. The sample of 7 banned IPOs also exhibit similar characteristics. As shown in Table 1, the total trading turnover for the overall median IPO is 3.85 times which is much lower than the turnover for banned IPOs. Bulk sales for all expect one of these banned IPOs exceed 12 times the number of share offered compared to 2 times for the median IPO. Since the operators (affiliated investors) get into tie-in-agreements to artificially prop up the market price and/or make profitable exit, we argue that total turnover, and more importantly bulk sales, will be significantly higher in manipulated stock.

H_1: Turnover (both total and bulk sales) is greater for manipulated stocks than for non-manipulated stocks.

(b) *Institutional investor participation*

Institutional investors participating in IPOs are considered to be informed and appear to participate well in high quality IPOs (Field and Lowry 2009). Field and Lowry (2009) also show that such informed participation is on account of institutional investors' better interpretation of available public information. Since manipulated IPOs are weak and speculative offering, whatever institutional subscription we observe should be on account of

participation from affiliated and/or momentum/ short-term traders. SEBI's investigation also revealed that institutional investor was provided profitable exist in the immediate post-listing period in one of the banned IPOs. On this basis we argue that *Tie-in* IPOs should not only see weak participation from institutional investors but also a much higher degree of flipping from institutional investors compared to IPOs without *Tie-in* agreements.

H_2: The degree of flipping in the institutional investor category is higher in manipulated IPOs than non-manipulated IPOs.

(c) *Post listing returns*

Aggarwal, Purnanandam and Wu (2005) hypothesize that returns for manipulated stocks are higher on the first day of trade, higher over the subsequent period (over the six month of listing) and lower over the long-run (six months onwards) than for non-manipulated stocks. While we follow Aggarwal, Purnanandam and Wu (2005) and hypothesize that returns for manipulated stocks are lower than non-manipulated stocks over the long-run, we argue differently for returns on the first day of trade and over the subsequent period. Brooks, Mathew and Yang (2013) show that first day stock returns for Indian IPOs is significantly influenced by total investor. Neupane and Poshakwale (2012) show that institutional investors' participation significantly influences the participation of high net-worth and retail investors which leads to high total demand. We, thus, argue that since manipulated IPOs have substantially low institutional participation, these IPOs have low stock returns on the first day of trade as well as in the subsequent period.

H_3: The post listing returns (first day, subsequent period and long-run) for manipulated IPOs are lower than for non-manipulated ones.

3. Data and descriptive statistics

3.1. Data

The data set used in this study comprises of firms listed on the Bombay Stock Exchange (BSE) and/or the National Stock Exchange (NSE) over the period from January 2006 to December 2011 and includes only IPOs issued with the auction mechanism. Most of the data on firm and offer characteristics is collected from the prospectus. We obtain price as well as trading data including that of bulk sales from the BSE/NSE websites. Data on participation of various investor categories is obtained from public sources, including the BSE and NSE

websites and some other finance portals, including those of ICICI Bank, Money Control and Chittorgarh.[14]

Insert Table 2 about here

3.2. Descriptive statistics

Table 2 presents the major summary statistics regarding firm/offer characteristics, investor subscription and bids, post listing returns and first day trading volume for the total IPOs issued during our sample period, for the sample of IPOs were are interested in and for IPOs which potentially are subject to tie-in-agreements. Column (1) presents the descriptive statistics of the total 227 IPOs issued during the sample period.[15] The mean (median) total assets and proceeds raised are INR 6,829 (1,613) million and INR 3,675 (1,057) respectively.[16] The mean (median) age at the time of IPO is about 14 (12) years. Investor subscription is highly variable as reflected by the mean (7.4 times) and median (3.56 times) values. Subscription by other investor categories is also variable both in number of shares bid as well as in the number of bidders. It is also interesting to note that a large number of bids, particularly from retail and quasi institutional investors, come on the final day of the offer period. The mean (median) market adjusted first day return (i.e. underpricing/initial return) for the period is 17% (6%). The returns decline considerably in the post listing period with the first month market adjusted mean (median) return falling to 10% (-3%) and the six month market adjusted mean (median) return falling to 6% (-15 %). The mean (median) total trading turnover (trading volume as a fraction of shares offered) on the first day of listing is 5.36 (3.85) times. Mean (median) bulk sales trading on the first day is 3.87 (1.99) times.

As discussed earlier, since IPOs subject to tie-in-agreements are likely to be offerings that are weak and small, we limit our empirical analysis to those with relatively smaller proceeds. Since the largest proceeds raised by a banned IPO is INR 1,206 million, we limit our sample to IPOs which raise INR 1,200 million or less. Accordingly, we exclude 98 firms from the initial 227 IPOs resulting in a sample of 129 IPOs. Columns (2) and (3) in Table 2 presents the descriptive statistics of our sample and excluded IPOs respectively. Understandably, the two groups are significantly different in size, both in terms of total assets and gross proceeds.

[14] www.bseindia.com; www.nseindia.com; www.icicidirect.com; www.moneycontrol.com; www.chittorgarh.com

[15] We exclude a small number of fixed priced IPOs issued during this period.

[16] US$1 was approximately equivalent to INR 45 during our study period. Thus, the median total assets and gross proceeds were approximately US$ 35 and US$ 24 million respectively.

Interestingly, while the two groups are significantly different in terms of attracting institutional investors, the difference in the participation of retail and quasi institutional investors is not very different in terms of times subscribed. The two groups of IPOs are also not significantly different in their post listing performance despite a significant difference in first day trading turnover (both total and bulk sales). We believe that our selected sample of IPOs is more likely to have firms subject to manipulation of the nature found in SEBI's investigation.

3.3 Tie-in-agreement IPOs

In this section we discuss IPOs that are most likely to be subject to tie-in-agreements. This follows the discussion in section (2.2) where we find evidence of poor participation of institutional investors in banned IPOs. Among the banned IPOs, PGE received only 6 bids from institutional investors – the most in the 7 IPOs. We, thus, create two categories based on institutional participation from the sample of 129 IPOs discussed above in section 3.2. We consider firms with 6 or less institutional bids as IPOs subject to tie-in-agreement (*Tie-in*). There are 64 IPOs with 6 or less institutional bids. We categorize IPOs that receive 10 or more institutional bids as the control (*control)* group. There are 55 IPOs with 10 or more institutional bids.[17] The classification is also consistent with IPO manipulation coverage in the Indian financial press. Affiliated investors or operators target firms which are less likely to receive subscription from large investors. Sensing that the offering with either be withdrawn or become a failure, these operators liaise with promoters/underwriters by getting into guaranteed financing contracts.

The descriptive statistics of these two groups of IPOs are presented in columns (5) and (6) in Table 2. *Tie-in* IPOs are smaller in size both in terms of total assets and proceeds compared to the *control* group. Further, less reputed underwriters manage 57 of the 64 *Tie-in* IPOs while the corresponding number for the *control* group is 34 IPOs. The mean (median) overall subscription is only 2.15 (1.46) times for *Tie-in* IPOs compared to 24.19 (12.54) times for the *control* group. The figures do suggest that most of the *Tie-in* IPOs barely obtain full subscription. This is not surprising given the poor participation of institutional investors whose median subscription is only 0.41 times in *Tie-in* IPOs which is significantly smaller than the median subscription of 7.58 times for the *control* IPOs. It is interesting to observe the participation of quasi-institutional and retail investors. Neupane and Poshakwale (2012)

[17] We exclude 10 of the 129 IPOs which received institutional bids of more than 6 and less than 10.

find that quasi-institutional investors follow institutional investors in IPO subscription. Data in Table 2 suggest that this does not hold true for *Tie-in* IPOs. Quasi-institutional investors appear to participate aggressively in *Tie-in* IPOs in the days leading up to the offer closing date and the median *Tie-in* IPO is fully subscribed by quasi-institutional investors by the end of the penultimate day not different from their participation in the *control* group IPOs. In overall terms, the median *Tie-in* IPO is subscribed 1.96 times by quasi-institutional investors which is much smaller than the 0.33 times subscription by institutional investors. While retail participation is low in *Tie-in* IPOs compared to *control* group IPOs, the median *Tie-in* IPOs is still oversubscribed by 2.39 times. In terms of number of bids submitted, all the three investor categories have substantially smaller number of bids in *Tie-in* IPOs. This, for the purpose of our analysis, however, brings to light an important finding that a relatively small number of bids (or participants) can wholly subscribe an offer and hence make it a successful IPO offering. The mean (median) number of institutional bids is only 3 (3) for *Tie-in* IPOs which is significantly smaller than the 56 (29) bids that IPOs in the *control* group receive.

In terms of listing and post-listing stock performance, *Tie-in* IPOs exhibit significantly weaker performance than *Control* IPOs. The median *Tie-in* IPO trades below the offer price on the listing day compared to a 21% market adjusted returns for the median *Control* IPO. The 21% returns for these small IPOs are more in line with prior theoretical and empirical prediction that smaller IPOs have higher initial returns. However, given the fact that *Tie-in* IPOs have significantly worse performance, the results are more in line with hypothesis 3. While the performance of both sets of IPOs deteriorate overtime, the deterioration in performance of *Tie-in* IPOs is significantly greater than the *Control* IPOs.

Table 2 also presents trading volume statistics on the first day of listing. We define total turnover (bulk sales turnover) as total shares traded (total bulk sales) divided by number of shares offered in the IPO. Both total trading turnover and bulk sales turnover is significantly higher for *Tie-in* IPOs compared to the *control* group. The median *Tie-in* IPO exhibits total turnover of 7.42 times which is 49.7% higher than the median *Control* group IPO. Similarly the median bulk sales turnover of 5.30 times for *Tie-in* IPO is 106.3% higher than bulk sales turnover of the median *Control* group IPO. Also worth noting here is that a substantial portion of the trading volume for *Tie-in* IPOs arises from bulk sales – 72% of the total turnover for the median *Tie-in* IPO compared to 52% for the *Control* group.

4. Empirical Analysis

4.1. Overall trading

Our first empirical challenge is to convincingly establish our proxy of tie-in-agreements. In this and the following two sub-sections we examine trading and post listing institutional holding to see whether our proxy of tie-in-agreements stands up to empirical scrutiny. We begin this by examining the overall trading pattern in the first six months of the post listing period. As hypothesized earlier, manipulated IPOs should exhibit significantly higher trading volume compared to non-manipulated ones. As most of our IPOs are listed in both the BSE and NSE stock exchanges, we aggregate the trading volume of two exchanges and compute total trading volume for each IPO.

Insert Table 3 about here

Table 3 presents the univariate results of the trading data over different windows of trading period in the first 6 months of listing by *Tie-in* and *Control* group IPOs. We define trading turnover as shares traded divided by shares offered in the IPO. Panel A shows buy, panel B sell and panel C the total cumulative trading turnover. Consistent with prior studies we find significantly higher trading turnover on the first day of listing which goes down considerably by the end of first week for the both categories of IPOs. More importantly and consistent with hypothesis 1, we find significantly higher buy, sell and total trading turnover on the first day of listing for *Tie-in* relative to the control group IPOs. *Tie-in* IPOs exhibit a median total turnover of 7.42 times compared to a median turnover of 4.94 times for the *control* group IPOs on the first day of trading. Since we present trading turnover on a cumulative basis, the insignificant difference from one week onwards suggests that trading in *Tie-in* IPOs reduces considerably after heavy volumes on the first day. The median total trading volume by the end of first week is 2.64 times for *Tie-in* IPOs and 2.06 times for the *Control* group. The difference is trading turnover between Tie-in IPOs and Control group is statistically insignificant for all other windows of trading period.

Insert Table 4 about here

We follow the univariate analysis with a multiple regression analysis which is presented in Table 4 for buy (penal A), sell (panel B) and total (panel C) turnover. Our main dependent variable is trading turnover which, as defined earlier, is trading volume divided by the number of shares offered in the IPO. Our main independent variable is the *Tie-in* dummy

variable which takes the value of 1 for *Tie-in* and 0 for *Control* group IPOs. We also include logarithm of IPO proceeds (*Proceeds*), underwriter reputation (*underwriter*) and market adjusted underpricing (*Underpricing*) as other control variables (Ellis 2006).

As shown in Table 4, Tie-in IPOs exhibit significantly higher turnover on the first day of trading for sell (Panel B) and total (Panel C) but not for buy (Panel A) volume once we control for other variables that affect trading. While the trading turnover for buy is insignificant in all windows of trading period, sell is significant not only for the first day but is significant up until the first month of trading. This finding is not inconsistent with the notion of manipulation in *Tie-in* IPOs as selling pressure may be significantly higher in these IPOs for providing exit to the operators who were initially been allocated shares in the offering or who bought shares early on to prop up the demand. The insignificant coefficient for the *Tie-in* dummy in buy regressions suggests demand for shares is considerably high for IPOs with strong institutional participation. Consistent with Ellis (2006) we find a positive relationship for initial returns and a negative relationship for proceeds with trading turnover. We, however, find a negative relationship between underwriter reputation and trading volume since most of the T*ie-in* IPOs are managed by low reputation underwriter.

Insert Table 5 about here

4.2 Bulk sales trading

In this subsection we turn our attention to bulk sales. As mentioned earlier, bulk sales refer to trades which account for more than 0.5% of the number of outstanding shares listed on the exchange.[18] As with trading turnover, we define bulk sales turnover as bulk sales divided by total shares offered in the IPO. Since the number of bulk transactions reduces considerably after the first month of trading, we limit bulk sales analysis to the end of the first month of listing. Table 5 the univariate statistics of the bulk sales turnover for the first day, first week and first month of listing. Not surprisingly, we find bulk sales to be considerably higher in *Tie-in* IPOs than *Control* IPOs. The median *Tie-in* IPO has more than twice the amount of bulk sales than the median *Control* group IPO. The median first day (first month) bulk sales for *Tie-in* IPO is 2.65 (5.30) times compared to 1.30 (2.57) times for the *Control* group IPO. All the differences in the median values are significant at less than 1% significance level.

[18] The quantitative limit of 0.5% could be reached through one or more transactions executed during the day in the normal market segment.

Insert Table 6 about here

In Table 6 we present the results of the multivariate regression analysis on bulk sales turnover. As with the trading regressions our main dependent variable is bulk sales turnover while the main independent variable is the *Tie-in* dummy IPO. We also include logarithm of IPO proceeds (*Proceeds*), underwriter reputation (*underwriter*) and market adjusted underpricing (*Underpricing*) as other control variables. As presented in Table 6, the coefficients on *Tie-in* is significantly positive for the first day and first week of trading for buy, sell and total turnover. Unlike, in total trading regressions, the coefficients on *Tie-in* in bulk sales regressions are positive and statistically significant even for the first week. This is consistent with our hypotheses 1 and the evidence from the 7 banned IPOs. The coefficients on *Tie-in* for the first month are also positive are not significant at conventional significance level. The coefficients on IPO proceeds, underwriter reputation and underpricing are similar to those that we observe in total trading regressions.

Insert Table 7 here

4.4 The participation of institutional investors

In this section we empirically examine our second hypothesis. As argued earlier *Tie-in* IPOs should exhibit a higher degree of flipping compared to IPOs without tie-in agreements. We examine this hypothesis by analysing institutional investors holding of IPO shares after allocation and in the first reporting period after the allocation. Further, owing to data availability on the shareholding of various types of institutional investors, we also examine if there are differences in shareholding among the various institutional investors between *Tie-in* and *Control* IPOs. Indian regulation requires firms to report shareholding structure in a pre-defined format (which includes information on different institutional investors) on a quarterly basis. We use data available from the first report submitted after the IPO to analyse post listing holding of shares by institutional investors. Table 7 presents the result of this particular analysis.

Panel A in Table 5 presents data on institutional investors' holding after IPO allocation and Panel B shows the holding in the first reporting period after listing for five different institutional investors: financial institution and bank, mutual funds, foreign institutional investors, insurance companies and venture capitalists. The figures show the proportion of

shares held by institutional investors as a fraction of the total shares outstanding. The table also shows the number of IPOs in which these institutional investor categories participate. Results from Panel A shows that while all the five institutional investor categories participate well in *Control* group IPOs, foreign institutional investors are the only major participants in the *Tie-in* IPOs. Foreign institutional investors participate in 45 of the 64 Tie-in IPOs while the participation of domestic investors (the four other categories) is only in 18 IPOs. The participation of domestic investors is much wider in case of *Control* IPOs. Financial institutions and mutual funds, for instance, participate in 43 and 49 of the 55 *Control* IPOs respectively. While financial institutions participate in only 15 *Tie-in* IPOs, mutual funds participate on only 5 *Tie-in* IPOs. Foreign institutions are the dominant investors in both the IPO categories with a median holding of 5.24% for *Tie-in* and 5.96% for *Control* group IPOs. Mutual funds have a median holding of 0% for *Tie-in* and 2.51% for *Control* group IPOs.

Panel B, which presents the institutional investors holding in the first reporting period after the listing, shows some interesting results. We find that while institutional investors tend to hold on to their allocation in *Control* IPOs, it is not the case in *Tie-in* IPOs. Foreign institutional investors, the dominant participant in the offering period, reduce their holding significantly in the post-listing period in *Tie-in* IPOs. The median foreign institutional holding goes down from 5.24 % at the time of allocation to 0.09% in the first reporting period. Interestingly, domestic investors do not appear to flip their shares even in *Tie-in* IPOs as the number of IPOs firm held by them remains more or less the same in the two reporting periods. It also appears that flipping is considerably less in C*ontrol* IPOs by all investor categories. The median holding by mutual funds is 2.38% in the first reporting compared to 2.51% after IPO allocation. Thus, consistent with our hypothesis we find that the degree of flipping is significantly higher in *Tie-in* IPOs compared to *Control* group ones.

4.5 Initial and post listing IPO returns

In this section we turn our attention to the listing and the post listing performance of our sample of IPOs with a particular emphasis on the performance of *Tie-in* IPOs. We present the results of the analysis in Table 8 where we analyse the returns for the first day (1), first month (2), three months (3) and six months (4) following the date of listing. Our dependent variable is the market adjusted returns based on offer price and the adjustment with the respective market return for the corresponding period. We use returns on the Sensex Index for calculating market returns. Our primary variable of interest is the dummy Tie-in, which, as

defined previously, takes the value of 1 for *Tie-in* IPOs and 0 otherwise. As additional control variables we also include several control variables that have been documented in the literature as explanatory variables for IPO returns. As such we include underwriter reputation (*Underwriter*), logarithm of gross proceeds (*Proceeds*), and market return (*Market Return*).

Insert Table 8 here

Regressions (1) – (4) clearly show that *Tie-in* IPOs perform significantly worse than *Control* IPOs not only on the first day of listing but also during the first six months of the post listing period. The results are statistically significant in all the four regressions and are consistent with hypothesis 3. The results also demonstrate the varied nature of tie-in IPO agreements in the context of the Indian market. In case of US IPOs, Aggarwal, Purnanandam and Wu (2005) show that tie-in IPOs exhibit much larger returns than IPOs without such agreements on the first day and in the immediate post listing period. Our results on listing returns are also consistent with the returns that we observe in case of the 7 banned IPOs. Despite the large amount of fake orders in the post listing period, most of these firms have considerable negative returns on the first day and in the subsequent periods. The results suggest that affiliated investors are unable to prop up the price in the post listing period for the large number of IPOs. It is also noteworthy to state here that, as SEBI's investigation shows, affiliated investors who suffered significant loses in the post listing trading receive funds from the IPO proceeds to cover the losses.

6. Conclusion

Since the burst of the internet bubble there has been a great deal of interest concerning manipulations in IPOs. Owing to the fact that information on bookbuilding is not made publicly available is US and in most other countries, empirical evidence, however, is scarce. Our paper aims to fill this gap by studying irregularities in IPOs using data from the Indian IPO market. The Indian IPO market is remarkably transparent in a number of aspects and allows an opportunity to examine irregularities in the IPO process. Our evidence suggests strong possibility of tie –in agreements between the issuer and some participating investors. The nature of the tie –in agreement, however, appears to be different from those discussed for US IPOs. Since underwriters have no discretion in allocation we find that tie-in agreements are not associated with institutional investors, but rather with quasi institutional investors. Further, such tie in agreements is also more likely to be associated with poor quality offerings

managed by small and less reputed underwriters. Our evidence is consistent with several stories that have appeared in the Indian financial press which alleges wrong doing in IPOs.

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Table 1: Banned IPOs

	PGE	RDB	BGI	BL	OCA	TS	TP	Median IPO
Firm/Offer Characteristics								
Total assets (Mill INR)	1,021	348	576	404	145	1,052	554	1,613
Proceeds (Mill INR)	1,206	356	551	630	369	825	600	1,057
Total shares on offer ('000)	5,745	4,500	6,720	6,300	3,350	5,500	10,000	12.00
Underwriter reputation	0	0	0	0	0	0	0	0.00
Sector/Industry	Industrials	Materials	IT	Healthcare	Financials	IT	Materials	-
Investors' subscription and bids								
Overall subs	1.33	1.45	1.47	1.77	1.52	2.95	1.21	1.44
Overall Inst subs	0.98	0.00	0.00	0.00	1.02	0.24	0.67	0.83
Inst subs- penultimate day	0.98	0.00	0.00	0.00	0.51	0.24	-	0.23
Inst subs - 2 days before close	0.29	0.00	0.00	0.00	0.49	0.24	-	0.00
Overall non-Inst subs	1.83	0.75	1.48	3.13	0.93	4.60		3.76
Non-Inst subs- penultimate day	0.67	0.00	0.29	0.33	0.00	2.32		0.84
Non-Inst subs - 2 days before close	0.24	0.00	0.01	0.08	0.00	1.92		0.24
Overall retail subs	1.64	3.96	5.06	3.36	2.50	6.18	1.73	3.02
Retail subs- penultimate day	0.06	0.23	1.20	0.61	0.68	2.04		0.45
Retail subs- 2 days before close	0.02	0.09	0.58	0.19	0.39	0.73		0.16
No of Inst bids	6	0	0	0	3	1	3	18
No of non-Inst bids	28	10	72	52	18	50		79
No of retail bids	4,188	2,781	5,026	4,826	1,914	10,238	3,158	23,952
Returns								
First day adjusted returns	1.037	-0.616	-0.595	-0.397	0.291	-0.651	-0.724	0.06
First month adjusted returns	0.022	-0.883	-0.694	-0.738	1.736	-0.823	-0.743	-0.03
3 month adjusted returns	-0.057	-0.878	-0.806	-0.816	1.311	-0.871		-0.15
6 month adjusted returns	-0.063	-0.944	-0.831	-0.856	1.733	-0.914		-0.15
First day Trading								
Total turnover	14.356	7.779	16.141	13.850	18.462	17.620		3.848
Bulk sales	13.660	5.893	15.134	12.160	17.716	16.998		1.988

This table presents the various descriptive statistics of the 6 IPOs banned by SEBI in late 2011. The six IPOs are PG Electroplast (PGE), RDB Rasayans (RDB), Bharatiya Global Infomedia (BGI), Brooks Laboratories (BL), Onelife Capital Advisors (OCA) and Tasksheel Solutions (TS). *Total assets* is the total value of assets of the firm at the time of the IPO (in millions INR). *Proceeds* is the intended gross proceeds of the offer (in millions INR). *Age* is measured as the difference between the IPO year and the founding year of the sample firm (in years). *Underwriter reputation* is a dummy variable that takes the value of 1 for high reputation and 0 for low reputation underwriters. *Subscription* is the ratio of the investors' demand for shares and the total number of shares offered. *Bids* are the number of bids submitted during the offer period. *Market adjusted returns* are raw buy-and-hold returns adjusted by the market return where the market return is the return on the BSE Sensex index over the same period. Bulk sales refer to transactions which accounts for more than 0.5% of the number of outstanding shares listed on the exchange. one day, one week and one month refers to the total (buy and sell) bulk sales on the first day, during the first week and first month respectively reported as a fraction of total shares offered in the IPO. All other variables are defined in Table 1.

Table 2: Descriptive Statistics

	Total IPOs	*Our Sample*	*Excluded*	*Test-stat*	*Tie-in*	*Control*	*Test-stat*
Firm/Offer characteristics	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Total assets	6,829 (1,613)	1,240 (807)	12986.38 (6,147)	*0.000 (0.000)*	804 (654)	1,748 (1,000)	*0.001 (0.001)*
Proceeds	3,675 (1,057)	671 (652)	6,984 (2,985)	*0.000 (0.000)*	574 (451)	785 (799)	*0.000 (0.000)*
Age	14.39 (12)	13.85 (12.00)	14.99 (12.00)	*0.438 (0.889)*	13 (12)	14 (12)	*0.862 (0.434)*
Underwriter reputation	0.47 (0.00)	0.21 (0.00)	0.75 (1.00)	*0.000 (0.000)*	0.06 (0.00)	0.38 (0.00)	*0.000 (0.000)*
Investors' subs and bids							
Overall subs	17.4 (3.56)	12.333 (2.48)	22.99 (5.61)	*0.006 (0.000)*	2.148 (1.46)	24.185 (12.54)	*0.000 (0.000)*
Overall Inst subs	20.53 (2.83)	10.093 (1.15)	32.04 (6.60)	*0.000 (0.000)*	0.531 (0.41)	21.221 (7.58)	*0.000 (0.000)*
Inst subs- penultimate day	4.03 (0.99)	2.115 (0.49)	6.15 (2.07)	*0.000 (0.000)*	0.309 (0.19)	4.217 (1.52)	*0.000 (0.000)*
Inst subs - 2 days before close	1.26 (0.39)	0.571 (0.24)	2.03 (0.64)	*0.000 (0.000)*	0.224 (0.01)	0.975 (0.62)	*0.000 (0.000)*
Overall non-Inst subs	26.78 (3.76)	22.476 (3.38)	31.52 (4.05)	*0.178 (0.299)*	3.639 (1.96)	44.396 (21.63)	*0.000 (0.000)*
Non-Inst subs- penultimate day	1.82 (0.84)	1.493 (1.00)	2.18 (0.61)	*0.093 (0.647)*	1.392 (0.97)	1.609 (1.00)	*0.504 (0.651)*
Non-Inst subs - 2 days before close	1.08 (0.24)	0.906 (0.39)	1.27 (0.15)	*0.129 (0.457)*	0.806 (0.43)	1.021 (0.34)	*0.413 (0.605)*
Overall retail subs	8.54 (3.02)	9.39 (3.18)	7.61 (2.97)	*0.381 (0.015)*	3.337 (2.39)	16.434 (8.20)	*0.000 (0.000)*
Retail subs- penultimate day	1 (0.45)	0.908 (0.50)	1.09 (0.37)	*0.470 (0.052)*	0.694 (0.53)	1.157 (0.50)	*0.056 (0.423)*
Retail subs- 2 days before close	0.44 (0.16)	0.419 (0.18)	0.46 (0.12)	*0.681 (0.109)*	0.422 (0.21)	0.416 (0.16)	*0.957 (0.925)*
No of Inst bids	66 (18)	27 (6)	108 (47)	*0.000 (0.000)*	3 (3)	56 (29)	*0.000 (0.000)*
No of non-Inst bids	374 (79)	116 (57)	655 (133)	*0.009 (0.000)*	46 (35)	197 (139)	*0.000 (0.000)*
No of retail bids	110,000 (23,952)	37,464 (12,995)	187,000 (50,650)	*0.002 (0.000)*	9,028 (7,318)	70,552 (39,620)	*0.000 (0.000)*
Returns							
First day adjusted returns	0.171 (0.06)	0.201 (0.06)	0.131 (0.05)	*0.248 (0.849)*	0.091 (-0.04)	0.327 (0.21)	*0.016 (0.006)*
First month adjusted returns	0.102 (-0.03)	0.117 (-0.06)	0.075 (0.01)	*0.606 (0.330)*	-0.080 (-0.28)	0.345 (0.19)	*0.002 (0.000)*
3 month adjusted returns	0.031 (-0.15)	0.093 (-0.13)	-0.031 (-0.15)	*0.174 (0.919)*	-0.081 (-0.41)	0.297 (0.08)	*0.012 (0.000)*
6 month adjusted returns	0.060 (-0.15)	0.178 (-0.18)	-0.075 (-0.15)	*0.021 (0.758)*	-0.063 (-0.35)	0.458 (-0.02)	*0.006 (0.001)*
First day Trading							
Total turnover	5.36 (3.85)	7.54 (5.88)	2.94 (2.29)	*0.000 (0.000)*	8.68 (7.42)	6.165 (4.95)	*0.000 (0.000)*
Bulk sales turnover	3.87 (1.99)	6.04 (3.70)	1.47 (0.43)	*0.000 (0.000)*	8.03 (5.30)	3.74 (2.57)	*0.000 (0.000)*
Number of IPOs	227	129	98		64	55	

This table reports the summary statistics of firm and issue-specific variables of 227 Indian IPOs listed on the Bombay Stock Exchange and/or NSE stock exchanges between 2007 and December 2011. This table presents the descriptive statistics of two groups of IPOs with issue proceeds less than or equal to INR 1,250 million: *Tie-in and Control*. Tie-in IPOs are those which have only 6 or less institutional bids. *Control* IPOs are those which have received more than 10 institutional bids. All other variables are defined in Tables 1 and 2.

Table 3: Post Listing Trading- Turnover as a fraction of shares offered

Panel A: Buy

	Tie-in	*Control*	Diff	t-stat p-value	z-test p-value
One day	4.37 (3.90)	3.05 (2.24)	1.32 (1.66)	0.010	0.000
One week	1.54 (1.34)	1.42 (0.91)	0.12 (0.43)	0.704	0.020
One month	0.53 (0.42)	0.56 (0.29)	-0.03 (0.14)	0.781	0.183
Two months	0.29 (0.22)	0.32 (0.15)	-0.03 (0.07)	0.721	0.255
Three months	0.21 (0.15)	0.23 (0.13)	-0.02 (0.02)	0.694	0.345
Six months	0.11 (0.09)	0.13 (0.07)	-0.02 (0.02)	0.600	0.369

Panel B: Sell

	Tie-in	*Control*	Diff	t-stat	p-value
One day	4.31 (3.18)	3.12 (2.68)	1.194 (0.50)	0.048	0.200
One week	1.53 (1.01)	1.23 (1.00)	0.306 (0.01)	0.202	0.500
One month	0.52 (0.33)	0.44 (0.29)	0.084 (0.04)	0.352	0.831
Two months	0.30 (020)	0.25 (0.16)	0.045 (0.04)	0.389	0.883
Three months	0.21 (0.14)	0.18 (0.12)	0.028 (0.02)	0.467	0.936
Six months	0.12 (0.08)	0.11 (0.06)	0.010 (0.02)	0.653	0.914

Panel C: Total

	Tie-in	*Control*	Diff	t-stat	p-value
One Day	8.68 (7.42)	6.17 (4.94)	2.514 (2.48)	0.010	0.015
One Week	3.07 (2.64)	2.64 (2.06)	0.431 (0.58)	0.352	0.146
One Month	1.05 (0.78)	1.01 (0.60)	0.045 (0.18)	0.809	0.593
Two Months	0.59 (0.43)	0.57 (0.34)	0.019 (0.09)	0.853	0.700
Three Months	0.42 (0.32)	0.41 (0.26)	0.008 (0.06)	0.909	0.780
Six Months	0.23 (0.16)	0.23 (0.14)	-0.004 (0.02)	0.922	0.782

This table presents descriptive statistics of the trading turnover as a fraction of the shares offered for different periods in the first six months of the listing period for buy (Panel A), sell (Panel B) and total (Panel C).

Table 4: Trading Regression
Panel A: Buy

	1 day	1 week	1 month	3 month	6 month
Tie-in	0.711	-0.212	-0.173	-0.062	-0.034
	(1.22)	(-0.44)	(-0.83)	(-0.87)	(-0.95)
Proceeds	-2.181**	-1.402	-0.559	-0.187	-0.095
	(-2.34)	(-1.64)	(-1.54)	(-1.55)	(-1.59)
Underwriter	-1.068**	-0.622**	-0.262**	-0.091**	-0.045*
	(-2.41)	(-2.38)	(-2.26)	(-2.03)	(-1.89)
Underpricing	1.536**	1.131**	0.472**	0.175***	0.090***
	(2.43)	(2.39)	(2.46)	(2.68)	(2.79)
Constant	17.245***	10.466*	4.174*	1.431*	0.737*
	(2.74)	(1.81)	(1.70)	(1.75)	(1.82)
Observations	119	119	119	119	119
Adjusted R^2	0.293	0.279	0.257	0.248	0.250

Panel B: Sell

	1 day	1 week	1 month	3 month	6 month
Tie-in	1.616***	0.512**	0.159*	0.063	0.029
	(2.63)	(2.03)	(1.69)	(1.60)	(1.29)
Proceeds	0.524	0.188	0.041	0.022	0.013
	(0.73)	(0.69)	(0.42)	(0.58)	(0.60)
Underwriter	-0.622	-0.310	-0.102	-0.030	-0.016
	(-1.11)	(-1.61)	(-1.38)	(-0.88)	(-0.77)
Underpricing	1.841***	1.053***	0.401***	0.161***	0.087***
	(2.71)	(4.04)	(4.76)	(4.56)	(4.55)
Constant	-0.717	-0.246	0.075	-0.007	-0.002
	(-0.15)	(-0.14)	(0.11)	(-0.03)	(-0.02)
Observations	119	119	119	119	119
Adjusted R^2	0.096	0.175	0.173	0.143	0.132

Panel C: Total

	1 day	1 week	1 month	3 month	6 month
Tie-in	2.327**	0.300	-0.014	0.001	-0.005
	(2.44)	(0.57)	(-0.06)	(0.02)	(-0.12)
Proceeds	-1.657	-1.214	-0.519	-0.165	-0.082
	(-1.48)	(-1.57)	(-1.59)	(-1.52)	(-1.53)
Underwriter	-1.691*	-0.932**	-0.364**	-0.122*	-0.061
	(-1.87)	(-2.54)	(-2.38)	(-1.82)	(-1.60)
Underpricing	3.377***	2.183***	0.873***	0.336***	0.178***
	(3.00)	(3.67)	(4.08)	(4.34)	(4.50)
Constant	16.528**	10.220*	4.249*	1.424*	0.735**
	(2.19)	(1.96)	(1.92)	(1.94)	(2.02)
Observations	119	119	119	119	119
Adjusted R^2	0.195	0.303	0.299	0.256	0.244

Table 8 presents the OLS regressions for post listing trading for Tie-in and Control IPOs for Buy (Panel A), Sell (Panel B) and Total (Panel C) for different periods in the first 6 months of listing. All variables are defined in Tables 4 and 6.

Table 5: Bulk Sales as a fraction of shares offered

	Tie-in	*Control*	Diff	t-stat p-value	z-stat p-value
One Day Buy	4.04 (2.65)	1.89 (1.30)	2.15 (1.35)	0.000	0.000
One Week Buy	5.88 (3.67)	3.38 (1.95)	2.50 (1.72)	0.010	0.000
One Month Buy	6.79 (4.59)	4.09 (2.01)	2.70 (2.58)	0.034	0.000
One Day Sell	3.98 (2.68)	1.85 (1.27)	2.13 (1.41)	0.000	0.000
One Week Sell	5.85 (3.78)	3.33 (1.94)	2.52 (1.84)	0.009	0.000
One Month Sell	6.77 (4.62)	4.30 (1.94)	2.47 (2.68)	0.083	0.000
One Day Total	8.03 (5.30)	3.74 (2.57)	4.29 (2.73)	0.000	0.000
One Week Total	11.72 (7.44)	6.71 (3.77)	5.01 (3.67)	0.009	0.000
One Month Total	13.56 (9.22)	8.39 (3.95)	5.17 (5.27)	0.055	0.000

This table presents descriptive statistics of the bulk sales as a fraction of the shares offered for different periods in the first month of listing.

Table 6: Bulk sales trading regressions

	BUY			SELL			TOTAL		
	1 day	1 week	1 month	1 day	1 week	1 month	1 day	1 week	1 month
Tie-in	1.895***	1.915*	1.755	1.817***	1.879*	1.210	3.712***	3.794*	2.965
	(3.57)	(1.82)	(1.16)	(3.47)	(1.80)	(0.65)	(3.52)	(1.81)	(0.88)
Proceeds	-0.762	-2.350*	-3.979*	-0.779	-2.360*	-4.976	-1.540	-4.710*	-8.955*
	(-1.32)	(-1.73)	(-1.76)	(-1.37)	(-1.77)	(-1.66)	(-1.34)	(-1.75)	(-1.70)
Underwriter	-1.183***	-2.337***	-2.983***	-1.217***	-2.365***	-3.192***	-2.400***	-4.702***	-6.174***
	(-2.79)	(-3.09)	(-3.05)	(-3.01)	(-3.20)	(-2.92)	(-2.90)	(-3.14)	(-2.99)
Underpricing	1.514**	3.837***	5.350***	1.350**	3.674***	5.649***	2.864**	7.511***	10.999***
	(2.48)	(3.29)	(3.49)	(2.26)	(3.20)	(3.08)	(2.37)	(3.24)	(3.28)
Constant	6.854*	18.480**	29.656*	6.995*	18.562**	36.413*	13.849*	37.042**	66.070*
	(1.76)	(2.01)	(1.94)	(1.82)	(2.05)	(1.79)	(1.79)	(2.03)	(1.86)
Observations	119	119	119	119	119	119	119	119	119
Adjusted R^2	0.217	0.271	0.307	0.209	0.267	0.295	0.213	0.269	0.302

This table presents the results of the regression analysis that examines bulk sales in the post listing period using the subscription variable. The dependent variable is bulk sales as a fraction of the shares offered. Underpricing is the first day market adjusted returns. Other variables are defined in Table 2 and 4.

Table 7: Participation of quasi and retail investors

	Quasi-institutional			Retail		
	All	*Tie-in*	*Control*	*All*	*Tie-in*	*Control*
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
LagInst	1.004***	-0.425	0.923***	0.687***	-0.121	0.639***
	(8.12)	(-1.12)	(5.52)	(5.96)	(-0.49)	(4.32)
LagQuasi				0.190	0.130	0.179
				(1.65)	(0.81)	(0.99)
Proceeds	0.161	0.392**	-0.199	-0.497***	-0.432**	-0.692***
	(0.77)	(2.02)	(-0.57)	(-3.22)	(-2.27)	(-2.73)
Underwriter	0.033	-0.180	-0.048	0.218	-0.246	0.246
	(0.11)	(-0.57)	(-0.14)	(1.04)	(-0.99)	(0.91)
Market Return	3.532***	1.527	4.128	3.238***	2.792***	2.234
	(3.16)	(1.37)	(1.61)	(3.57)	(3.15)	(1.07)
Constant	0.382	-0.874	3.048	4.323***	4.061***	5.826***
	(0.29)	(-0.72)	(1.34)	(4.41)	(3.51)	(3.38)
Observations	119	64	55	119	64	55
Adjusted R^2	0.416	0.054	0.315	0.438	0.179	0.382

This table presents the OLS regression results for the participation of quasi-institutional and retail investors. The overall sample for this analysis is 119 IPOs which consists of 64 *Tie-in* and 55 *Control* IPOs. *Tie-in* and *Control* IPOs are defined in Table 3. The dependent variable in regressions (1) – (3) is the logarithm of 1 plus quasi institutional investors' subscription while for regressions (4) – (6) is the logarithm of 1 plus retail investors' overall subscription. LagInst and LagQuasi is the logarithm of 1 plus the penultimate day's subscription for institutional and quasi institutional investors respectively. *Proceeds* is the logarithm of gross proceeds. *Underwriter* is a dummy variable which takes the value of 1 for high reputation underwriters and vice-versa. *Market Return* is the weighted average of the buy-and-hold returns on the BSE Sensex index in the 3 months before the IPO date where weights are 3 for the recent month, 2 for the next and 1 for the third month before the offering.

Table 8: Participation of institutional investors – after allocation

Panel A: Institutional investors' holding after IPO allocation

	Tie-in (64)	Control (55)	t-stat p-value	z-stat p-value
Financial institutions	0.836 (0.00) (15)	2.726 (1.57) (43)	0.006	0.000
Mutual funds	0.447 (0.00) (5)	3.312 (2.51) (49)	0.000	0.000
Foreign institutional	7.033 (5.24) (45)	6.890 (5.96) (50)	0.913	0.852
Insurance companies	0.000 (0.00) (0)	0.471 (0.00) (20)	0.084	0.000
Venture capitalists	0.399 (0.00) (2)	1.030 (0.00) (21)	0.266	0.000
N	119			

Panel B: Institutional investors' holding in the first reporting period after listing

	Tie-in (64)	Control (55)	t-stat p-value	z-stat p-value
Financial institutions	0.663 (0.00) (15)	2.150 (0.11) (40)	0.005	0.000
Mutual funds	0.402 (0.00) (5)	3.634 (2.38) (46)	0.000	0.000
Foreign institutional	2.949 (0.09) (30)	4.937 (4.95) (43)	0.021	0.001
Insurance companies	0.000 (0.00) (0)	0.389 (0.00) (24)	0.000	0.001
Venture capitalists	0.378 (0.00) (2)	0.408 (0.00) (29)	0.034	0.038
N	119			

Table 5 presents institutional investors' holding in Tie-in and Control IPOs immediately after IPO allocation (Panel A) and in the first reporting period after listing (Panel B). The figures represent the proportion of shares held by different institutional investors as a fraction of total shares outstanding.

Table 9: Post-listing returns

	First day	First month	3 months	6 months
	(1)	(2)	(3)	(4)
Tie-in	-0.306***	-0.436***	-0.367**	-0.563***
	(-2.72)	(-2.66)	(-2.36)	(-2.70)
Underwriter	-0.015	0.062	0.069	0.057
	(-0.11)	(0.30)	(0.35)	(0.21)
Proceeds	-0.155	-0.064	0.052	-0.065
	(-1.25)	(-0.50)	(0.37)	(-0.33)
Market Return	-0.500	-0.345	-0.813	-1.184
	(-0.72)	(-0.36)	(-0.67)	(-0.83)
Constant	1.372	0.752	-0.038	0.906
	(1.64)	(0.87)	(-0.04)	(0.68)
Observations	119	119	119	119
Adjusted R^2	0.037	0.052	0.026	0.038

This Table presents the OLS regressions for the post listing returns of 119 Tie-in and Control IPOs. The dependent variables in regression (1), (2), (3) and (4) are the market adjusted first day, first month, 3 month and 6 month returns. *Market adjusted returns* are raw buy-and-hold returns adjusted by the market return where the market return is the return on the BSE Sensex index over the same period. All other variables are defined in Table 4.