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Underpricing of initial public offerings in India

Abstract

This study attempts to provide new evidence on the first day IPO market performance using a set of 235 IPOs newly listed between April 1, 1997 and March 31, 2008 on the Indian Stock Exchange. The study examines how a change in the institutional arrangements that govern the pricing of IPOs, from the traditional fixed price approach to the building of a book, affects the level of underpricing. It also extends the literature on underpricing by comparing underpricing under the two pricing methods.

The study adds new evidence to the existing literature on IPOs in a significant manner. Firstly, in consistence with the 'hot issue markets' theory (Ibbotson and Jaffe, 1975; Ritter, 1984), it highlights that on the main board of the Indian Exchange, IPO underpricing increased in 2007. The empirical findings indicate a significantly mean positive underpricing (14.45 %); nonetheless, 60% of IPOs in the sample are initially overpriced. Secondly, in contrast with Giudici and Paleari (1999), the study finds no evidence that there is difference in underpricing between fixed price and book build offers.

Keywords: India, underpricing, price support, initial public offering, Indian Stock Exchange, book building, fixed price offering.
JEL Classification: G14, G15, G30, G32.

Introduction

The performance of book building vis-a-vis fixed-price initial public offerings (IPOs) is a well-researched area worldwide. Both offering methods lead to underpricing. Underpricing of IPOs as referred in the literature is one of the anomalies observed in the primary markets all over the world[1]. The term refers to the positive initial returns over the offer to listing dates of the new issues. While the evidence on IPOs long-run underperformance is mixed, the most striking and widely diffused empirical regularity is the initial underpricing, i.e. the positive first day returns. It appears that the prime factor causing IPO underpricing is asymmetric information (Rock, 1986; Ritter and Welch, 2002). There are other explanations like conflict of interests and agency problems (Ljungqvist and Wilhelm, 2003; Loughran and Ritter, 2003) and the signaling role (Allen and Faulhaber, 1989). Many of these explanations are likely to be true for emerging economies as well, routed as they are in theory; there could be institutional features that might impinge on both the causes and the extent of underpricing in these countries. Hence, it would be interesting to study an emerging economy like India where a large number of companies went public to finance their expansion in the presence of perverse underpricing.

Moreover, international evidence suggests that book building issues expect to have lower underpricing than that of fixed-price issues. In Indian IPO markets, book building mechanism since 1999 has gained popularity particularly for relatively larger IPOs. Traditionally, Indian IPOs used to be fixed price offerings, wherein prices of the stocks on offer were determined prior to seeking investors' bids. While book building has become increasingly popular especially for large issues, smaller issues by relatively small firms continue to be offered on fixed price basis. Indian IPO markets thus, provide a natural setting to understand whether there are any systematic differences in underpricing and long-run performance of the IPOs following fixed price as opposed to book building method.

It is thus very important to examine price performance of Indian IPOs at the time of listing for various reasons. First, the changes in the pricing regulations along with the boom and slump (hot and cold phases) in the IPO market over the last decade have made India a very important and interesting destination for such studies. The Indian institutional arrangements, in common with those in other markets, have evolved with a movement away from the traditional method of offering shares at a pre-determined fixed price, towards a book-build. Fixed price mechanism was used to price IPOs until 1999[2]. The fixed price mechanism coupled with wide spread underpricing lead to a situation where investors resorted to manipulations to increase the odds of getting the shares allocated. In 1999, the Securities and Exchange Board of India (SEBI) introduced a book building process similar to the US, with pric-

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[1] For example, Loughran, Ritter and Rydqvist (1994) compare short-run underpricing of IPOs for 24 countries. Kang and Stulz (1996), Cai and Wei (1997) and Hamao, Packer and Ritter (2000) study short-run underpricing and long-run underperformance of Japanese issues. See also Levis (1993) for U.K. issues, Gajewski and Ginglinger (1998) for French issues, and Gebhardt and Heiden (1998) for German issues.

[2] The firm going public would set a price and open the issue for subscription. Allocations were strictly on a proportionate basis.

ing flexibility coupled with discretion in allocation[1]. Post 1999, issuers could opt either conventional fixed price mechanism or the book building mechanism for pricing IPOs. Consequently, some public issues managed during the initial period could be overpriced. This situation provides a unique opportunity to observe both mechanisms working in similar market conditions. An expanding literature examines this transition and its implications for underpricing[2]. Thus, 1999 represents a natural structural break point in the availability of different issuance mechanisms in the Indian IPO market. Examining IPOs from 1998 in India allows understanding the critical differences with the previous studies due to changes in regulation as well as the evolution of the IPO market. It also facilitates to test the implications of introducing book building to the IPO markets.

Second, the study of Indian IPOs should be of interest to the global financial community as over the time period India has become a favorite destination for FIIs. Finally, the Indian primary markets have witnessed a boom during the last few years. Both the number of new issues coming to the market and the total amount raised has increased in leaps and bounds. Empirical findings indicate that book building has rapidly gained favor as the issue mechanism in India since its inception in 1999. For instance, over 72% of the IPOs brought to the market in 2005 were book built. This trend continued in the later part of the years as well.

This study attempts to provide new evidence on the first day IPO market performance using a set of 235 IPOs newly listed between April 1, 1997 and March 31, 2008 on the Indian Stock Exchange. It also extends the literature on underpricing by comparing underpricing under the two pricing methods. Specifically, the study investigates how a change in the method by which price is determined affects the level of underpricing.

Empirical findings indicate that the initial underpricing is significantly positive, and substantial money is 'left on the table' by issuers. A strong reduction in the mean underpricing practices, especially in 2008, is documented. This contrasts with the findings by Loughran and Ritter (2003) and Ljungqvist and Wilhelm (2003), documenting a rising severity of IPO underpricing in the US stock market. Separate analysis of IPOs with book building (which are less underpriced than fixed-price IPOs) new evidence is provided. In contrast with Giudici and Paleari (1999), the study finds no difference in underpricing between fixed price and book build offers.

The remainder of the paper is organized as follows. Section 1 highlights the recent literature about IPOs underpricing. Section 2 gives a short description of the institutional details of the Indian IPO process. Section 3 provides the empirical evidence regarding the initial price performance of Indian IPOs. The final section provides the summary and concluding remarks.

1. Literature review

The underpricing of IPOs is a universal phenomenon well documented in the economic literature (Ibbotson, 1975). Underpricing is ubiquitous but the amount of underpricing varies across countries. Loughran, Ritter and Rydqvist (1994) provide data on the initial listing performance of IPOs made in 25 countries. They show that the initial listing return ranges from 4.2% in France to 80.3% in Malaysia. Researchers provided explanations for this widely diffused 'anomaly' of the financial markets. The identified possible reasons developed in the finance literature to explain the underpricing are information asymmetry among participants, agency problems and institutional setting when the firm goes public.

It appears that the prime factor causing IPO underpricing is *asymmetric information* between the issuer and the investment banker; asymmetric information among investors and asymmetric information between issuer and investment banker. Rock (1986) assumes asymmetric information between investors. He classifies investors into two types: informed and uninformed, based on their knowledge of the future market price of the offered shares. Informed investors are knowledgeable about the future prospects of the shares being sold and will only attempt to buy when the issue is underpriced. Uninformed investors, on the other hand, do not know which issues are underpriced or overpriced, and therefore do not discriminate between issues when they apply for IPOs. Therefore they face a "*winner's curse*" due to the adverse selection externalities. Due to this adverse selection problem, the uninformed investors will exit the market unless they find issues of underpriced IPOs are available on average to recompense them for their informational handicap (at least to a risk-free rate). An implication of the "winner's curse" theory is that riskier issues should be underpriced more in order to make them attractive to a larger group of investors. Beatty and Ritter (1986) extend this and show that the expected underpricing is an increasing function of

[1] Book building process is the process of securing the optimum price for the company's share based on the feedback received from the prospective investors as well as market intermediaries during a certain period. It is a common practice used in most developed countries for marketing a public offer of equity shares of a company.

[2] See Benveniste and Busaba (1997), Giudici and Paleari (1999) and Cornelli and Goldreich (2001).

the uncertainty about the market-clearing price of an IPO. They defined 'ex-ante uncertainty' as a proxy of information asymmetry, which in turn is related to some variables, such as the firm's age, size and assets typology, as well as the file price-range spread. A number of authors have tested this proposition and they are in general agree with it (see, for example, Cheung and Krinsky (1994), and Miller and Reilly (1987)).

Many researchers are of the view that information asymmetry exists between the offering parties and the investors about the price and the level of the stock demand. Benveniste and Spindt (1989) introduce the "*information gathering theory*" and state that the underpricing is a mean to induce informed investors to reveal private information about the demand for shares in the pre-selling phase, thus allowing better evaluation of offerings by the intermediaries. Chemmanur (1993), Jegadeesh et al. (1993), Spiess and Pettway (1997) show that the underpricing may also generate useful information for the firm in order to plan future seasoned offerings ("*market feedback hypothesis*"). Allen and Faulhaber (1989), Grinblatt and Hwang (1989) and Welch (1989) instead identify the firm's managers as the informed party, and interpret the underpricing as a "signal" of a firm's superior quality ("*signalling hypothesis*"). A key assumption is that high value firms with favorable prospects tend to underprice more than low value firms.

Baron and Holmstrom (1980) and Baron (1982) postulate information asymmetry between the issuer and the investment banker ("*principal agent model*"). They assume that an investment banker is better informed about the capital market than the issuer and is therefore better able to gauge demand for the offer and set the price[1]. He is thus encouraged to sell underpriced shares[2]. A similar story is modeled by Mandelker and Raviv (1977), stating that the underpricing is related to intermediaries' risk aversion. Tinic (1988), Hughes and Thakor (1992) and Drake and Vetsuypens (1993) hypothesize that risk aversion also derives from the willingness of the intermediary to avoid litigation.

Introducing agency and moral hazard consideration, Ibbotson (1975) states the desire to leave a "good taste in investor's mouths" as a potential explanation of underpricing by intermediaries[3]. Fulghieri and Spiegel (1991) hypothesize that intermediaries also want to gain the goodwill of strategic clients, assigning them underpriced shares. More easily, Baron and Holmström (1980) highlight that marketing expenses have a decreasing marginal return and it is less costly to convince investors to subscribe underpriced IPOs. Ritter (1984) claims that investors prefer underpricing because they expect that after the IPO the controlling shareholders may extract private benefits from the firm. Su and Fleisher (1999) admit that also bribery and corruption can explain high underpricing in IPOs.

Nevertheless, other works relate the underpricing to irrational behaviors due to speculation bubbles and market "fads" (see Aggarwal and Rivoli, 1990), to noisy trading activities (Chen et al., 1999), to *naïve* investors' overoptimism (Rajan and Servaes, 1997; Bossaerts and Hillion, 1999). Mauer and Senbet (1992) propose an explanation based on stock pricing in segmented markets; in particular, they assert that in these markets problems of incomplete access and incomplete spanning do exist, causing a remarkably high risk for investors. Welch (1992), in his model of *informational cascades*, holds that an issuer underprices the issue in order to persuade the first few potential investors to purchase and spawns a cascade in which other investors follow suit despite their earlier lack of enthusiasm in subscribing to the issue.

In the Indian context, Shah (1995) conducted the earliest study on underpricing. Using a large sample 2056 IPOs for 1991-1995, he showed an average underpricing of 105.6% in India's primary market. Narasimhan and Ramana (1995) after analyzing the performance of 103 IPOs, Baral, and Obaidullah (1998) with 433 IPOs analysis conjectured that Indian markets were seeing 'overpricing and artificial support', though they also found initial returns to be higher. All these studies have discussed the short-term performance of Indian IPOs. Madhusoodanan and Thiripalraju (1997) after analyzing the long run performance (up to 3 years) of 1922 IPOs from 1992-1995 concluded that Indian IPOs were subject to wide scale underpricing with investors resort to manipulations to increase the odds of getting the shares allocated. Table 1 compares the level of underpricing reported by the earlier studies exhibiting that the initial excess return on IPOs in the Indian primary capital market have been very high.

[1] Better is in the sense of being better able to price the issue near to the subsequent market price.

[2] This theory is refused by Muscarella and Vetsuypens (1989), who analyze IPOs in which the intermediary sells its own shares (thus without information asymmetry) and nonetheless find significant underpricing. Camp (1992) notes that self-underwritten IPOs require a review of issue price by an independent intermediary.

[3] Ibbotson and Jaffe (1975) also forward the hypothesis that investment bankers set the price lower in order to provide an incentive for potential investors.

Table 1. Phenomenon of undrpricing: Indian scene

Studies	Period	Sample size	Performance (%)
Ajay Shah (1995)	1991-1995	2056	105.6
Narasimhan & Ramana (1995)	1993-1994	103	92.16
Baral & Obaidullah (1998)	1994-1995	433	153.173
Madhusoodon & Thiripalraju (1997)	1992-1995	1922	85.75

However, in recent times the book building method has increased in popularity with over 70% of IPOs from 2002 choosing that method[1]. The transition from IPOs using fixed price offers, to the majority using book-builds illustrates how quickly the market adopts a procedure that appears to offer greater efficiency. Moreover, the debate is going on in the academic fraternity about optimal selling procedures in IPOs (fixed price offer vs. book building vs. auction-like). Analysis of Indian IPOs is required as it provides the opportunity to evaluate the shift in issue procedures. In India until 1998 almost all IPOs were fixed price offerings, while book building has become popular in 1999. Thus, there is the opportunity to test how a change in the institutional arrangements that govern the pricing of IPOs, from the traditional fixed price approach to the building of a book, affects the level of underpricing.

There have been conflicting international evidences on the comparison between book building and fixed price offerings. Ljungqvist, Jenkinson, and Wilhelm (2003) find that book built issues do not necessarily lower underpricing in all countries. However, underpricing is lower for book built IPOs when issuers use U.S. lead managers and when the issues are marketed in the U.S. Interestingly, as the authors carefully note in the paper, their sample excludes data from some large domestic IPO markets, including India. However, the study of French IPOs by Derrien and Womack (2002) has found both book building and fixed price to be inefficient. While Spatt and Srivastava (1991) create a framework by which the fixed price allocation coupled with information exchange between the issuer and bidders can lead to optimal collection for the issuer, Benveniste and Busaba (1997) have put forth a model by which book building generates higher proceeds but induces higher uncertainty.

The present study differs with regard to above theories on several dimensions. Firstly, the Indian book building mechanism requires retail and institutional investors bid on independent pools of shares. Auctions are nonexistent in the Indian market. This leads to an altogether different set of theoretical issues compared to the setting in which all investors bid for the same pool of shares. The present analysis focuses on the effect of introducing book building as a mechanism in the IPO market formerly dominated by fixed price offerings. Secondly, the focus is on the time-period when book building was introduced to the marketplace in contrast to the markets that the Cornelli and Goldreich study, where book building has historically been available. Lastly, the present study is studying a different set of issues. Prior studies of IPO analyzed variation within book built IPOs, which sheds light on micro-level bidding by individual investors. On the other hand, this study examines the differences between mechanisms. The present study will verify if in India book building is useful to reduce underpricing.

2. Public issue process in India

This section briefly outlines the current regulations and procedures involved in the new issue process in India. Prior to May 1992, the government of India controlled the pricing of equity issues. A government appointed official, the Controller of Capital Issues (CCI), priced the issue of equity capital using a pre-determined formula. Since then the government has abolished price controls. After May 1992, companies are free to price the equity issues. Currently, the Securities Exchange Board of India (SEBI) regulates the new issue process[2]. All companies planning to make equity offerings to the public submit an offer document for approval by SEBI. Companies are also required to state the price at which the public offering is to be made. The offer document should provide an adequate justification of the offer price.

An investment banker, who is the lead manager, manages such public issue[3]. He can enlist the support of other investment bankers. He is responsible for all the key decisions and the administration of the issue process and is required to adhere to the disclosure norms prescribed by SEBI. Since 1995, SEBI has allowed companies/lead managers to indicate a price band within which the final offer price must lie. The maximum price should not be more than 120% of the minimum price. SEBI is also concerned with adequate information disclosure to potential investors and ensuring that companies and

[1] For the annual distribution of IPOs see Table 3.

[2] SEBI regulates both the primary and secondary markets in India and performs a role that is comparable to the Securities Exchange Commission (SEC) of USA.

[3] In India, there are three major types of investment bankers, viz. merchant banking divisions or subsidiaries of banks, merchant banking divisions or subsidiaries of development banks, and non-bank financial service companies engaged in merchant banking activities. The process of competitive bidding for choosing the investment banker is not prevalent in India.

their merchant bankers do not follow discriminatory policies that harm the interests of investors. Investment bankers cannot discriminate between the different investors while allocating shares in the public issue process. In the case of oversubscription, the allotment is finalized in consultation with the stock exchange and a SEBI nominated public representative. However, companies can retain a certain amount out of the public issue to a particular class of investors. The usual classes of investors include the resident Indian public, non-resident Indians (NRI), foreign institutional investors (FII), mutual funds, and employees of the company[1].

With the introduction of the book building process and the scrapping of the concept of par value for shares, the pricing process has become more open[2]. It is now possible to follow the fixed price route or the book-building route for an issue. In case of the book building process, the price is not fixed, but a price band is suggested. The investors can bid for any price between the cap and the floor and the quantum of subscription. One of the lead managers will work as the book runner. The final issue price is determined as the cut-off at which the issue is fully subscribed. The book building could be used for 75 per cent of the issue, which could be subscribed by institutions and high net worth individuals, and the balance 25 per cent could be issued to individual investors as a fixed price issue, the price being the cut-off determined via book building. It is also possible to have 100 per cent book built issues where the individual investors also take part in the book building process. The book building process is completely automated (on-line) using the systems of the stock exchanges, and this process is known as e-IPO. This has been made possible by the compulsory dematerialization of stocks in case of secondary market transactions.

3. The empirical analysis

3.1. The sample. An initial sample of IPOs on the Bombay Stock Exchange (BSE) during April 1, 1997 and March 31, 2008 is identified from the Prowess database, provided by the Center for Monitoring the Indian Economy (CMIE). To ensure valid estimates of the measures, an IPO is included only when it meets the following additional criteria:

1. The IPO shares are ordinary common shares.
2. The IPO firms must have relevant financial information and daily adjusted closing stock price data on listing day available from the Prowess database or BSE web site.

Table 2 reports the classification of the data based on sector and year of IPO.

Table 2. Sample distribution of IPOs by firm's sector

Year	Financial sector	% of sample	Industrial sector	% of sample	Services sector	% of sample	Total	% of sample
1998	1	4.00	0	0.00	0	0.00	1	0.43
1999	1	4.00	0	0.00	1	1.52	2	0.85
2000	2	8.00	2	1.39	7	10.61	11	4.68
2001	1	4.00	2	1.39	0	0.00	3	1.28
2002	1	4.00	0	0.00	1	1.52	2	0.85
2003	0	0.00	1	0.69	1	1.52	2	0.85
2004	2	8.00	12	8.33	7	10.61	21	8.94
2005	5	20.00	27	18.75	15	22.73	47	20.00
2006	4	16.00	28	19.44	16	24.24	48	20.43
2007	7	28.00	67	46.53	17	25.76	91	38.72
2008	1	4.00	5	3.47	1	1.52	7	2.98
Total	25	100.00	144	100.00	66	100.00	235	100.00

Note: 235 IPOs on the Bombay Stock Exchange between 1998 and 2008. The sample is identified from the Prowess database and BSE web site.

In 2005-2007, there is high level of IPO activity, about 79.15 % of the whole sample. Therefore, there is evidence that the IPOs are clustered in time. While there is some clustering by year, all IPO announcements occur on different days. The table also reports that the largest number of IPOs occurred during 2007 when the Indian stock market was passing from the boon phase. Firms executing IPOs represent a broad cross section of industries, indicating that IPOs are not specific to small set of industries. Considering the business sector subdivision of the sample, the maximum number of IPOs has been in industrial sector (144) followed by services (66) and then financial sector (25). Among

[1] An NRI is a person of Indian origin regardless of his/her citizenship. Foreign individuals with the exception of NRIs are not allowed to directly participate in Indian capital markets. FIIs must be registered with SEBI prior to investing in the Indian capital markets and are subjected to regulation.

[2] The Book Building guidelines were first introduced by SEBI in 1995 (clarification XIII, dated 12.10.95) for optimum price discovery of corporate securities. The SEBI, from time to time modifies the guidelines in order to upgrading the existing mechanism. The SEBI in its press release dated September 7, 1998 prescribed the fresh guidelines for book building mechanism after thorough modification and it was again modified in 2001 (Circular No. 2, dated 6.12.2001) and 2003 (Circular No. 11, dated 14.08.2003).

the IPOs of the survey, 38 offerings are privatization operations and in 14 cases the issuing firm belongs to a business group the holding company of which is already listed ('equity carve-outs'). With reference to privatization banks, insurance companies and public utilities formed the majority of IPOs. Equity carve-out IPOs involve almost all the largest business groups listed on the stock market in the period under consideration. Table 3 presents the annual distribution for the sample of 235 IPOs by method of listing.

Table 3. Sample distribution of IPOs by method of listing

Year	Financial sector			Industrial sector			Service sector			Total			% of sample
	BB	FP	Total	BB	FP	Total	BB	FP	Total	BB	FP	Total	
1998	1	0	1	0	0	0	0	0	0	1	0	1	0.43
1999	1	0	1	0	0	0	1	0	1	2	0	2	0.85
2000	0	2	2	2	0	2	2	5	7	4	7	11	4.68
2001	1	0	1	0	2	2	0	0	0	1	2	3	1.28
2002	1	0	1	0	0	0	1	0	1	2	0	2	0.85
2003	0	0	0	1	0	1	1	0	1	2	0	2	0.85
2004	1	1	2	7	5	12	6	1	7	14	7	21	8.94
2005	5	0	5	17	10	27	12	3	15	34	13	47	20.00
2006	2	2	4	23	5	28	15	1	16	40	8	48	20.43
2007	7	0	7	58	9	67	16	1	17	81	10	91	38.72
2008	1	0	1	4	1	5	1	0	1	6	1	7	2.98
Total	20	5	25	112	32	144	55	11	66	187	48	235	100

Note: This table reports the number of IPOs in the sample overall by year and by method of listing during 1998-2008. BB refers to book built IPOs and FP refers to fixed price offering. Sample IPO firms were identified which had daily stock price information available from the Prowess database & BSE web site.

Of the 235 IPOs in the sample, 48 are fixed price offerings and 187 are book-build offerings. There is a noticeably higher number of IPOs during 2004 to 2007 compared to other years and a visible increase in the number of IPOs using the book building pricing method relative to the number of IPOs using the fixed price method towards the latter end of the sample period. Of the total sample, 187 firms preferred this mode over fixed price mechanism. The book building method provides the lead banker more flexibility to set the offer price. The final offer price incorporates the feedback received during the subscription period. One thus expects the underpricing to be less in case of book built issues.

3.2. Descriptive statistics. In order to test the correlation between the underpricing and some explicative variables pointed out by the literature, Table 4 presents descriptive statistics of the sample. Financial companies figure separately from others as they have different accounting standards. Table also reports about the offering, the market momentum prior to the IPO and the aftermarket price volatility.

Table 4. Descriptive statistics of the sample

Statistics		Mean	Median	Min value	Max value	Sample size
Company size (whole sample)	Company's assets (Rs Cr)	3225.608	171.500	3.700	126268.710	235
	Equity capital (Rs Cr)	139.074	14.060	0.050	7812.500	235
Company size (bank and insurance companies)	Company's assets (Rs Cr)	17904.033	671.900	3.700	126268.710	25
	Equity capital (Rs Cr)	239.062	200.000	4.490	1147.770	25
	Income from investments (Rs Cr)	1386.265	244.955	0.100	6647.870	25
Company size (other companies)	Company's assets (Rs Cr)	1478.176	166.765	8.680	65958.100	210
	Equity capital (Rs Cr)	127.170	13.065	0.050	7812.500	210
	Cross sales (Rs Cr)	440.847	144.185	2.560	21289.400	200
Company age	Whole sample (years)	16.9	13.0	1.0	137.0	235
	Bank/Insurance (years)	39.4	15.0	2.0	137.0	25
	Other companies	14.3	12.5	1.0	68.0	210
IPO proceeds (Rs Cr)		314.640	81.000	0.0002	9187.500	235
Fraction of the equity capital held by controlling shareholders (%)		58.22	58.82	0.00	89.96	235
Oversubscription level: ratio between	Total demand and supply	24.17	12.00	1.00	176.00	235
Days between offering and listing		28.2	26.0	18.0	86.0	235
Daily price volatility (%)	(10 days after the listing)	13.20	7.13	0.21	152.72	235

Table 4 (cont.). Descriptive statistics of the sample

Statistics		Mean	Median	Min value	Max value	Sample size
Market performance (%)	(100 days before the IPO)	5.55	6.65	-8.43	17.28	235
Daily market index volatility (%)	(60 days before the IPO)	0.60	0.55	0.31	1.24	235

Note: The company size is measured by the accounting value of the assets at the listing. For financial companies, i.e. banks and insurance companies, the data about the income from capital investments are reported respectively. The company age at the listing is reported as well. Information about the IPO are listed (total proceeds, oversubscription level, days between the IPO and the listing). Statistics about the market index performance and volatility before the IPO and the IPO share volatility after the IPO are also reported.

Empirical findings indicate that a strong scattering of the firms' size and IPO proceeds exists, revealed by the difference between the mean and median values. The mean company age is 17 years that is almost comparable to US IPOs but considerably lower than European samples[1]. The mean company asset size (excluding Bank and Financial firms) is Rs. 1478 Cr. The fraction of equity capital held by the controlling shareholder after the IPO is on average 58.22%, not noticeably different from other markets[2]. These findings indicate that controlling shareholders in most of the cases retain the majority of the voting capital after the IPO. Oversubscription levels, as measured by ratio between demand and supply, are significantly high. The mean value is 24 whereas the maximum value is as high as 176. On average, the sample firms offer their shares after a period (28 days) characterized by a mean positive performance by the market index. This lag has been reducing with time.

3.3. Underpricing and 'money left on the table'. For each sample IPO, two measures of underpricing were calculated. Firstly, the 'simple' underpricing, defined as the difference in percentage between the official price of the share after the first day of listing and the offer price. Secondly, the 'adjusted' underpricing, defined as the difference between the 'simple' underpricing above and the market index return measured between the beginning of the public offering and the day of the first trading. In this analysis, the market index is historical SENSEX index[3]. Table 5 summarizes the results obtained by calculating the 'simple' and 'adjusted' mean underpricing over time. The mean value and the number of firms exhibiting a positive (negative) underpricing are also reported. Table also reports the t-tests in order to determine the statistical significance of the underpricing.

Table 5. IPOs mean underpricing (first day return), by listing year

Year	IPOs	Underpricing (%)			Adjusted underpricing (%)			Days
		Mean	Positive	Negative	Mean	Positive	Negative	
1998	1	-74.045	0	1	-66.589	0	1	86.0
1999	2	-52.969	0	2	-58.296	0	2	47.5
2000	11	-27.534***	4	7	-28.302***	5	6	46.2
2001	3	-75.697**	0	3	-62.428**	0	3	35.7
2002	2	-76.992**	0	2	-78.493**	0	2	30.0
2003	2	8.037	1	1	6.160	1	1	26.0
2004	21	28.166**	14	7	27.034***	15	6	29.1
2005	47	20.322**	35	12	15.870***	32	15	26.8
2006	48	15.638**	28	20	12.920***	24	24	26.0
2007	91	22.043*	55	36	21.888*	58	33	26.6
2008	7	5.559	4	3	8.487	6	1	24.3
Total	235	14.455*	141	94	13.039*	141	94	28.2

Notes: The underpricing is adjusted by considering the market index return between the issue of the offer price and the listing. Days between the first day of the offering and the trading is reported. *, **, *** Statistically different from zero at the 99%, 95% and 90% level, respectively.

Empirical findings indicate that the underpricing phenomenon is common in IPOs in Indian case. The mean 'simple' underpricing, relative to the whole sample of 235 firms, is equal to 14.45%, 13.04%, if one considers the 'adjusted' return. The sample mean values are statistically different from zero with a remarkably high significance (99%); nevertheless, they do not appear to be homogeneously distributed over time. The adjusted return value is lower than the simple mean as it discounts the effect of positive perfor-

[1] For example, Habib and Ljunqvist (2001) report a mean age equal to 14 years in the US market. In Europe a higher comparable mean age is reported by Vandemaele (1999) for the French market (44 years), Roosenboom et al. (1999) for the Netherlands (35 years), Holmen and Hogfeldt (1999) for Sweden (31 years).

[2] Cooney et al. (1999) found 67.4% in their US sample, Lee et al. (1999) 53.0% for the Australian market, Goergen (1998) 76.4% and 62.6% for the German and the UK market respectively, Roosenboom et al. (1999) 64.6% for the Netherlands.

[3] From 1979 onwards, India has had the "BSE Sensex".

mance by market index between offer date and listing date. When underpricing is adjusted for market movements, the minimum underpricing increases to -78.49% and maximum decreases to 27.03%.

On average from 1998 to 2002, Indian IPOs were overpriced. This is because book building mechanism was evolving by that time and free price mechanism as propounded by Securities Exchange Board of India (SEBI) was not delivering desired results. For 2003, the results are not statistically significant, because of the small number of firms going public. The mean values for this period indicate overpricing, but due to small sample size, these cannot be statistically tested. Evidence for underpricing for years 2004 to 2006 are less significant than results for 2007. In 2007 IPOs were significantly underpriced: given that during that period the market momentum was favorable, this was consistent with the 'hot issue markets' theory (Ibbotson and Jaffe, 1975; Ritter, 1984). The analysis of the most recent IPOs in 2008 seems to reveal a strong reduction in the underpricing, with mean values of about 5.56%. This can be attributed to recent weak market sentiments.

Researchers have underlined that underpricing is not the entrepreneur's primary concern, although it may represent an opportunity cost (Habib and Ljungqvist, 2001). They must minimize the reduction in underpricing-induced wealth losses ("money left on the table"), which increase in the underpricing but also in the number of shares sold in the IPO. Ritter (1984) defined this as the offer price to closing market price on the first day of trading, multiplied by the number of shares offered. However, Loughran and Ritter (2002) noticed that issuers rarely get upset about 'money left on the table'. Introducing a '*prospect theory*' of issuers' behavior, they argue that IPOs where wealth losses are large are almost invariably those where the offer price and market price are higher than had originally been expected. Thus, controlling issuers are generally simultaneously discovering they are wealthier than they expected to be, and underpricing may be considered an indirect form of investment banker's compensation. On the other hand, Daniel (2002) argues that it might not explain all the underpricing in IPOs. Hence, it is worth analyzing both underpricing and wealth losses. Table 6 computes the amount of money 'left on the table'. As there has been significant inflation during the sample period, all the statistics also considers inflation ratios as published in International Finance Statistics Yearbook of IMF.

Table 6. "Money left on the table", by listing year

Year	Simple size	Money left on the table			
		Total (Rs Cr)	Total (Inflation adjusted Rs Cr)	Mean (Rs Cr)	Mean (Inflation adjusted Rs Cr)
1998	1	-29.28	-30.65	-29.28	-30.65
1999	2	-225.74	-234.77	-112.87	-117.38
2000	11	-311.08	-322.56	-28.28	-29.32
2001	3	-76.89	-80.26	-25.63	-26.75
2002	2	-77.08	-80.02	-38.64	-40.01
2003	2	73.05	75.80	36.53	37.90
2004	21	183.11	190.89	8.72	9.09
2005	46	298.21	315.51	6.34	6.71
2006	47	3176.60	3378.95	66.18	70.39
2007	91	9505.60	9933.35	104.46	109.16
2008	7	165.95	165.95	23.71	23.71
Total	233	12682.46	13312.19	11.33	12.84

Note: Sample includes 235 IPOs on the Bombay Stock Exchange between 1998 and 2008. "Money left on the table" is defined by the product between the number of offered shares and the first-day monetary return. Inflation adjusted amounts are also reported.

The mean amount of 'money left on the table' is equal to Rs. 11.33 Crores (Rs. 12.84 Crores inflation adjusted). Empirical finding are similar as reported in Table 4. In years 1998-2002, the mean value is negative indicating overpricing of the issues. The highest mean 'money left on the table' is observed in 2007. In contrast, in 2008, total and mean amounts of 'money left on the table' are quite low. In order to test the effects of different placing strategies on the underpricing level, two subsamples were identified. In particular, the first sample includes 48 fixed price samples and the second 187 IPOs in which the final offer price is determined after book building (in the prospectus a price range is filed). From the analysis of the literature, one expects underpricing to be lower in IPOs with book building, coherently with the "information gathering theory" by Benveniste and Spindt (1989). Table 7 displays the underpricing levels, by offering strategy currently applicable in India.

Table 7. The relationship among underpricing (adjusted values), "money left on the table" and placing strategies

	Book building		Fixed price
Sample size	187		48
Mean adjusted underpricing (%)	14.79%		15.82%
t-test on the difference		-0.117	
'Money left on table' (Mean inflation adjusted) Rs. Cr	31.822		-1.468
t-test on the difference		0.471	

Notes: Sample includes 235 IPOs on the Bombay Stock Exchange between 1998 and 2008.

Empirical findings indicate that the difference is not statistically significant at the 1% confidence interval. This implies that underpricing in IPO that use a book building does not differ from underpricing in IPOs that use a fixed price method. This result contrasts with Giudici and Paleari (1999) who document a statistically significant decrease in underpricing of IPOs using the book-building pricing method compared to IPOs using the fixed price method on the Italian Stock Exchange. They attribute the reduction in underpricing to reduced information asymmetry brought about through the information gathering activities of the investment banker.

The possible explanation for there being no difference in underpricing between the two pricing methods, and consistent with the results in Table 7, is that book-build IPOs are consistently priced closer to the line than IPOs that use the fixed price method. This would result in a narrower range and lower volatility of underpricing for IPOs using the book-building method compared to IPOs using the fixed price method. This is consistent with the conjecture that the demand schedule constructed during the book-build process allows the investment banker to set the final issue price to control the level of underpricing. The mean amount of money left on the table is more in the case of book building. This is due to significant overpricing of fixed price issues from 1998-2002 as stated in previous tables. Moreover, the difference in money left on the table in the case of book building vs. fixed price is also not significant. This again implies that book building has not been able to significantly reduce underpricing in Indian capital markets.

Conclusion

The present study analyzes a comprehensive and unique data set about IPOs short-run market performance in India. It computed the first-day return of 235 IPOs from 1998 to 2008 obtaining a mean (adjusted) underpricing equal to 14.45% (13.04%). The amount of money "left on the table" by issuers, when they sell underpriced shares was also computed. Empirical findings indicate that Indian market was experiencing underpricing from 2003, which increased over time and was particularly high during 'hot issue' market of 2007. However, it has decreased in the first part of 2008 (in 2008 it is on average negative).

Placing strategies also influence the initial returns of IPOs. This study investigates how a change in IPO placing methods affects underpricing in the Indian equity market. There is no evidence that underpricing in IPOs that use a book building are different from underpricing in IPOs that use a fixed price method. This result is in contrast to the evidence in Giudici and Paleari (1999). It may however, still be consistent with the premise that the book building method reduces information asymmetry between investment banker, issuer, and investors, but as the results of this study show this does not necessarily result in a lower level of underpricing.

The above empirical findings provide original contributions to existing literature which are important from the point of view of Indian IPOs market. The number of firms going public in India has recently increased, but we are much far from the standard of other developed markets: therefore, often IPOs are considered as a speculative opportunity more than an occasion to diversify portfolios. Moreover, the evolution of the placing procedure, from fixed price offerings to book building, has not improved the efficiency of Indian IPOs market. It is a pity that in India no transparency characterizes intermediaries' activism after the listing. As soon as possible SEBI should arrange a list of detailed information to be filed and published by the intermediaries when trading shares after the listing.

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