Initial Returns, Long Run Performance and Characteristics of Issuers: Differences in Indian IPOs Following Fixed Price and Book building Processes

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We would like to acknowledge the contribution of an independent and partial analysis of some of the Indian IPOs from 1999 and 2000 by Amit Kumar and Saurabh Gupta, PGP 2003-05 student of IIM, Ahmedabad. This analysis was in the form of an independent project titled "Indian IPOs during 1999-2000: An Empirical Analysis", was completed in November 2004 and provided us with the issues empirically investigated in this work.

Abstract

Initial returns (or underpricing) and long run performance of IPOs have been researched extensively across countries. Recent research on IPOs has also been focused on differences in pricing and allocation mechanisms across countries. Indian IPO markets provide a natural setting for comparing the characteristics of issuers, initial returns and long run performance of IPOs coming out with fixed price versus book building route. On a sample of 84 Indian IPOs (20 book-build and 64 fixed-price) from the period 1999 to 2002, we find that the fixed price offerings are used by issuers offering large proportion of their capital by raising a small amount of money. In contrast, book building is opted for by issuers offering small proportion of their stocks and mobilizing larger sums of money. Unlike in the early nineties, the activity in Indian IPO markets is now increasingly following trend of "industry-specific waves" of IPOs as most of the IPOs in our sample are from sectors, which were "hot" during the period. Consistent with the evidence from other countries, initial returns are higher and more uncertain on fixed price offerings. Again in line with evidence elsewhere, all types of Indian IPOs in our sample under performed in the first two years subsequent to listing. We also find some evidence that the IPOs from issuers belonging to industries under the spell of "hot issue" market, under perform more than the rest.

1.0 Introduction

Under pricing of IPOs has been researched extensively and has been found across countries. Ritter (2003) provides an update on the compilation[1] of Loughran *et al.* (1994) in which he reports research on initial returns on IPOs across 38 countries covering differing sample periods, all providing positive significant average returns. Besides empirical research on under-pricing of IPOs and development of theoretical explanations for the under-pricing, many studies have also been noted that IPOs, after initial positive returns, tend to under-perform subsequently. Some of the studies indicating poor long run performance of IPOs from different countries have been compiled by Jenkinson and Ljungqvist (2001). In last few years, researchers have also focused on differences in the mechanisms for pricing and allocation of IPOs across countries. In Indian IPO markets, book building mechanism was introduced a few years back and has since gained popularity particular 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 under-pricing and long run performance of the IPOs following fixed price as opposed to book building method. In this paper, by empirically studying the differences between the IPOs following different process, we extend empirical work on Indian IPO markets as other empirical works in Indian context, cited later, are all from period when book building process for IPOs was not allowed and used.

The remaining part of this paper is organized in four sections. Section 2 describes the mechanisms followed in India for pricing and allocation of IPOs and contrasts it with processes followed in other countries. It also covers a brief review of theoretical and empirical research on IPOs to set the motivation for the study. Section 3 covers the description of data set used in this study, results on under-pricing and comparison of characteristics of issuers using fixed price offerings and book building. Section 4 covers the results of the long run performance of the IPOs offered on fixed price basis and compares them with those offered through book building route. Section 5 discusses the findings and lays out direction for further research on Indian IPO markets.

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[1] Loughran et al. (1994) covered research on under-pricing in 25 countries.

2.0 Pricing and Allocation Mechanisms in IPOs

Historically, considerable differences existed in mechanisms for IPO pricing and allocation across countries. While in US, predominantly book building route has been followed for IPO pricing for a long time now, the fixed price open offers have been used in countries such as United Kingdom, Singapore and Hong Kong (Kang 1995). In France, multiple mechanisms such as fixed price, auction and book building are followed for IPO pricing (Ritter 2003). Prior to 1997, only price-discriminatory auction were used for IPOs in Japan (Kaneko and Pettway 2003). Even when book building route is followed, there could be subtle differences in the processes followed. In US, an original price range is indicated before the road show, starting the book building process. In around 50% cases, final offer prices are set within the originally indicated price range as pointed out by Loughran and Ritter (2002). They also point out that around half of the remaining IPOs have final offer price above the original range and around below it. Unlike in US, prices of IPOs in Germany are set around seven days after the start of book building. Like pricing, there are differences across countries in allocation of IPO stocks across bidding investors. In most countries, the underwriters have discretion in allocating IPO stocks. Theoretical explanations explaining the basis of such allocations based on the underlying incentives for the underwriters have also been developed (Benveniste and Spindt 1989, Loughran and Ritter 2002).

2.1 Pricing and Allocation Mechanism in India

Prior to economic reforms initiated in early nineties, all public issues in India required approval from the office of Controller of Capital Issues (CCI), Government of India. The approval covered all aspects of an issue, including the price at which stocks were proposed to be offered. In 1993, the office was abolished and the newly created securities market regulator, Securities and Exchange Board of India (SEBI) was entrusted the task of regulating all aspects of Capital Markets including primary markets, including IPO markets. The IPO markets in India have been historically dependent on retail investors and the mechanism allowed and followed for IPOs was fixed price offerings. In addition, there was an explicit and severe bias in favor of smallest bidder in allocation of stocks. Given the dependence of the market on small investors, lack of IT based

infrastructure to pool in demand on at least daily basis, which is required for book building, the use of fixed price offers was understandable. Even after the abolition of CCI, SEBI's initial regulations favored small investors in allocation of IPO shares to the smallest bidders even though the pricing and other regulatory restrictions associated with CCI regime were eased. By mid nineties, SEBI changed the rule of allocation from an explicit and severe bias in favor of smallest bidders in the face of multiple applications being used by the bidders to capitalize on apparent under pricing of IPOs. With the hindsight, the large volume in IPO market (in terms of number of IPOs) in early nineties can be more aptly termed as "hot issue market", an IPO market phenomenon which recurs in other countries as well. The allocations under the changed regulations were made on the basis of proportionate allotment rules with all applicants being allotted proportionately depending upon the number of shares applied and the degree of oversubscription.

By late nineties, with the increased institutionalization of Indian capital markets, dematerialization of shares, screen based trading on exchanges, and increase in access to the screen based exchanges (National Stock Exchange or NSE and The Stock Exchange, Mumbai or BSE) across the country, companies were allowed to opt for the book building route for their IPOs. Besides the traditional fixed price offers, companies can now use 100% book building or 75% book building route subject to certain conditions. Currently, if an unlisted issuing firm comes out with an IPO through fixed price offering of its stocks, it has to have a certain minimum asset size and profits in three of preceding five years. In contrast, there are no such restrictions for an issuing firm if it opts for book building process provided it is able to place at least 50% of the stocks offered to institutional investors (defined as 'Qualified Institutional Buyers'). In case of 100% book building, the entire allocation is based on bids placed by the investors. However, not less than 25% of the issue has to be allotted to retail investors applying for less than 1000 shares. In contrast, in 75% book building route balance 25% is allotted to retail investors at a price determined through book building, using proportionate allotment rule. In either of the two mechanisms, there is no discretion with the underwriters on allotting shares to retail individual and non-institutional (applying for more than 1000 shares) investors. Only allotment to Qualified Institutional Buyers (QIBs) in IPO is discretionary.

2.2 Fixed Price vs. Book Building: Theory and Evidence

Book building for IPOs, since nineties, is increasing in popularity among underwriters and issuers in Europe and in other regions, where historically other competing mechanisms such as fixed price offers or auctions were used (Ljungqvist, Jenkinson and Wilhelm 2003, Ritter 2003). Since 1999, trend in India also has been towards book build issues particularly for large IPOs once book building method was allowed for IPOs by the regulator. However, fixed price offerings have also continued in Indian IPO markets.

In theory, fixed price and book building mechanisms have been compared in terms of their "price discovery" process. In fixed priced offerings, the offering of stocks is made without ascertaining the demand from investors and hence the price is discovered in the aftermarket. On the other hand, investor "demand" and their valuations are discovered in the premarket in case of book building. It has been pointed out that both methods require underpricing or money to be left on the table for prospective investors. Winner's curse faced by a winning bidder in case of fixed priced offers would result in underpricing of IPOs (Rock 1986). Similarly, underpricing is shown to be required in case of book building for the potential investors to surrender their private information (Benveniste and Spindt 1989). In both the methods, the possibility of informed investors capitalizing on their information is the driver of under pricing. IPOs have to be under priced on an average to compensate uninformed investors.

Most of the early literature analyzing and comparing book building and fixed price methods using theoretical models suggested that book building on an average would require lower under pricing (Benveniste and Wilhelm 1990, Spatt and Srivastava 1991, Benveniste and Busaba 1997). As pointed out by Busaba and Chang (2002) however, these models considered the possibility of informed traders being able to capitalize on their information only by participating in the IPO and not in the aftermarket. In other words, the true value of the shares in the models is considered to be established as soon as shares are listed and the trading commences. In such a case the incentive of getting allocation of under-priced IPO shares induces informed traders to truthfully reveal their private information. By allowing the possibility of informed traders capitalizing on their information in the aftermarket by strategically misrepresenting the information during the IPO allocation stage, Busaba and Chang show that a simple fixed price offering

aimed at retail investors might lead to less under pricing unless the underwriter can successfully target a subset of informed investors through book building, the subset being small enough to get the issue subscribed. They proceed to argue that if the number of the targeted subset of informed investors is considerably smaller than the total number of all informed investors, then book building could lead to lower under pricing as the targeted subset has to compete with the other informed investors in the aftermarket. This would make it relatively attractive for them to truthfully reveal their information in return for getting slightly under-priced IPO allocation. On the other hand, if an IPO is targeted at large number of informed investors, then the informed investors have strong incentive to misrepresent information in the premarket, with a view to trade on the same in the aftermarket.

Empirically, most of the studies across countries have found that book building method results in lower under pricing on an average (Loughran et al. 1994) as compared to fixed price offers. However, Kaneko and Pettway (2003) find that the under pricing in Japan has increased following adoption of book building method by the issuers. What is intriguing about their finding is that the issuers still have a choice of opting for price-discriminatory auction process followed since 1989, but all issues since 1997 have followed book building method. Another empirical study by Derrien and Womack (2003) of French IPOs during 1992-1998 period, finds that the under pricing and its variance is lower in IPOs following auction as compared to book building and fixed price offers. While these two studies point out that the auctions might be associated with lower under pricing, empirical evidence from most of the countries suggests that book building results in lower under pricing when compared with fixed price offerings.

2.3 Research on IPOs in India

Like in all other countries, the early empirical studies on IPO markets in India focused mainly on the initial returns or under pricing. Krishnamurti and Kumar (1994) analyzed 98 IPOs from 1992-93 period and reported average initial returns of 35.3%. On a wider data set of 2056 IPOs listed during the period Jan 1991- April 1995, Shah (1995) found mean initial unadjusted returns of 105.6% on equally weighted basis and mean initial returns of 113.7% if weighted by the size of issues. He also finds that very small as well as very large issues had higher initial returns than the issues of medium size. Using

adverse selection explanation of Rock (1986), he argues that one of the factors for severe under pricing in Indian IPO markets is that the IPOs rely mainly on retail uninformed investors and hence under pricing is to compensate them for winner's curse caused by presence of informed investors. However, as shown by Busaba and Chang (2002), under pricing should be less in case the allocations are made with a severe bias towards retail, as the winner's curse problem faced by uninformed investors would be minimal. Indeed the allocation rules prevailing at the time of these studies had severe bias in favor of retail allocation. In such a context, the under pricing can only be explained by the presence of informed investors in the aftermarket as argued by Busaba and Chang. Both the studies cited above had some IPOs in their sample from the period before the office of Controller of Capital Issues (CCI) was abolished. As pointed out earlier, the issuers in India were not free to price their issues and required approval from CCI during that period. On a data set of 1243 IPOs during the period April 1993- March 1995, Pandey and ArunKumar (2001) found mean initial market adjusted returns of 69.8% on equally weighted basis. They also found that smaller sized issues tend to have higher initial returns (or higher under pricing) as compared to large issues, that the insiders' stake in the issuing firm is interpreted as positive sign and that the large revealed demand (level of subscription) at the time of fixed price offerings is a good indicator of subsequently realized returns. During early nineties, most of Indian IPOs were by issuers issuing equity at par for taking up green-field projects or starting businesses. While the average initial returns used to be significantly high, possibly due to opening up of the economy and economic reforms initiated in 1991, there were wide variations in realized initial returns reflecting the diverse quality of the issuers. Unlike under pricing issue, studies on Indian IPOs have not examined their long run performance, except the one by Shah (1995). In his sample, he finds that Indian IPOs generated excess returns even after listing. His results could however be attributable to excessive optimism generated during the period covered by him. The sample used by him was of the IPOs, which came immediately after the initiation of economic reforms and easing of control in 1991. Casual observation, from later periods, suggests poor long run performance of an average Indian IPO. A large number of issuers of IPOs are reported to vanish after mobilizing capital and several such firms are listed on the regulator's web-site (www.sebi.com, Vanishing Companies). Similarly, Indian IPOs after the introduction of book building method have not been studied extensively. This study purports to fill in these research gaps on Indian IPOs. In particular, this work sets out to empirically investigate the differences in under

pricing, long run performance and characteristics of issuers following book building and fixed price IPO processes in Indian markets.

3.0 IPOs and Under Pricing in the Indian Markets

3.1 Choice of the Period and the Sample for the Study

Since the book building method of pricing was first allowed and used in 1999, we use data set on IPOs in Indian markets starting from the year 1999 onwards. As one of the objectives is to compare the performance of IPOs in the aftermarket and since we use approximately two years' aftermarket returns, our sample ends with the IPOs of calendar year 2002. Increasing the length of aftermarket returns for the study would have meant reducing the number of years to be included in the sample. As one of the primary objectives of the study is to compare the characteristics of issuers and under pricing of IPOs following book building route as opposed to traditional fixed price offerings used in the Indian IPO markets, we could not extend the sample by including IPOs from earlier years.

Table 1 reports the number of IPOs in Indian market during the period 1999-2004. The data on IPOs for the years 1999 and 2000 was obtained from PRIME, a commercial agency monitoring and compiling information on all primary public issues in Indian markets. It was cross-checked from other sources such as publications of official agencies such as NSE and other commercial publications such as Capital Market (www.capitalmarket.com, IPO diary). As can be seen from the table, the number of IPOs during this period peaked in 2000 during the IT/ dotcom boom. The number of book build issues has been small although their proportion has increased in the recent years. In last three years since 2002, the number of IPOs has been less even though the average issue size has been much larger.

Insert Table 1 about here

During the four years starting 1999 and ending 2002, a total of 178 initial public offerings were made by issuers. Of these, only 20 issuers or around 11% opted for book building route. In order to compute returns on listing and the aftermarket performance of these

IPOs, we use the time-series of returns of these stocks from PROWESS, a data base compiled by Centre for Monitoring Indian Economy or CMIE. This data base has accounting and financial market information on more than 8000 Indian companies. The daily returns of the companies compiled in this data base are available for the two main exchanges, i.e., NSE and BSE, and are adjusted for any corporate actions such as stock splits, stock dividends (bonus) etc. and for dividends. We use the return series of one of the two exchanges wherever a particular IPO was listed first. We also cross check the return series using adjusted closing price time-series for any errors of compilation in the data base.

Of 178 issuers who came out with IPOs in four years spanning 1999-2002, there is no information available on 32 issuers in the PROWESS data base. Most of these firms are not listed on the two major stock exchanges and were listed on one of the small regional stock exchanges. Given the lack of information on these issuers in the data base and difficulty of obtaining the data on the time-series of prices in the aftermarket, we drop these IPOs from the data set for further analysis. Since there is not much trading on regional stock exchanges and given that the trading in such small firms' stocks tends to be infrequent, any analysis of their aftermarket performance is not feasible due to informational constraints. In fact, we are forced to drop 62 IPOs further. These were dropped on account of non-availability of the continuous time-series of their prices or considerable lag in listing of these IPOs at the two major exchanges even though these firms are part of the data base. Any issue, which was not listed on either of the two major exchanges within four months of the close of the issue, was dropped. Similarly, any IPO issuer for which the prices or return time-series was not available in the data base was dropped. The excluded IPOs were, on an average, considerably smaller than the included IPOs. Table 2 reports average issue-size of 94 IPOs excluded from further analysis. We separately report the average issue size of 32 issues, which were listed on smaller exchanges and for which no inform is available in the corporate data base used (PROWESS), and for the remaining 62, which had to be dropped due to delayed listing or lack of information on time-series of prices despite being in the data base.
The table also reports the average issue size of the 64 fixed price offerings and 20 book-build IPOs included in the sample for further analysis. As is evident from the table, average issue-size of excluded fixed price issues (94 in all) was about one-tenth of the average of included fixed price issues. Since fixed price issues in the sample were smaller

than book build issues, the table reports the average issue-size of book build issues separately.

Insert Table 2 about here

Of the 84 IPOs[2] analyzed in this study, as many as 41 IPOs were by firms from information technology (IT) sector. The remaining ones were from different industries and sectors with the prominence of banking, media, and electronics. Out of the 41 IPOs from the IT sector issuers, 36 were fixed price offerings and remaining five were book build IPOs.

3.2 Initial Returns on IPOs

For reporting initial returns or under pricing, we compute unadjusted log and simple return on listing. As we observe that quite a few IPOs have markedly different initial price on a few small initial trades after which the prices tend to stabilize, we also compute and report initial returns based on the closing price of first day when the stock gets listed. In addition, we also report initial returns adjusted for corresponding market movement by subtracting log market return from the log returns on listing, as given by-

$$\text{Adjusted Initial Returns on Listing} = \ln (P/O) - \ln (I_L/I_O) \quad \text{---------- (1)}$$

where, P= Closing price on the day of listing, O= Offer price, I_L= Index at close on listing date, and I_O= Index at close on Offer closing day.

We use closing price of the first day of listing on the IPO for computing the adjusted initial returns. As 41 of the 84 IPOs in the sample are from IT sector, we use CNXIT index of the National Stock Exchange for adjusting returns on IPOs from issuers belonging to the IT sector. We use the same index for computing the adjusted returns on these IPOs for their long run performance in the aftermarket, which is reported later in the paper. For the remaining IPO stocks, we use S&P CNX Nifty of the National Stock Exchange. CNXIT index instituted by National Stock Exchange is a market capitalization weighted index of 20 stocks of the firms belonging to IT sector. S&P CNX Nifty on the other hand, is a market capitalization weighted index of 50 stocks of firms

[2] The list of 84 firms in the sample is given in Appendix 1.

belonging to 24 different sectors/industries. The reason for using sectoral index for IT sector IPOs is the extreme volatility in the prices of the IT sector stocks during 1999-2002. Any meaningful evaluation of IT sector IPOs in the aftermarket required that the realized returns on these IPOs be adjusted at least for corresponding movement in sectoral stocks or indices.

In Table 3, we report the unadjusted and adjusted initial returns and their descriptive statistics for 84 IPOs in the sample. In order to make comparisons between book build issues and fixed price offering, we report the average initial returns of both types of IPOs separately. Further, as large number of IPOs using fixed price offerings during the years 1999 and 2000 were from IT sector, which was evidently "hot market" for IPOs of issuers in the sector worldwide, we report average initial returns on the fixed price IPOs belonging to the sector separately.

Insert Table 3 about here.

In line with the evidence on initial returns from IPOs worldwide, IPOs included in the sample also provided significant initial returns on an average. The average initial returns were positive and significant for all the three types of IPOs in the sample- (i) fixed price offering by issuers from IT sector, (ii) fixed price offering by other issuers and (iii) the IPOs following book building process. The average initial returns, when computed on the basis of the closing prices on the day of listing, are somewhat lower. Though unadjusted log returns are not reported in the table, the initial log returns, when adjusted for the corresponding market returns, are approximately similar to unadjusted log returns (within +/- 2% of each other). In case of 36 IT sector fixed price issues in the sample, the average initial returns on the IPOs were more than 111% based on the opening price on listing and more than 107% if closing price of listing day is used for computing initial returns. The latter is smaller as most of the time the first price is usually higher and fairly unrepresentative of the prices at which trading takes place subsequently. This can also be seen from the average initial returns on the other two types of IPOs reported in the table. Even though the variance of the initial returns is extremely high with a minimum of -19.5% and maximum of 621.5% (based on closing prices), the median returns on these IPOs were 45%.

In comparison to fixed price IPOs by the IT sector, 28 fixed price IPOs by other issuers in the sample provided, on an average, much lower returns to their investors. The initial returns on these IPOs averaged 52.8% if computed on the opening price and 38.1% if computed on closing price of the listing day. The variance of initial returns was higher for these IPOs, when compared to the IT sector IPOs despite average returns being lower. Consequently, the median initial return, on these IPOs, was a miniscule 1%. In fact, if one of these IPOs, which gave 826.1% return, is excluded, the average returns for this subset of IPOs drops to less than 9% (all based on closing prices).

Unlike fixed price IPOs, 20 IPOs following book building process had 21.3% and 18.4% initial returns on an average. Though the variance in the initial returns on these IPOs was considerably lower than the fixed price offerings, it was not trivial with the range of initial returns being -48.2% to 171.8%. The median book build IPO in the sample gave unadjusted return of 3.6%.

Based on the analysis of initial returns of 84 fixed price and book build IPOs, it is clear that the fixed price offerings, as compared to book build IPOs, had higher initial return on an average. This is in line with evidence reported in other countries (Loughran et al. 1994). Unlike US, where the under writers tend to target a select group of investors (Busaba and Chang 2002), the under writers of book build issues in India are not as selective. Despite this, the initial returns and variance of initial returns on book build issues are lower implying that the price discovery at the pre-market stage seems to be more effective in case of book building process. Though initial returns in fixed price offerings were considerably higher than the book build IPOs, the differences were not as large if IPOs from the IT sector are excluded. A large number of the fixed price IPOs from IT sector issuers (32 out of 36 in the sample) were from 1999 and 2000, the years corresponding to "dotcom" and "Internet" stock price "bubbles". Nonetheless, the variance in initial returns in case of book build issues was much less than fixed price offerings.

3.3 Characteristics of IPO Issuers

Besides initial returns or pricing, casual observations on Indian IPOs seem to suggest that the book build issues tend to be larger than the fixed price offerings. In the US

context, studies have found that initial returns are higher for smaller issues (Beatty and Ritter 1986, Ibbotson et al. 1994). In the Indian context, while Pandey and Arun Kumar (2001) find that the initial returns tend to be larger for smaller issues, Shah (1995) finds that both very large and very small issues had larger initial returns, on an average. Smaller issues in India also tend to rely more on retail investors and have relatively lower subscription from large and institutional investors. Small issues in any case, may curtail involvement of certain investors if the information production costs in ascertaining quality of an issue are relatively fixed, an argument made in the context of book building (Busaba and Chang 2002). Such IPOs also impose relatively higher risk and costs on large investors in case the stock in the aftermarket turns out to be illiquid. There is higher probability that the smaller issues would turn out to be relatively illiquid in the aftermarket. In addition to average issue size of the IPOs in the sample, we also compare average age of the IPOs as proxy for the quality of the issuers. These comparisons are reported in Table 4.

Insert Table 4 about here.

As is widely believed by many, including casual observers, book build IPOs in India are many times larger as compared to fixed price IPOs. In fact, table 4 understates the difference as among the fixed price issuers were eight public sector banks, which came out with their IPOs and each of these IPOs were for issues of more than Rs.1000 million. Excluding these 8 IPOs from 28 IPOs of issuers not belonging to IT sector reduces the average of remaining 20 IPOs in this category to Rs. 311.3 million. The smaller issue size of fixed price offerings is consistent with the argument made by Busaba and Chang (2002) that if the under writers can not target a small subset of informed investors, then fixed price offerings to the retail investors might still be optimal and might be associated with, on an average, lower under pricing. As shown by Busaba and Chang (2002), if the "carrot" of discretionary allocation by the underwriters to the informed investors is weak, then the informed investors would not truthfully reveal their information and the price discovery in such a case would be weak. In their model, the weakness in the incentive for the informed investors can be caused by lack of discretion in allocation, or presence of large number of informed investors.

The wide differences in the average issue size of book build IPOs in comparison to fixed price offerings also make the comparison of initial returns problematic. Higher initial returns on fixed price offerings could be associated with smaller issue-size and not necessarily the process opted by the issuer. Alternatively, smaller issues could be difficult to place through book building, in the presence of fixed costs of information production by informed investors unless only select investors can be targeted, which is difficult in the existing institutional arrangements for IPOs in India. Moreover, the issuers may not prefer to target small set of informed investors in case they are offering relatively large proportion of the firm's stocks, due to control reasons.

It has been argued that the age of an issuer could be a proxy for uncertainty of its IPO, with higher age reducing uncertainty (Beatty and Ritter 1986). It has also been used in analyzing cross-sectional differences in initial returns of IPOs (Kaneko and Pettway 2003). While we have not analyzed the cross-sectional differences in initial returns in the sample due to lack of readily available information on variables of interest such as the quality of underwriters, institutional and venture capital stake in the firm etc., we analyze the age of issuers in each of the three categories of IPOs. As is evident from table 4, the average and median age of issuers is highest for fixed price issuers not belonging to IT sector, followed by book build issues. The issuers from IT sector in the sample were relatively younger. As discussed earlier, eight of the 28 issuers not belonging to IT sector were public sector banks which have been in existence for long period and a large number of them were nationalized in sixties and seventies. The oldest of these banks was incorporated in 1865! Though not reported in the table, the average and median age of remaining 20 IPOs in this category drops to 7.3 years and 5.5 years respectively when these eight banks are excluded. These figures are marginally lower than that of issuers of book build IPOs. Unlike issue size, the age of issuers opting for book building process for IPOs does not seem dramatically different from the fixed price issuers if we exclude IPOs of relatively younger IT sector firms.

As a proxy for the quality of an IPO, insiders' stake in the firm has increasingly been used in research on IPO markets (Habib and Ljungqvist 2001, Pandey and Arun Kumar 2001, Kaneko and Pettway 2003). Higher proportion of the issuing firm's capital being offered in the IPO would be treated as an unfavorable signal by the investors. In Indian context, Pandey and Arun Kumar find that the IPOs receive much higher response from

the investors in case smaller proportion of the firm's capital is being offered. Though we do not have data on insiders' stake for all the IPOs included in the sample, we analyze the data on proportion of capital offered in the IPO for 54 of 60 fixed price offerings and for 16 out of 20 book-build IPOs. All these 70 IPOs were from the year 1999 and 2000. The average offer in case of 54 fixed price offerings was 28.93% of the post-issue capital; whereas it was just 3.84% in case of book build IPOs. The median post-issue capital offered was 25.38% and 2.68% respectively for these IPOs. Like average issue-size, the offered capital in case of book build issue was dramatically different from that of fixed price offerings. Put together, this implied that the book build issues are from significantly larger capitalization firms offering a small proportion of their equity. The evidence thus points out that there might be self selection among issuers in following IPO process. Smaller issuers offering large proportion of their stocks might rely on retail uninformed investors and take fixed price route. On the other hand, relatively larger firms offering small proportion of their stock, possibly for getting them listed, might opt for informed institutional investors through book building route. The higher initial returns on fixed price offerings might be compensation to the uninformed investors for the liquidity risk and trading with informed investors in the aftermarket. The discount in the book building process, on the other hand, might be to induce truthful revelation of demand, as argued by Busaba and Chang (2002).

Based on analysis of issue-size, age and proportion of capital offered in the IPO, we find that the book build IPOs in the sample are by larger firms expecting relatively higher capitalization mobilizing large amount of money by issuing comparatively very small proportion of their stocks. There are however, not dramatic differences in the age profile of issuers following book building route from that of issuers following fixed price route.

4.0 Aftermarket Performance of IPOs

In order to analyze aftermarket long run performance of the IPOs in the sample, we compute cumulative market-adjusted returns (CARs) for up to 500 trading days after listing. This period roughly corresponds to about 2 years. As pointed out earlier, any period longer than this would have forced us to restrict the sample size given the fact that book building process for IPOs started in India in 1999 only. The only other empirical study on the aftermarket performance of Indian IPOs from the period

Jan'1991-Apr'1995 by Shah (1995), as discussed earlier, computed CARs for 400 days subsequent to listing. In order to compute CARs, we compute market-adjusted daily returns as given by-

$$\text{Adj. daily return}_t = \ln (P_t / P_{t-1}) - \ln (I_t / I_{t-1}) \quad \text{--------- (2)}$$

where, P_t = closing price of the stock on day t, and I_t = closing index on day t.

For the IPOs of the issuers belonging to IT sector, we use CNXIT, a sectoral index described earlier and for the rest of the IPOs, we use S&P CNX Nifty, a broader market index albeit of large capitalization stocks. In case a stock was not traded on a given day, we assign zero return for that day.

We report the results in the form of a graph by plotting cumulative market-adjusted returns for the three distinct groups of IPOs in the sample separately. In figure 1, we report the results from 36 fixed price offerings belonging to IT sector. As a group, these IPOs exhibited considerably poor performance with logarithmic cumulative returns of around -0.85 after 500 days of trading. That meant that these stocks lost value corresponding to approx. 60% of the offer price by the end of 500 trading days after adjusting for index. Such poor returns on these IPO stocks are observed despite adjusting their returns with a sectoral index and not by a broader market index. Except for around first ten days of trading, these IPOs tended to under perform after listing and practically all gains (initial returns) on an average were wiped out after around 150 days of trading. As pointed out by Ritter (2003), firms tend to come out with IPOs in industry-specific waves and in such cases, "it is difficult to separate out bad luck from *ex ante* overvaluation if subsequent returns are low". Since most of the fixed price IPOs in the sample from the IT sector were from 1999 and 2000 (32 out of 36), the poor aftermarket performance of these IPOs can be easily attributed to poor performance of similar stocks worldwide. Though we use sectoral index for computing CARs for these IPOs, firms included in the index are relatively larger and older firms and despite being subject to the same market cycle, may not be representative of the firms coming out with IPOs. Despite poor performance on an average, 7 of these 36 IPOs performed better than the sectoral index at the end of 500 days and ended up with positive cumulative adjusted returns.

Insert Figure 1 about here.

In comparison to the IT sector, performance of other fixed price issues from other sectors was much better. In figure 2, we report the results on CARs of these IPOs. These fixed price IPOs' performance up to around one year after listing was in line with the market after wiping out gains associated with initial returns in around 45 days. In the second year, they under performed on an average but by the end of second year, the average CAR was only marginally negative at -0.05. While on an average, these fixed price IPOs performed well in the aftermarket, in large part this was due to eight fixed price offers by the public sector banks included in this group. All eight stocks of the public sector banks performed well in the aftermarket, even though all of them did not yield positive initial returns on listing. Overall, 13 out of 28 of these fixed price offerings had positive cumulative adjusted returns at the end of 500 trading days.

Insert Figure 2 about here.

In figure 3, we report average cumulative adjusted returns on stocks of those IPOs in the sample, which had opted for book building process. The initial excess returns on book build IPO stocks in the sample were wiped out by around 40 days after listing. Book build IPOs tended to under perform afterwards and ended with an average cumulative adjusted return of around -0.30 at the end of 500 days. This would mean an average negative adjusted return of approximately 25% on issue price at the end of 500 trading days. While eight of these 20 IPOs ended 500 days with positive cumulative adjusted return, remaining 12 had negative cumulative adjusted returns. A closer examination of the book build IPOs revealed that seven of these belonged to media and entertainment sector (film, music, and print). Out of these seven, six ended 500 trading days with negative cumulative adjusted returns. At the time of internet and dotcom stock boom during 1999 and 2000, this sector along with telecom was also attracting exaggerated valuations in Indian markets and the poor performance of these stocks in the aftermarket is likely to be for similar reasons as in case of stocks of the IT sector IPOs. However unlike fixed price offerings of the IT sector, four of the five book-build IT sector IPOs had positive cumulative adjusted returns.

Insert Figure 3 about here.

Overall, our results are consistent with evidence of relatively poor long run performance of IPOs reported across countries. Unlike Indian IPOs from the period analyzed by Shah (1995), wherein he finds excess returns on IPOs even after listing, we find that most of the excess initial returns on an average are wiped out in the first year after listing. Despite poor average performance of IPOs, there were strong performers in each category of the IPOs included in the sample. As far as long run performance is concerned, book build issues do compare favorably if the cumulative adjusted returns on IT sector fixed price offerings are combined with fixed price offerings of other issuers. In any case, there is a built in bias in our study due to informational constraints. Had we included all the fixed price offerings made during the period covered under the study, the comparison possibly would have been starker. The excluded IPOs from the sample, as pointed out earlier, were all considerably smaller fixed price offerings and were either not listed on major exchanges and were not traded after listing.

5.0 Discussion on Findings

In the light of evidence from other countries that book building process for IPOs is associated with lower under pricing or initial returns, we investigate the differences in book build IPOs and fixed price offerings in Indian IPO markets. Since 1999, Indian issuers have been allowed and have followed book building process for their IPOs. However, some issuers have continued to opt for fixed price offerings. This raises a question as to why different issuers opt for different processes for their IPOs. In order to gain some insight in answering this question, we investigate the differences in the characteristics of issuers and the issue opting for different mechanisms. Besides initial returns and characteristics of issuers, we also investigate another long standing strand of empirical research on IPO markets, viz., long-run performance of IPOs in the aftermarket. On the latter issue, our motivation was also to investigate for whether there are any systematic differences in the long-run performance of IPOs following different mechanism. Unlike initial returns, there is no theoretical basis for existence of systematic differences in the long run performance of IPOs having followed different mechanism for IPO pricing and allocation.

Based on analysis of a sample of 84 IPOs from a period spanning calendar years 1999 to 2002, we find that large number of issuers have continued to follow fixed price route for placing their stocks in Indian IPO markets despite having the option of book building route[3]. We find that in line with evidence in other markets, the volume (in terms of number of IPOs) in Indian IPO markets is also driven by "industry specific waves" of IPOs, as is indicated by large number of IPOs belonging to IT sector in our sample. Based on the characteristics of issuers and the issues, we find that there is a clear difference in issuers opting for book building route and fixed price offerings. Typically, book building process has been opted for by the issuers offering a small proportion of their stocks but intending to mobilize large amount of money. This indicates that the expected capitalization of such firms is fairly large. In contrast, fixed price offerings are made by issuers expecting to raise smaller amounts of money by placing large proportion of their stock. As argued by Busaba and Chang (2002), book building process may not dominate fixed price route unless a small set of informed investors can be targeted. They argue that the fixed price offers dominate book building process, in terms of under pricing, in case uninformed retail investors are targeted, who then receive allocations accordingly. Given our empirical finding that the firms following fixed price route offer a large proportion of their stock in the IPOs, it is possible that such issuers might be consciously targeting retail investors. This might happen in case they want to retain relatively unfettered control in the hands of insiders. Given another empirical finding of ours that fixed price offers are for smaller issue-size with average issue-size possibly in the reach of private equity investors, such issuers also face, at least in theory, a choice of raising funds through such routes. Such routes however, require that the control be shared with outside investor(s). Having opted for public placement of stocks, the firm (more precisely, the insiders) might be opting for lesser control by outsiders and hence might show strict preference for dispersed retail investors. Another possible and somewhat more traditional explanation for preference for retail investors is of course, the unattractiveness of small issues of firms with small expected capitalization, from the point of institutional investors given fixed cost of information production and illiquidity of traded stocks post listing.

[3] As pointed out earlier, the eligibility requirements for an issuer making fixed price offerings, in the prevailing IPO regulations in India, are more onerous than for an issuer using book building route and hence lesser regulatory restrictions can not explain as to why firms have continued to prefer fixed price offerings.

In terms of initial returns or under pricing, we find that fixed price offerings yield higher initial return on an average, as compared to book build IPOs. The variance of initial returns on fixed price offerings is also higher indicating superior "price discovery" by the book building process. Initial returns are still higher on the IPOs from those issuers, which belong to the industries under the spell of "hot issue" market. This is indicated by average initial return on IT sector IPOs in our sample.

While average initial return on the IPOs from "hot" industries/sectors is higher, these IPOs also tend to perform poorly, on an average, in the aftermarket in long run. Though the fixed price IT sector IPOs performed the worst, all types of IPOs, on an average, under performed in our sample till about two years after listing. This evidence is consistent with the evidences from studies, cited elsewhere in this paper, on long run performance of IPOs across countries. However, our findings on long run performance are markedly different from the findings of Shah (1995) on early nineties Indian IPOs. Like many other studies on long run performance of IPOs, our results also suffer from presence of large number of IPOs belonging to a few industries. Another problem issue constraining our inference on long run performance is that adjusted market returns need to be adjusted with an index, which is representative of small capitalization stocks. Otherwise, results could be easily affected due to presence of well known "size effect" in the capital markets. Another extension of this empirical work would be to compute issue-size weighted initial returns and average cumulative adjusted returns for long run performance. The findings may turn out to be somewhat different given large variation in issue-size and capitalization of firms coming out with IPOs.

Another interesting area for further research, which might also shed some light on the choice of IPO process by the issuers, is the impact of specific institutional features of Indian markets on the effectiveness of price discovery during book building process. In particular, it is worthwhile investigating as to how under writers in Indian use their discretion in allocating IPO stocks to the "Qualified Institutional Buyers".

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Table 1: IPOs in Indian Markets since 1999

Year	Fixed Price Offering	Book Build Issues	Total	Average Issue Size (Rs. in Millions)
1999	32	2	34	537.7
2000	111	14	125	237.4
2001	11	2	13	233.4
2002	4	2	6	3302.5
2003	6	5	11	1533.0
2004	12	14	26	4781.6

(Source: Prime Data Base for the years 1999 and 2000, Indian Securities Market Report of NSE and Capital Market's web-site www.capitalmarket.com)

Table 2: Issue Size of IPOs included in the Sample and excluded IPOs from 1999-2002

	Average Issue Size (Rs. in Millions)
Fixed Price IPOs included in the sample (64)	393.44
Book Build IPOs included in the sample (20)	2091.26
Fixed price IPOs excluded due to non-inclusion in the data base/ listing on regional exchanges (32)	37.16
Fixed Price IPOs excluded due to lack of continuous trading/ delayed listing/ non-availability of time-series of prices (62)	42.17

Table 3: Initial Returns on included IPOs from 1999-2002

		Return on Listing	Return at the first day's closing	Adjusted Log return on first day's close
Fixed Price IT Sector Offering (36)	Mean	111.63%	107.77%	52.71%
	Median	57.58%	45.00%	46.90%
	St. Dev.	161.08%	144.65%	48.33%
	Minimum	-30.00%	-19.50%	-29.06%
	Maximum	780.00%	621.50%	170.92%
Other Fixed Price Offerings (28)	Mean	52.75%	38.12%	10.84%
	Median	10.00%	1.00%	4.31%
	St. Dev.	186.37%	159.67%	48.45%
	Minimum	-36.36%	-62.41%	-76.62%
	Maximum	983.33%	826.17%	204.06%
Book Build IPOs (20)	Mean	21.26%	18.42%	11.15%
	Median	17.07%	3.59%	7.84%
	St. Dev.	47.69%	54.87%	36.80%
	Minimum	-60.00%	-48.20%	-55.13%
	Maximum	152.22%	171.84%	95.97%

Table 4: Average Issue-size and Age of included IPOs

		Age (in years)	Issue-size (Rs. in millions)
Fixed Price IT Sector Offering (36)	Mean	6.22	131.02
	Median	5.5	53.5
	St. Dev.	4.52	173.98
	Minimum	0	25.0
	Maximum	16	916.79
Other Fixed Price Offerings (28)	Mean	28.68	730.84
	Median	8.5	481.81
	St. Dev.	38.88	890.91
	Minimum	0	25.5
	Maximum	137	3850.0
Book Build IPOs (20)	Mean	7.35	2091.26
	Median	6.5	867.53
	St. Dev.	5.29	2720.75
	Minimum	0	26.80
	Maximum	20	8340.2

Figure 1: Cumulative Adjusted Returns on Fixed-Price IT Sector IPOs

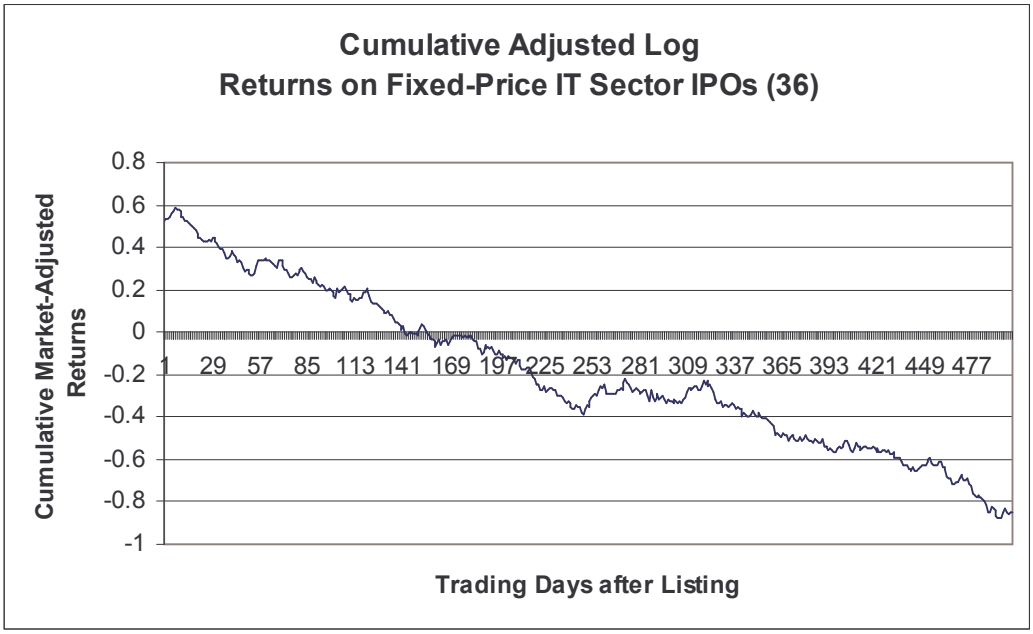


Figure 2: Cumulative Adjusted Returns on Other Fixed-Price IPOs

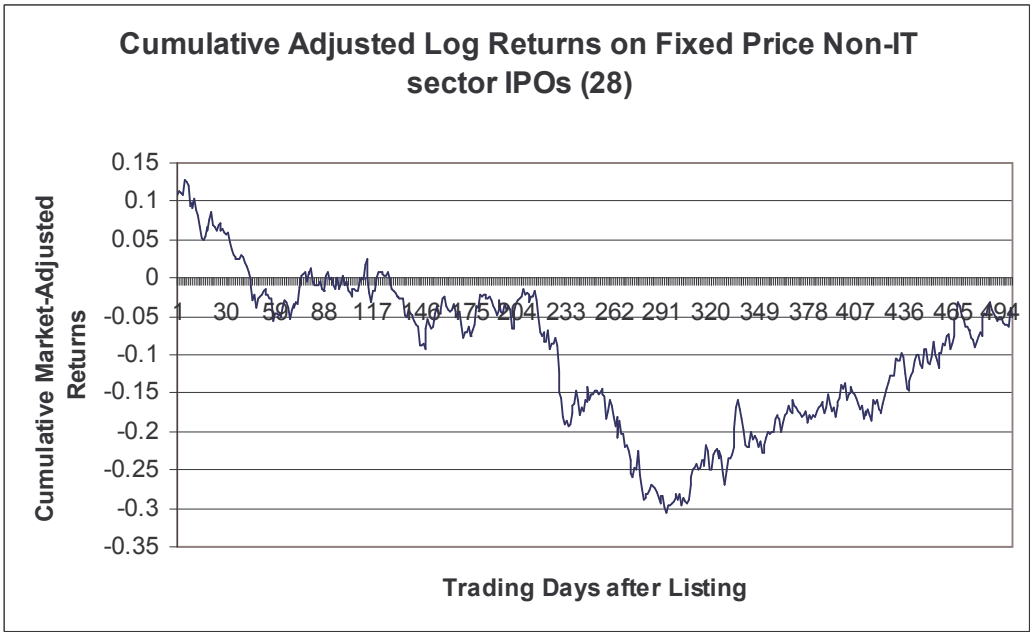
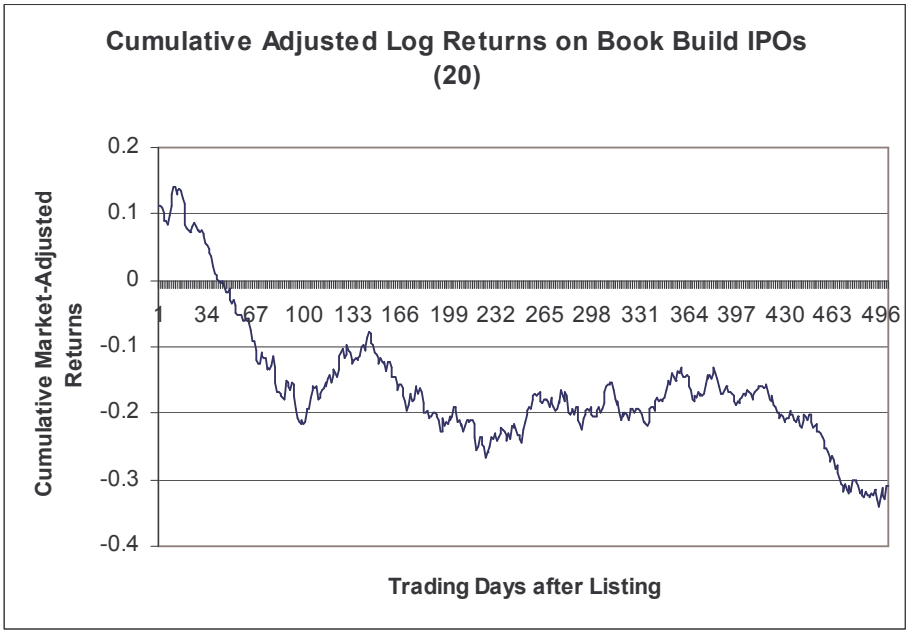


Figure 3: Cumulative Adjusted Returns on Book-Build IPOs



Appendix 1: List of Firms included in the Sample

ADLABS FILMS LTD.	V&K SOFTECH LTD.
CENTURION BANK LTD.	FOURTH GENERATION INFORMATION SYSTEMS LTD.
INDIAN OVERSEAS BANK	IQMS SOFTWARE LTD.
TELEVISION EIGHTEEN INDIA LTD.	ELDER PHARMACEUTICALS LTD.
PADMALAYA TELEFILMS LTD.	TABASSUM INTERNATIONAL LTD.
KIRLOSKAR MULTIMEDIA LTD.	OMNI AX'S SOFTWARE LTD.
TELEPHOTO ENTERTAINMENTS LTD.	DYNACONS SYSTEMS & SOLUTIONS LTD.
VINTAGE CARDS & CREATIONS LTD.	INTEGRATED HITECH LTD.
SQL STAR INTERNATIONAL LTD.	TELESYS SOFTWARE LTD.
KALE CONSULTANTS LTD.	ANDHRA BANK
SOFTWARE TECHNOLOGY GROUP INTERNATIONAL LTD.	PUNJAB NATIONAL BANK
ZENITH INFOTECH LTD.	UNION BANK OF INDIA
SIBAR SOFTWARE SERVICES (INDIA) LTD.	ALLAHABAD BANK
PENTAGON GLOBAL SOLUTIONS LTD.	SOUTH ASIAN PETROCHEM
SOFTPRO SYSTEMS LTD.	iQ INFOTECH LTD.
TELE DATA INFORMATICS LTD.	E.STAR INFOTECH
VIRINCHI CONSULTANTS LTD.	IFK TECHNOLOGIES
DATANET SYSTEMS LTD.	SEQUELSOFT INDIA
GDR SOFTWARE LTD.	HUGHES SOFTWARE SYSTEMS LTD.
GEOMETRIC SOFTWARE SOLUTIONS CO.LTD.	HCL TECHNOLOGIES LTD.
SOFTSOL INDIA LTD.	SHREE RAMA MULTI-TECH LTD.
LANCO GLOBAL SYSTEMS LTD.	CINEVISTA COMMUNICATIONS LTD.
BIOPAC INDIA CORP.LTD.	CADILA HEALTHCARE LTD.
IT&T LTD.	MASCOT SYSTEMS LTD.
OPTO CIRCUITS (INDIA) LTD.	AKSH OPTIFIBRE LTD.
GALAXY MULTIMEDIA LTD.	MUKTA ARTS LTD.
SIRIS SOFT LTD.	HUGHES TELE.COM (INDIA) LTD.
AJANTA PHARMA LTD.	MRO-TEK LTD.
GLENMARK PHARMACEUTICALS LTD.	PRITISH NANDY COMMUNICATIONS LTD.
BARON INFOTECH LTD.	TIPS INDUSTRIES LTD.
POLARIS SOFTWARE LAB LTD.	BALAJI TELEFILMS LTD.
ONLINE MEDIA SOLUTIONS LTD.	AZTEC SOFTWARE & TECHNOLOGY SERVICES LTD.
TIMES BANK LTD.	CREATIVE EYE LTD.
PNB GILTS LTD.	MOSCHIP SEMICONDUCTOR TECHNOLOGY LTD.
MELSTAR INFORMATION TECHNOLOGIES LTD.	MID-DAY MULTIMEDIA LTD.
SIBAR MEDIA & ENTERTAINMENT LTD.	D-LINK(INDIA) LTD.
SYNDICATE BANK	BHARATI TELE-VENTURES LTD.
VISESH INFOSYSTEMS LTD.	
KANIKA INFOTECH LTD.	
VIJAYA BANK	
IDBI BANK LTD.	
BALWAS E-COM INDIA LTD.	
CYBERSCAPE MULTIMEDIA LTD.	
VISION ORGANICS LTD.	
SAVEN TECHNOLOGIES LTD.	