The Indian IPO Market: Suggestions for Institutional Arrangements

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Abstract

In the companion paper on empirical regularities of India's IPO market, we found a high degree of underpricing. IPO underpricing is not healthy – it involves penalising unlisted companies with a high cost of capital; this is unlikely to be a criterion along which the efficiency of resource allocation is maximised.

In this paper, we propose four policy alternatives, which are primarily (though not exclusively) aimed at decreasing the extent of IPO underpricing:

- We propose improvements to the quality of information disclosure at the time of a public issue.
- We propose giving firms greater freedom to choose the offer price close to the issue date.
- We propose an auction–based strategy of operation in the primary market.
- We offer a way to legitimise the gray market and bring it within the fold of the institutional framework governing financial markets of the country.

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1 Empirical Results Reviewed

At the outset, we will summarise the conclusions of the companion empirical paper [Sha95].

1. India's IPO market is characterised by pervasive underpricing. In our dataset, on average, the price at first listing was 105.6% above the offer price.
2. The commonest delay between issue date and listing date is 11 weeks, and it is highly variable. This delay is strongly associated with issue size, where bigger issues tend to have shorter delays. There is some evidence that the listing delay has diminished over the years, but there has been no improvement in 1995 as compared with 1994.
3. Because the listing delay is *variable*, it is incorrect to use simple averages in expressing IPO underpricing, this would be clubbing together returns obtained over different lengths of time. Because this delay is *long*, it is necessary to measure returns on IPOs in excess of returns on the market index. Hence we focus on the weekly returns on IPOs, in excess of weekly returns on the market index. We find that the average IPO underpricing comes to 3.8% per week by this metric.
4. Our examination of the time–series of monthly volume of IPOs and of monthly average underpricing reveals a lagged effect of fluctuations in the market index. The volume of IPO issues in month x is *positively* influenced by returns on the BSE Sensex between months $x-2$ and $x-4$ – for example, high stock market returns from 1 January to 31 March would generate a higher volume of IPOs in May. The average underpricing in month x is *positively* influenced by returns on the BSE Sensex between months $x-5$ and $x-8$ – for example, high stock market returns from 1 January to 30 April would generate *higher* average underpricing of new listings in September.
5. The inter-company differences in underpricing are remarkably difficult to model. We find that issues with offer price above face value have much lower underpricing, but the underpricing gently increases with the offer price. Underpricing is very high amongst the smallest issues – it drops sharply in the bottom quartile by issue size and gently increases as the issue size gets larger beyond the bottom quartile. Returns on the BSE Sensex in the past impact underpricing with the same lagged relationship mentioned above. Finally, the ratio of issue size to project outlay is negatively associated with underpricing.
6. The average long-run trading frequency of IPOs is 74%, which is much worse than the A group companies, which have an average trading frequency of 94%. The trading frequency of IPOs is slightly higher after first listing, and settles down to the long-run average within the first ten days or so.
7. There is a very striking pattern of extremely good returns to new listings in the first calendar year – on average, IPOs earn 40% in excess of returns on the market index in the first 200 trading days. This is very unlike new listings on other markets in the world, and may well reflect price manipulation by promoters. This conjecture is supported by the fact that these sharp excess returns are mostly reversed in the even-shorter period of the following six calendar months. These unusual excess returns are the most pronounced for IPOs with an issue size between Rs.45 million and Rs.75 million. After this disturbance, new listings appear to behave like the market index, on average.

8. In all, the price at the close of the very first day of trading is an approximately unbiased forecast of the price 400 trading hence, barring the fluctuations in the market index.

9. We offer a new way of measuring the process of price discovery, and find that markets are strongly "learning" the correct prices in the first few days, but the price discovery process goes on to a lesser extent for as long as 1.5 calendar months. During this initial period, and especially during the first five trading days, mispriced assets are likely to exist.

In the companion empirical paper [Sha95], we had suggested that underpricing may derive from the following basic problems of uncertainty and information: asymmetric information, fixing the offer price too early, the interest rate float, the liquidity premium, building loyal shareholders, and merchant banker rewarding favoured clients.

2 Underpricing is Not Optimal

So far, we have:

1. Empirically documented the extent of IPO underpricing in the economy, and

2. Suggested that IPO underpricing is structural, that it is caused by basic problems deriving from the microeconomics of uncertainty and information. Thus it is not like market inefficiencies which vanish when "enough" agents are informed about the problem.

Why does IPO underpricing matter? Why can we not simply exist at a high–underpricing equilibrium? Chronic IPO underpricing hurts the economy in two ways:

- It skews the cost of capital as offered to firms by the price system. Incumbent listed firms are able to access capital at considerably more attractive prices than unlisted firms. For example, a firm which was listed two years ago may be able to raise resources at a P/E of 20, while a similar company in the same industry going public for the first time may be able to raise resources at a P/E of 10.

  There is no reason why this bias, which constitutes an entry barrier against young firms, should be consistent with an efficient allocation of resources. It would help the efficiency of resource allocation if this $2\times$ penalty to firms going public for the first time were eliminated.

  Another argument follows from the implications of asymmetric information: the primary market is the channel through which good firms subsidise bad firms. This generates the wrong incentives in a market economy for resource allocation.

- Firms face this hurdle in making the transition from closely–held companies into widely–held companies, and would hence defer going public if possible. This slows down the lifecycle evolution of the management and organisation of the firm.

  Other things being equal, it hinders the egalitarian wealth distribution produced by widespread ownership of stock.

3 The Role for Public Policy

As has been emphasised above, IPO underpricing is not a market inefficiency. In numerous situations, blemishes of the price system sort themselves out through high–speed error–correction mechanisms such as arbitrage, or low–speed error–correction mechanisms such as the traditional "equalising differences". However, IPO underpricing is not one of these situations.

If anything, there are forces at play which can keep the system trapped in the wrong equilibrium. An important factor here may be oversubscription risk. If we initialise a system with high IPO underpricing, then this elicits oversubscription, and many agents risk getting no allotment. Once the system has chronic oversubscription, IPO underpricing has to become attractive enough to invite investors bear oversubscription risk. Thus a regime involving high IPO underpricing might be able to maintain itself at equilibrium.

IPO underpricing is hence one of the situations where public policy *can* help produce a superior outcome. The remainder of this paper is devoted to four suggestions in this vein. These suggestions are far from interventionist; instead they are focussed on the institutional arrangements governing public issues. They help agents solve the fundamental microeconomic problems of the IPO process described above by eliciting better information processing as applied to price discovery, and better trading arrangements. The suggested role for government is to enable and foster such institutions.

4 Informational issues

4.1 Informed investors vs. Lay investors

Asymmetric information is the core problem underlying IPO underpricing. India's IPO market is unique by world standards for the institutions and human capital which enable the direct marketing of IPOs to millions of lay investors all over the country. From the viewpoint of IPO underpricing, however, such an IPO market is a very poor one, because it emphasises reaching out to uninformed investors – insofar as these uninformed investors cannot discriminate between "good" and "bad" IPOs, the "good" IPOs have to strongly underprice themselves in order to stay attractive.

IPO underpricing would diminish if we could move away from such an IPO market towards one where most shares at an IPO are sold to the relatively informed institutional investors, who would turn around and sell mutual fund paper to the lay investors. Such a transformation has already begun in many ways; progress in this direction is likely to have a major impact upon the extent of underpricing.

Today, SEBI regulations require that 25% of the issue size must be offered to the public. There has been a proposal for raising this minimum fraction to 50%. Such a move would be likely to worsen IPO underpricing, because it takes a step back towards an IPO market dominated by relatively uninformed lay investors.

4.2 Information Disclosure

Better mechanisms for information disclosure are a direct way of directly addressing the difficulties caused by asymmetric information. We can think of numerous ways to improve the quantity and quality of information produced by firms going public. Some of the more readily implementable of these ideas are presented here:

- Firms should be required to show five years of audited annual reports when they go public. Obviously, this restriction will not help with completely new startups.

  Audited annual reports are crucial to understanding the track record of a company, as distinct from the fragmentary information currently shown in the prospectus. Five years of history is required for eliminating pre–issue window–dressing, for assessing growth rates after removing non–recurring transactions, etc.

  A large machinery for dissemination of these annual reports is not required; instead we can leverage off the existing channels of information dissemination in the economy. If CMIE could obtain the past annual reports of a firm going public, then this information would reach thousands of financial market participants within a timelag measured in days.

- A monitoring mechanism should be in place for assessing the quality of projections contained in the prospectus, to compare actuals against those previously predicted.

  With such monitoring, bad firms would obviously be less able to raise funds after poor use of resources from a first issue. However, the most important effects of a monitoring mechanism of this nature take place at the *merchant banker*. If the error in the outcome as compared with projections of all issues by a given lead manager were publicly known, then the reputation of the lead manager (and his ability to place future issues with low underpricing) would hinge on unbiased and efficient projections being produced regularly in prospectuses. This would lead to superior projections without requiring a bureaucratic machinery to micro–monitor firms going public.

  With such a system, the merchant banker would become a crucial project appraisal stage for companies going public, and the track record of the merchant banker would be a major factor in placing issues with minimal underpricing.

- Better norms need to be created for the presentation of accounting and stock market ratios in the prospectuses. A wide range of different formulae are currently employed for calculating return on net worth, EPS, P/E and even high/lows. This unpredictability reduces the information content of the prospectus, and less information generates more underpricing.

- SEBI can play a valuable role by playing policeman on the quality of information disclosure in prospectuses. To the extent that purchasers in the primary market trust information in prospectuses, their ex-ante uncertainty about the company diminishes, and so does the need for underpricing. If SEBI plays a part in assuring quality control of information in prospectuses, everyone benefits.

5 Government Regulations

Under the current institutional framework of public issues, the offer price must be defined when the prospectus is given to SEBI for clearance.

The correct role of the regulatory agency in a market economy is to ensure truthful disclosure of comprehensive information by the issuer, which would enable the valuation process of the market. The regulatory agency should have no role in price setting.

Thus the issuer should not need to set a price when obtaining SEBI approval. In this case, the issuer would set the price days or hours before the issue opens. This would reduce the risk to the issuer of market-wide price fluctuations.

Similarly, regulations which prohibit startups from pricing shares above the face value are an avoidable complication. In an analytical view of finance, "premium" (defined as offer price minus face value) is irrelevant, and there is no reason for government to concern itself with it.

6 The Auction–based Alternative

Our presentation of the auction–based alternative is inspired by the Japanese system, and strongly based on the analysis and results of Pettway and Kaneko, 1994 [PK94].

In Japan, the IPO process works as follows. First, roughly half the shares being issued are sold through an auction. The public issue takes place after the auction is completed. The auction works as follows:

- Employees of the issuing company and similar interested parties are prohibited from participating in the auction. Bids cannot exceed 5000 shares.
- At the auction, there is no "offer price" or "suggested price". Participants are required to select a price for the company using their own information and analysis.
- The bids are sorted by price, and shares are allocated to the bidders at the price they quoted, until the auctioned portion of shares are exhausted. Those allocated shares by this mechanism are charged their own bidding price.

The nonauctioned shares are priced at the weighted average price of the auction. Within this constraint, the underwriter is free to place the unauctioned part as he pleases; e.g. through private placement, or public offer, etc.

In this system, price discovery takes place through the auction. The restriction disallowing bids above 5000 shares reduces the role for strategic behaviour at this auction.

Once the auction is complete, a market–determined price is known, and the details of placement at this price are left to the underwriter.

There is some evidence that this system has helped reduce the degree of IPO underpricing in Japan. This evidence is unfortunately clouded by two changes in the institutional structure of the Japanese primary market which took place close to each other:

- Earlier, Japan had some complex limits on the trading price at first listing. On 1 April 1988, these limitations were abolished.
- On 1 April 1989, the public auction process was introduced.

Unlike India, the primary market in Japan has little activity as measured by the sheer *number* of issues. Only 17 IPOs took place between 1 April 1988 and 1 April 1989, so it is not possible to precisely separate the contribution of the two regulatory changes.

Pettway and Kaneko [PK94] report the following results for the extent of IPO underpricing over the three phases:

		Underpricing	
Period	Number	Mean	Std. Devn
1/1/81 – 31/3/88	93	70	83
1/4/88 – 31/3/89	17	19	15
1/4/89 – 31/3/93	37	12	25

Overall, the auction system appears to have diminished the extent of underpricing, but our statistical precision is limited by the low number of IPOs. For example, a 95% confidence interval in period 2 runs from 11% to 27%. Changes in the institutional structure were able to reduce underpricing from 70% to 12% on average, however part of this effect is owing to the elimination of price limits upon first listing.

Hanley and Ritter [HR] also suggest explicit auctions work better than the institutions used in the US (the "firm commitment" contract). The cite evidence from France and Netherlands:

> In France, IPOs are less underpriced than in many other countries. This is of interest because the contractual mechanisms for going public in France bear a much closer resemblance to explicit auctions than is true in the US. Indeed, Wessels (1989) reports that in the Netherlands firms using a procedure similar to that used in France are not underpriced at all, whereas those using a fixed price offering (similar to a firm commitment offering in the US) have average initial returns of 12.3%.

We need not adopt every detail of this system in India. For example, it may make much sense to amend the upper bound on the number of shares applied from a fixed 5000 shares to $\frac{1}{4}$% of the auctioned shares. The trading software on the NSE is equipped to conduct auctions, and is an eminently feasible option. What is important here is the basic insight, that of exploiting market information to form a price, and of sending a powerful signal about the correctness of this price at the public offer, is on track.

The theory of auctions is a very well developed branch of economics, and many insights from this can be applied to designing a good auction mechanism (See Feldman and Mehra, 1993 [FM93], and Chari and Weber, 1992 [CW92]). For example, as is the case with US treasury bill auctions, if the auction is a "discriminatory price auction" (i.e. the winning bidders pay the price that they had bid), then there are strong incentives for each agent to learn about how other agents are bidding. This information search is waste for society, it is unrelated to the basic question, which is learning about how much the shares on sale are worth. At equilibrium, the effort spent by agents in studying how others in the market are bidding will be associated with enhanced underpricing. This has led to a consensus amongst economists that US treasury bills should use a uniform price auction instead of a discriminatory price auction.

6.1 Initialisation

Once auctions are permitted as one way in which firms can access the primary market, firms would strongly prefer this mode because it requires less underpricing. SEBI would need to have operational procedures to supervise the correct functioning of the auctions.

7 Legitimising the Gray Market

While hard data is unavailable, the gray market appears to have grown greatly over the past decade.

Even after eliminating the 4% of all IPOs with the most extreme underpricing, the standard deviation of weekly returns on IPOs in excess of returns on the market index is very high at 3.6%. In the light of such variability, we would surprised if such a market had *not* emerged. The unpredictability of allotments, and the risky returns after allotment, are a source of considerable risk to agents. As Burton Malkiel [Mal90] observes in *A Random Walk down Wall Street*,

> Part of the genius of financial markets is that, when there is a real demand for a method to enhance speculative opportunities, the market will surely provide it.

The gray market is a grassroots organisation of economic agents who benefit from speculative activity in a risky environment in exactly the same sense that the first un–institutionalised financial markets grew out of trading in agricultural commodities many centuries ago.

Even if it were optimal, banning the gray market is not an enforceable policy option. Why can we not simply ignore the gray market, and go on pretending that it does not exist? There are two arguments, one emphasising a *cost*, and the other emphasising an *opportunity*.

- The cost.

  As long as the gray market continues in its illegal state, it stands outside the legal framework of society. The gray market operates on trust; enforcement mechanisms employed have to perforce stand outside the legal channels of the country. All gray market activities are off–balance–sheet and outside the purview of taxation.

  It is not healthy for the country to have a huge trading activity going on outside the pale of the law.

- The opportunity.

  The speculative efforts of myriad gray market participants are a mechanism of *price discovery*. The cumulative information processing put in by agents between issue date and listing date in the gray market should be a valuable backdrop of price formation at first listing.

  To some extent, this is already taking place; the trading activity at first listing is very much a carryover from the gray market. If we can create better institutions governing the gray market, then (a) more agents will be able to participate in the gray market, thus improving the information processing on this market, and (b) the price discovery efforts on the gray market will become a public good though publicly disclosed price quotes.

In the following section, we sketch one policy option through which the gray market can flourish in a legal manner, while contributing to price discovery between issue date and listing date. It is obviously an unusual line of attack, and there are many legal and implementation impediments along the way. However, it does appear to be an approach for legitimising the gray market and harnessing it in information processing and hence resource allocation in the economy.

7.1 Tradeable Cards

We can best describe a system with tradeable cards by showing the public issue process as it would then operate:

1. When an application form is submitted for a public issue, there would be no name or address attached. Application money would be paid, and the applicant would be issued one credit–card style plastic card for each 1000 shares applied for.

   The card would merely be proof of having applied for 1000 shares of a given public issue, the applicants name would not be associated with it. The card would be the *only* proof of having applied for a thousand shares.

2. These cards would be fully, and legally, tradeable. The issuing company would make no attempt at tracking how the card changes hands. Tradeable

cards would give investors an exit route after public issue but before listing. This would eliminate the liquidity premium component of IPO underpricing.

Organisations like the OTCEI could offer two way quotes on these cards, thus creating publicly available price quotes.

3. At some point in time, which we shall call the "redemption date", the company would announce the allotment for this public issue. Under proportional allotment, it would perforce have to be an allotment rule of the form "n shares for each card with probability λ". Regardless of the degree of oversubscription, we can find a probability λ which makes n a trading lot. By applying the allotment rule, the company would make a list of card numbers who have won allotment and print these in a newspaper.[1]

   The merchant banker would be required to give out the list of cards which won allotment in electronic form to anyone who asks for it (e.g. the OTCEI and similar gray market participants, electronic information companies who could offer services which tell whether a given card won allotment or not, other newspapers who wish to carry this information, etc).

   The moment this advertisement appears, the market value of cards which got no allotment would drop to the refund they are entitled to, and the cards that have got allotment would start trading at the price of n shares.

4. Once the ad has appeared, the person who holds the card would walk up to a publicly accessible machine, which is like an ATM machine, where he inserts the card, types in his name and address, and (on the spot) is issued share certificates. A less high–tech way of implementing this same step would be to have human operators at a window who would take the card, type in the name and address of the customer, and issue share certificates.

   This style of share allotment eliminates the entire difficulty of the postal system, whereby shares often get listed before all applicants have got share certificates. In this system, SEBI could ensure that these machines are giving out share certificates a full week days before listing date.

   Cards which got no allotment would be accepted by these machines, and a refund check would be handed to the customer.

This system achieves a "fully legal" gray market. While it does not offer a full secondary market for trading in these cards, price discovery could easily coalesce around institutions like the OTCEI who would offer two way quotes on these cards.

Price Discovery

The market price of the tradeable cards at a time t would be p_t. How does this connect with price at first listing?

The financial contract here can be represented as follows: T days from now, at redemption date, a lottery will be drawn and with probability λ, the card will become worth the refund money R; with probability $1 - \lambda$ it will become worth n shares of the company.

[1] An advertisement showing all applications which have obtained allotment is quite feasible. Recently Liberty Shoes Ltd. did just that (page 10, *Business Standard*, 17 October 1994).

Using information available at time t, including the market price of the card at time t, we would like to estimate the price at first listing. This problem appears to be well–posed once the allotment rule is made public, so that λ and n would also be known.

Uncertainty in T, i.e. unanticipated delays in allotment, would be a complication. However, it does appear that pricing algorithms could be constructed which infer the price at first listing as a function of the market price of the cards.

Thus there appears to be a clear connection between price discovery as applied to the cards and price discovery at first listing. The policy implications of this reasoning are:

1. Knowing λ and n is absolutely crucial for mapping the card price to the listing price. A very short time after the issue, the firm should announce the allotment *rule*, i.e. the probability that a given card wins allotment, and the number of shares that successful cards will get. Note that this is not the full list of cards which won allotment, this is just a simple function of the degree of oversubscription.
2. Uncertainty in T is also a hurdle, though not an insurmountable one. As early as possible, the firm should announce the redemption date (i.e. the date at which the advertisement showing the list of successful cards appears, and when the machines start accepting cards and issuing shares).

Difficulties of this system

- Such cards would not be legally tradeable under the present legal system.
- Merchant bankers would have to install numerous of these ATM–like machines, which accept cards and print out share certificates, all over the country. It is not possible to predict where a given customer will go to present his card, so the unique identifying numbers on the share certificates must be chosen only at the instant the card appears before the machine. These machines would need reasonable computer networking nationwide.[2]
- This system is biased against gray market participants in small towns, who would have to travel to a larger city to use the certificate–issuing machine. Merchant bankers would then compete with each other to establish larger networks of more far–flung machines, so the reach of this system would steadily improve over time.
- As with ATM networks, there is the real risk of a monopoly controlling the network; that network would then earn monopoly rents. At a policy level, the objective should be to foster an environment with many merchant bankers competing in setting up networks of these machines, while still offering interoperability between the machines (just as ATM cards of different banks should be respected by different ATM networks).
- This system does not allow small investors to participate. Cards worth an application of 100 shares could easily be cumbersome, and applications of 1000 shares may be out of reach for many investors.

[2] Such networking obviously has accounting and management motivations, but it is also crucial in dealing with forgeries. Once a given card number has been issued shares, a second card which appears at any window in the country bearing that same number should alert law–enforcement agencies. This requires computer networking.

- The cards are like money, with problems like theft, loss or destruction, and counterfeiting. The legal system would have to deal with theft and counterfeiting.

  If a criminal could manufacture these cards, then counterfeit cards could be a serious problem. The best line of attack in deterring this seems to be to define specifications for the card which make the manufacturing process for these cards relatively convoluted.[3] This would make it difficult to setup small–scale counterfeiting operations.

  Authentication procedures have a role here. With authentication procedures, the criminal would not be able to read the list of cards which won allotment (which would be publicly available) and mass–produce the winning numbers. The only recourse he would have is to buy a card on the market, read the (encrypted) number on it, and replicate it. This is slower and more difficult, and hence reduces the rate of return in the forgery business.

7.2 Initialisation

Thus tradeable cards appear to be a useful idea "once well established". It may not be difficult for such a system to come about on its own, once legal impediments are removed.

From the viewpoint of an investor, a public issue which works with tradeable cards is more attractive because of the liquidity obtained.

From the viewpoint of firms competing for resources on the primary market, tradeable cards are attractive because they would help attract investors. By eliminating the liquidity premium, they would reduce underpricing (i.e. the issuer would obtain a better price). By improving price discovery, tradeable cards reduce the volatility of the stock price upon first listing.

From the viewpoint of merchant bankers competing to be the lead manager to a given issue, offering the infrastructure of tradeable cards would be a competitive edge. Firms would prefer recruiting lead managers who had the capability of using the tradeable cards system.

From the viewpoint of brokers and institutions like the OTCEI, tradeable cards generate trading and hence brokerage fees.

[3] For example, the hologram on the Citibank Visa card performs this function. The magnetic stripe could be written in a relatively twisted way which is difficult to replicate in a garage shop.

8 Factors underlying Underpricing Revisited

Let us go back to the six factors underlying IPO underpricing, and see how our policy proposals address them.

1. *Asymmetric Information*

   Superior information disclosure directly reduces the asymmetry of information between firms and investors, and diminishes underpricing as a consequence.

   The auction system brings market information to bear on the choice of offer price, and should help reduce the underpricing caused by asymmetric information.

2. *Fixing the Offer Price Early*

   Allowing firms to choose the offer price closer to issue date directly addresses this problem.

   The Japanese auction system eliminates the entire concept of the issuer fixing offer prices.

3. *The Interest Rate Float*

   This will only shrink when issuing firms and merchant bankers are able to become more efficient, and shorten the lags between issue date and listing date. None of the policy proposals above address this.

4. *The Liquidity Premium*

   This will vanish in a system with tradeable cards.

5. *Building loyal shareholders*

   Even though firms may want to build loyal shareholders at equilibrium, the Japanese auction system prevents them from engendering underpricing as a means towards this end.

6. *Merchant Banker Rewarding Favoured Clients*

   The repeated game between the merchant banker and his institutional clients is irrelevant in the Japanese auction system.

The combination of these policy proposals should thus help dramatically reduce the degree of IPO underpricing.

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