Speculation, Price Limits and IPO Markets: Evidence from a Natural Experiment *

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Introduction

Many firms raise capital by going public through Initial Public Offerings (IPOs) and listing their shares on various exchanges. Initially, the price per share is either fixed or determined through the book-building process. The primary market investors bid within the price bracket set by the firm for efficient price discovery. As soon as the shares are allotted through the primary market, traders and investors initiate the buying and selling of stocks in the secondary market. Because of uncertain initial prices in the secondary market, many traders and investors speculate in IPOs to reap immediate profits. The high volume of speculative trading in the initial days of an IPO further increases price volatility, leading to abnormally high prices. To tackle this situation, the Securities Exchange Board of India (SEBI) brought introduced a new regulation in January 2012. As per this regulation, daily returns of IPOs raising less than INR 2.5 billion are bound within a bracket of ±5 %, and daily returns of IPOs raising greater than INR 2.5 billion are bound within a bracket of ±20 %. The price limits are maintained for the first 10 trading days after IPO listing. This restriction led to many changes in both the behaviour of IPO issuing firms and the trading activity by various investor types, post IPO listing. We will discuss these trends through the results of our tests treating the introduction of the new regulations as the setting of a natural experiment. We use a customized data set from the Bombay Stock Exchange (BSE) in India for pre- and post-regulation periods. Moreover, we used matched sample analysis to compare IPOs in the pre- and post-regulation periods.

1) Lower Price Variability

The ratio between the open price and the highest price for the day was calculated for all IPOs listed in pre- and post-regulation periods. As shown in Fig. 1 (a), the mean of the open-high ratio – represented by horizontal dashes- declined significantly from around 1.21 pre regulation to 1.05 post regulation. Also, the interquartile range of open-high ratio – represented by the vertical lines – declined post regulation as well.

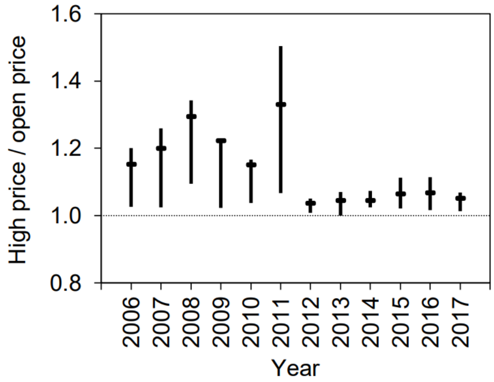

Fig 1(a): Distribution of high relative to open prices

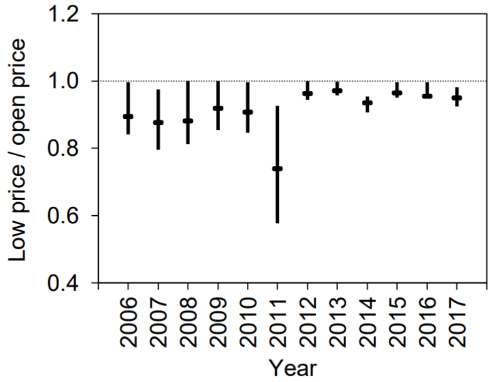

Fig 1(b): Distribution of low relative to open prices on

Similarly, Fig. 1(b) depicts the open-low ratio for the pre- and post-regulation IPOs. The mean open-low ratio has decreased (in absolute terms) from 1.13 pre regulation to 1.04 post regulation. The reduction in the mean open-high and open-low ratios and the reduced interquartile ranges depict that the IPO market price movement became less variable after 2012, thus reducing speculative opportunities.

On an open-close basis, the returns for the first day of the IPO, after being capped is shown in Fig 2(a). The abnormal lottery-like returns evident in the pre-regulation period declined drastically in the post-regulation period, leading to less opportunities for speculation. Although the price brackets were imposed for a period of 10 days after IPO listing, further computation of the standard deviation of returns for an entire month suggests that the volatility, in general, reduced even beyond the 10th day (except for the spill-over effect visible on the 11th day) when compared to pre-regulation periods, as visible in Fig 2(b). The key reason behind this could be the reduced uncertainty around the IPO as it reaches the 10th day of trading.

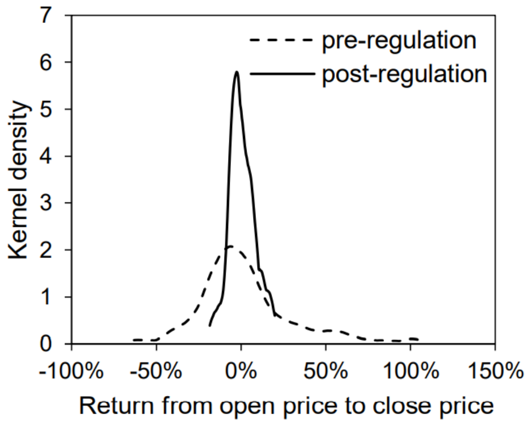

Fig 2(a): Open-to-close return on first day of trading

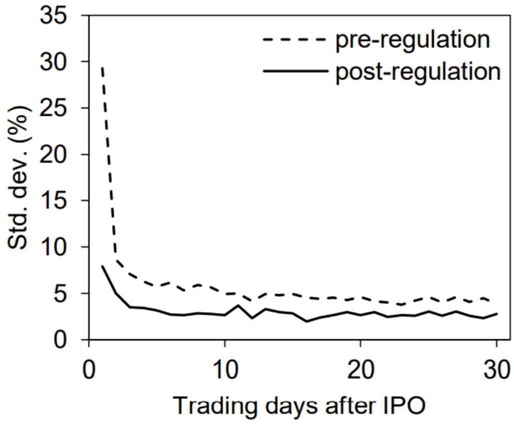

Fig 2(b): Standard deviation of daily return after IPO

2) Lower demand for IPO stocks

The reduced volatility post regulation made it difficult for retail investors to speculate. Thus, the usually high demand for the IPOs declined drastically. The demand by retail investors declined, as evidenced by a decline in subscription rates from 9 times the shares allotted to them in the pre-regulation period to 4.7 times their allotted shares. Other investor segments, such as qualified institutional buyers (QIBs), also demanded fewer IPO shares post regulation, visible in the decline from subscription rates of 36.1 times pre regulation to 12.6 times post regulation. This trend was not evident for high net worth individuals (HNIs) as their demand rose from nearly 49 times in the pre-regulation period to 75 times in the post-regulation period. Other investor segments like employees also showed a similar trend, whereas the existing shareholders' trend was not significant enough in the two periods.

Share allocations were similar between the two periods, likely due to existing regulations on how IPO shares should be allocated among investor groups. One exception is the increase in shares allocated to HNIs, possibly due to their increased demand, as discussed above.

	Pre-regulation	Post-regulation	Difference
Times subscribed:			
Qualified institutional buyers	36.086	12.603	– 23.483
Retail investors	9.042	4.678	– 4.364
High-net-worth individuals	48.643	75.437	26.794
Employees	0.384	0.208	– 0.176
Existing shareholders	0.038	0.171	0.133
All investors	28.613	18.970	– 9.643
Percent allocation:			
Qualified institutional buyers	55.174	53.954	– 1.220
Retail investors	31.343	30.051	– 1.292
High-net-worth individuals	11.684	14.817	3.133
Employees	1.457	0.672	– 0.784
Existing shareholders	0.342	0.506	0.164
All investors	100.000	100.000	0.000

Table 1: Subscription and allocation by investor type

3) Changes in Investor Trading Behaviour

The number of orders per minute is a factor that indicates the general level of sentiment in the market. A higher number of orders per minute suggests a positive sentiment and thus a higher level of speculative trading. This sentiment was distinctly visible on the first trading day of an IPO in the pre-regulation period. After the imposition of the new law, the trading activity declined from 502 trades per minute to 247 trades per minute. A similar declining trend can be seen in factors like share traded per minute relative to share offered, and share traded per minute relative to shares outstanding.

	Pre-regulation	Post-regulation	Difference
Number of trades per minute	502.540	246.850	– 255.690
Shares traded / shares offered per minute (%)	0.438	0.051	– 0.387
Shares traded / shares outstanding per minute (%)	0.107	0.011	– 0.096

Table 2: Overall trading activity by investor type

Due to the capped returns and lesser lottery-like payoffs, individual investors became net sellers after the regulation period. As a result, their sell volumes were 16.1% higher than their buy volumes. In contrast, institutional investors became net buyers post regulation, with a 15.7% increase in net buying activity. Other investor groups did not show significant changes in buying or selling activities from pre to post regulation.

To ensure an even more efficient IPO price discovery in the secondary market, SEBI implemented an hour-long pre-market auction where the stocks are traded and settled at an equilibrium price taken as the open price for that day in the normal market. After considering the trading activities in the pre-market auction, retail investors once again are the main sellers, with a 68.9% share in all sell volumes and a total of 82.5% share in all sell trades.

All these findings indicate that retail investors became net sellers post regulations if we consider the first day of trading an IPO and the pre-market auction.

4) First day returns in IPOs

We calculated the returns on the first day itself by considering both offer-to-close as well as offer-to-open returns. The latter would signify the IPO's first-day returns, excluding the returns of the first trading day. When the unmatched samples, i.e., random samples from pre and post-regulation periods are examined, there is a visible decline from 15% to 11.5% in offer-to-open returns and 19.5% to 11.5% in offer-to-close returns. However, these results are not statistically significant. We see a similar trend when we compare matched IPO samples. The first day returns decrease from 14.2% pre regulation to10.9% post regulation. Again, however, the differences between all these data points are statistically insignificant.

	Pre-regulation (N=297)	Post-regulation (N=96)	Difference	t-statistic	p-value
Unmatched samples					
Open price / Offer price – 1 (%)	15.041	11.528	– 3.513	– 1.358	(0.175)
Close price / Offer price – 1 (%)	19.511	12.483	– 7.028	– 1.522	(0.129)
Matched samples					
Open price / Offer price – 1 (%)	14.205	10.900	– 3.305	– 1.080	(0.282)
Close price / Offer price – 1 (%)	12.714	11.956	– 0.758	– 0.190	(0.852)

Table 3: IPO first day returns (results are not statistically significant)

There is no significant change in the percent returns on the first trading day of IPOs even after the price bands were in effect post regulations. These combined results indicate that IPOs were underpriced, and that the underpricing is approximately similar pre and post regulation.

5) One year returns in IPOs

In the pre-regulation period, higher speculation abnormally inflated the prices of the IPOs during the initial days of their trading, thus leading to negative returns on a yearly basis. In contrast, after the price bands were imposed in 2012, the annual returns became positive due to reduced speculation in the initial days. This conclusion follows from an analysis of future returns in two matched IPO samples, pre and post regulation. After factoring in the normal market return for that particular year, an investment in a pre-regulation IPO gave a negative abnormal return, whereas an investment in a matched IPO post regulation gave a positive abnormal return (Fig 3).

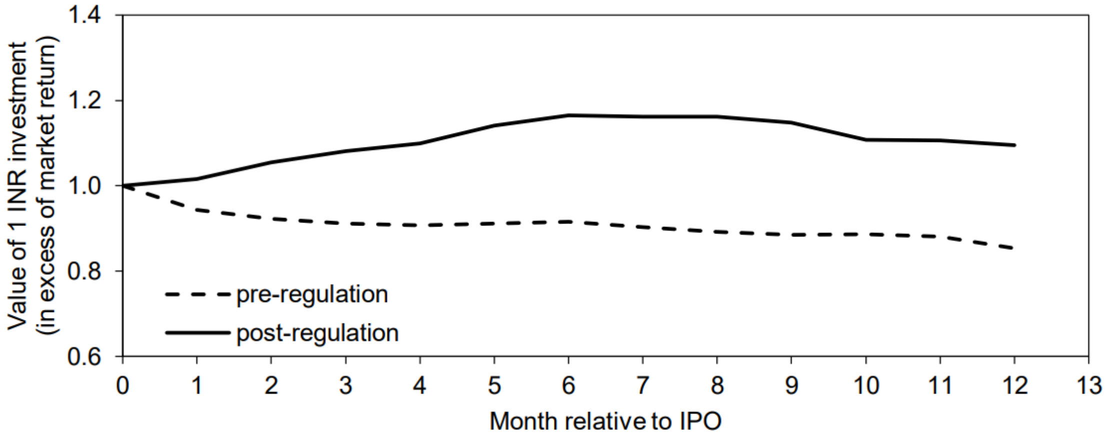

Fig. 3: Value of INR 1 investment over the first year after IPO

Further analysis of returns of monthly portfolios containing IPOs listed in the past 12 months to factor in other parameters like size, value, and momentum of an IPO gave a similar result. The pre-regulation monthly portfolios of IPO stocks returned -1.2% per month or around -13.5% annually. In contrast, the post-regulation monthly portfolios of IPO stocks returned +1.5% per month or around +19.5% annually.

6) Changes in types of IPO listed

A stricter price band of ±5 % on IPOs raising less than INR 2.5 Billion led to a drastic reduction in the number of small-sized IPO listing post regulation (Fig 4). As a comparison, nearly 71% of all IPOs listed pre regulation were raising less than INR 2.5 billion. This number drastically dropped to 20.8% post regulation. Several reasons led to such an extreme decline in the IPOs raising less than INR 2.5 billion post regulation. Key factors include attributes of small IPO firms like lower offer price, low VC backing, low reputation of underwriters of the IPO, and a stricter price band regulation on trading by SEBI.

Also, there is an average of 54 IPOs per year being listed on SME exchange with proceeds less than INR 2.5 billion between 2012 and 2017. It suggests that there was no sudden decline in relatively smaller firms in India. Rather they existed just like in the pre-regulation periods, but they chose not to list their IPO on BSE/NSE, the main stock exchanges, probably due to the above-mentioned reasons.

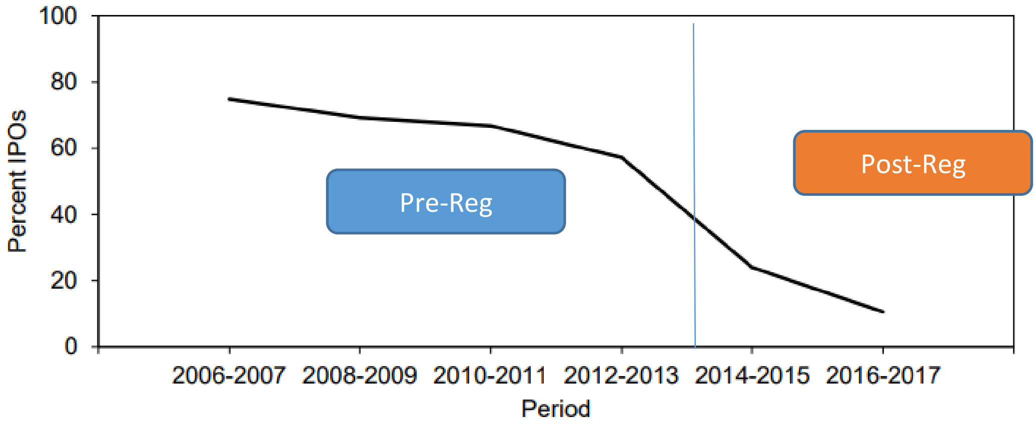

Fig. 4: Percentage IPOs with proceeds less than INR 2.5 billion over the years

Conclusion

The imposition of price bands on returns from trading IPOs in the first ten days by SEBI in January 2012 led to various changes in the behaviour of different market participants and the firms raising capital through IPOs. Our analyses suggest a significant reduction in price variability of IPOs in the post-regulation period, and thus a reduction in the chance of high profits from speculation. Also, we find a substantial decline in the IPO subscription rates by retail investors post regulation. In fact, all other investor segments, except HNIs, show a decrease in the demand for IPOs and hence the subscription rates remained low, as compared to the pre-regulation period. Although there is no distinct change in IPO underpricing from pre to post regulation, there is significant evidence of higher future returns and lower initial market prices due to the imposed price bands. Lastly, we find a considerable decline in IPOs of relatively smaller firms being listed after the new regulations. We also see large firms being listed on the main exchanges and the somewhat smaller firms listed on SME exchanges, with a sharp reduction in medium-sized IPOs.

We also conducted an analysis to determine the measure of coincidence between the reduction of speculation amongst traders due to the new law imposed by SEBI and a general change in the traders' demand for speculative stocks. This analysis was based on factors like trading activity, past returns, turnover, and market cap of a particular stock. All the tests suggested no decline in the traders' demand for speculative stocks over the years and no change in investor sentiment. Thus, our findings indicate that the reduction in speculation of IPO stocks was primarily due to the new law imposed by SEBI on the return of IPO stocks in 2012.