IPO Volatility In Indian Markets

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INTRODUCTION

Firms can raise capital through either debt or equity. Firms hit capital market to raise money through equity. IPO issue price can be determined by the fixed price method or the book building method. In most of the capital markets around the world, including India, the book building method is the most preferred way. In a book building method, the firm prescribes a price band. This price band is decided by the company in consultation with some leading banks after a thorough analysis of the company's books and comparison with peers (if any) already listed on the stock market. The firm then invites bids from potential investors. There are three categories of investors involved in every IPO floated in India - Retail, Qualified Institutional Buyers (QIBs), and Non Institutional Investors (NIIs). In most of the cases, 35% of the IPO is reserved for the retail section, 50% stake is reserved for the QIB section, and the remaining 15% is reserved for the NIIs. However, in some cases, some portion is reserved for employees of the said company. For example, Coal India Limited's IPO hit market in October 2010. It was 32% reserved for the retail category, 13% reserved for the HNI category, 45% reserved for the QIB section and 10% reserved for employees of Coal India. Each investor bids the amount of shares he or she wishes to have, and how much price he or she is ready to shell out for each stock. Once the book is closed on the prescribed date, the underwriter determines the maximum price at which allotted shares can be sold.

Price discovery of an IPO is important for the opening period because no trading history exists. It is difficult to predict the listing price due to existence of the underpricing phenomena. IPO underpricing is the difference between the listing price and the issue price. The researchers found that during the January 2007 to August 2010 time period, IPOs in India, on an average, are underpriced by 15%. Initial trading should lead to equilibrium in demand and supply of the stock, and that should provide the fair price. This fair price can turn out to be very different from the price band decided for the stock. In an ideal market, where everyone is well informed, the fair price should reach as soon as the stock opens, and it should portray normal volatility from the listing day. In such a case, the market is following a strong form of efficiency.

The researchers seek to find out the time it takes for the Indian IPOs to reach a fair price by taking a look at the volatility figures (variation between the day's high price and the day's low price) and the volume figures for the initial trading sessions of a newly listed issue. The researchers have considered 175 IPOs, which are listed on Indian bourses over a period from January, 2007 to August, 2010. The researchers found that the stock is very volatile on the listing day (37.2%). The volatility reduces on the next day (second day) and was consistent at 9% from the third day onwards. With regards to volume traded, high volumes can be seen on the listing day. Volume trails off from the second day (37% of the listing day) to the sixth day (12% of the listing day). It is clearly evident that high volatility exists in the IPO listings. The researchers propose several ways such as anchor investors, price band on the issue price on the listing day, strengthening derivatives' markets and alternative price discovery method to book building.

The remainder of this paper proceeds as follows. Section I studies the various research work already existing in this field of area. In section II, the researchers assess the relevant data and methodology for their analysis and also enunciates key results. Section III suggests few recommendations, which can reduce IPO volatility and section IV draws conclusions from the study.

SECTION I

LITERATURE REVIEW

There is a vast amount of theoretical and empirical research available on IPOs. IPO Underpricing is a capital market anomaly. Many previous studies use the return between the issue price and the closing price on the listing day for IPO

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underpricing, but this method does not differentiate those investors who take positions soon after the listing. The researchers suggest that IPO underpricing should focus on the difference between the issue price and the listing price. Underpricing can be of ex post type or ex ante type.

Rock (1986) states that investors have a different degree of information about the fair price of the new offerings. Informed investors alone cannot subscribe fully in all IPOs. Therefore, to attract uninformed investors, the firms have to provide sufficient discount. This is known as the *'winner's curse'* for uninformed investors. Allen and Faulhaber (1989) proposed the *'signalling theory'*, where firms only with the most favourable prospects can afford to underprice the issue, as only the best can recoup the cost of underpricing. Baron (1982) suggests that the merchant banker has an incentive to underprice the issue as a favour to his long-established clients.

Shah (1995) documented IPO underpricing in the Indian markets. He proposed that fixing the issue price early causes underpricing. According to the new SEBI guidelines, a 12-day gap is kept between IPO subscription's last date and listing date. Earlier, it could range from 2 weeks to 2 months and in some cases, even more. Similarly, a study by Madhusoodanan and Thirpalraju (1997) showed that the underpricing in India is more in the short run, when compared to other countries. Other factors responsible for IPO underpricing are liquidity premium, building loyal shareholders, merchant banker rewarding favoured clients, and the interest rate float. IPO underpricing also helps firms if they wish to come out with Follow on Public Offer (FPO) in the future. Many Public Sector Units (PSUs) in the Indian context have come out with FPOs in recent times. In some cases (Miller, 1977), IPO issue price is overvalued as compared to the fair value, and in that case, prices naturally correct on the listing day. Purnanandam and Swaminathan (2004) explain that more overvalued IPOs tend to underperform in the market, and other IPOs underperform until five years after the offer. The previous study shows that IPO underpricing is a more common phenomena than overpricing, with average listing gains of 15%. Many theories assume market efficiency and consider the closing price on the listing day as the fair value of the IPO. The researchers propose here that it is not the case with Indian markets. It is true that volatility of price reduces after the listing day, but it still remains. Even after five days post listing, the researchers saw 8.67% price volatility in IPO firms.

SECTION II

DATA COLLECTION AND METHODOLOGY

The researchers examined the period from January, 2007 to August, 2010 for the purpose of this research. During this period, the researchers came across 175 IPOs which were listed on the Indian bourses (The whole list can be found in the Table 12). The researchers found a day's volatility by looking at the highs, lows and volume over the first six trading sessions, including their listing day. The researchers also performed a volume (relative to listing day) analysis for all these days. These analyses had been performed based on the overall subscription figures and issue size. A day's volatility can be defined as:

$$\text{Day's Volatility} = \frac{\text{Day's High - Day's Low}}{\text{Day's Low}} \quad \text{.....(1)}$$

Day's relative volume with respect to listing day can be defined as:

$$\text{Day's Relative Volume To Listing Day Volume} = \frac{\text{Day 's Volume}}{\text{Light Day 's Volume}} \quad \text{.....(2)}$$

Let's take an example of Bajaj Corp to understand this procedure more clearly.

Table 1 : Subscription Data For Bajaj Corp.

Category	Subscription
Retail	6.62x
QIB	20.2x
NII	53.5x
Source : http://www.chittorgarh.com/	

The issue was open from 2nd Aug- 5th Aug and the price band for subscribing to this issue was ₹ 630-660. The subscription details are given in the Table 1. On its listing day, Bajaj Corp. attained a high of 812, and a low of 730. This resulted in a listing day volatility of 11.2% ((812-730)/730). Bajaj Corp's traded volume on the listing day was 3,707,538, while its volume on the next trading day was 555,141. Thus, the second day's relative volume was 0.15 times (555,141/3,707,538).

KEY RESULTS

Standard statistical tools help the researchers to get a clear picture from a vast pool of data. The researchers have generated mean, median, standard deviation, variance, skewness, kurtosis and range for the data. They are tabled below in Table 2:

Table 2 : Statistical Analysis

	Listing day	Second day	Third day	Fourth day	Fifth day	Sixth day
Sample size	175	175	175	175	175	175
Mean	0.3742	0.1257	0.1046	0.0883	0.0943	0.0873
Median	0.3025	0.1125	0.0812	0.0739	0.0733	0.0671
Std. deviation	0.296	0.066	0.11	0.058	0.064	0.06
Variance	0.0876	0.0043	0.0121	0.0033	0.0040	0.0036
Skewness	2.226	0.883	1.763	1.511	1.802	1.506
Std. error of skewness	0.184	0.184	0.184	0.184	0.184	0.184
Kurtosis	7.452	0.94	4.433	2.495	4.203	1.996
Std. error of kurtosis	0.365	0.365	0.365	0.365	0.365	0.365
Minimum	0.04	0	0	0	0	0.02
Maximum	2.06	0.37	0.48	0.33	0.41	0.31

A high mean of 37% and median of 30% signify a great degree of volatility in the share price on the listing day. This volatility falls down dramatically on the second day before stabilizing from the fourth day onwards. The small difference between standard deviation and mean for each day points towards high variation in the data and presence of some outliers. Positive value of kurtosis on all six days also signifies a right tail and thus, median is less than the mean for all the days. Significantly positive kurtosis (7.4) can be seen for the listing day, which results in a significant difference between median and mean on the listing day. One can also see that the highest difference between maximum and minimum is on the listing day. Table 3 compares the average volatility and volume for the first six days, including the listing day.

Table 3: Volatility And Volume Comparison

Day	Average volatility	Average Volume (relative to first day)
First day (listing day)	37.4%	1 times
Second day	12.6%	0.37 times
Third day	10.5%	0.23 times
Fourth day	8.8%	0.16 times
Fifth day	9.4%	0.15 times
Sixth day	8.7%	0.12 times

The researchers note that there is a constant drop in volume across all days, with a 63% drop from the listing day to the second trading day. The constant drop in volume figures and volatility point towards a sharp decline in interest post the listing day. With regard to issue size, larger issue sizes should result in the share being divided among more number of people, and this should thus, result in lower listing day volatility i.e. listing day volatility is inversely related to the issue size for a given IPO. For regression analysis, independent variable (overall subscription and issue size) should

follow the normal distribution. As per Curran, West and Finch (1996), normality is not violated if the independent variable's skewness is in the rage of -2 to 2 and kurtosis is in the range of -7 to 7. For oversubscription, skewness is 1.8 and kurtosis is 2.93, while for issue size, skewness is 5.17 and kurtosis is 30.9. Since skewness and kurtosis are not within the specified range of normal distribution for issue size, the researchers change the independent variable to - 1/sqrt(issue size) and change the hypothesis to

H1: First day volatility is positively related to overall subscription, and is negatively related to -1/sqrt (issue size) for a given IPO.

The skewness and kurtosis for -1/sqrt(issue size) is -1.17 and 3.39 respectively.

Table 4 : Regression Parameters For H1

Variable	β	t statistic
-1/sqrt(issue size)	-0.392	-5.534

α	R^2	F statistic
0.172	0.154	15.616

Table 5 : Volatility And Volume Comparison (Issue Size < 250 Crore)

Day	Average volatility	Average Volume (relative to first day)
First day (listing day)	43.7%	1 times
Second day	14.1%	0.40 times
Third day	12.1%	0.26 times
Fourth day	10.1%	0.19 times
Fifth day	10.6%	0.17 times
Sixth day	10.1%	0.14 times

Table 6 : Volatility And Volume Comparison (Issue Size > 250 Crore)

Day	Average volatility	Average Volume (relative to first day)
First day (listing day)	23.3%	1 times
Second day	9.2%	0.31 times
Third day	6.8%	0.18 times
Fourth day	5.9%	0.11 times
Fifth day	6.8%	0.11 times
Sixth day	5.7%	0.09 times

Table 7 : Regression Parameters For Oversubscription

Variable	β	t statistic
Oversubscription	0.003	0.045*

Table 8: Volatility And Volume Comparison (Overall Subscription > 50)

Day	Average volatility	Average Volume (relative to first day)
First day (listing day)	36.4%	1 times
Second day	11.0%	0.35 times
Third day	10.6%	0.27 times
Fourth day	7.8%	0.17 times
Fifth day	9.1%	0.20 times
Sixth day	7.5%	0.14 times

Regression analysis results for H1 hypothesis is presented in the Table 4:
Regression equation,

First day volatility = 0.172 - 0.392 * (-1/sqrt(issue size)) ..... (3)

This can be better clarified by breaking issue size into two categories: less than ₹ 250 crore and more than ₹ 250 crore.

Table 9 : Volatility And Volume Comparison (Overall Subscription Between 10 and 50)		
Day	**Average volatility**	**Average Volume (relative to first day)**
First day (listing day)	25.7%	1 times
Second day	10.9%	0.38 times
Third day	8.8%	0.24 times
Fourth day	8.5%	0.19 times
Fifth day	8.1%	0.17 times
Sixth day	7.6%	0.13 times

Table 10: Volatility And Volume Comparison (Overall Subscription Between 3 and 10)		
Day	**Average volatility**	**Average Volume (relative to first day)**
First day (listing day)	45.4%	1 times
Second day	14.2%	0.37 times
Third day	11.2%	0.27 times
Fourth day	8.9%	0.16 times
Fifth day	10.0%	0.13 times
Sixth day	8.9%	0.10 times

There is a significant drop in the first-day volatility, for issue sizes of greater than ₹ 250 crore, compared to issue sizes of less than ₹ 250 crore. More oversubscription should result in higher demand and anticipation for a stock. This should result in higher volatility as people scramble to get some shares of the newly listed issue. Hence, the researchers propose that listing day volatility is positively related with the overall subscription. The Regression Analysis is presented in the Table 7.

We can infer from the Table 7 that oversubscription is not statistically significant. Hence, the hypothesis is incorrect. To prove their point better, the researchers divide overall subscription figures into four categories: greater than 50, between 10 and 50, between 3 and 10 and less than 3. Of the 175 issues under consideration, 30 (17.1%) issues were subscribed greater than 50 times, 44 (25.1%) issues were subscribed between 3 and 10 times, 64 (36.6%) issues were subscribed less than 3 times. Tables 8, 9, 10, and 11 compare the average volatility and relative volumes for all these categories separately.

Table 11: Volatility And Volume Comparison (Overall Subscription < 3)		
Day	**Average volatility**	**Average Volume (relative to first day)**
First day (listing day)	41.3%	1 times
Second day	13.6%	0.38 times
Third day	11.1%	0.20 times
Fourth day	9.5%	0.14 times
Fifth day	10.2%	0.13 times
Sixth day	9.9%	0.12 times

SECTION III
RECOMMENDED ACTIONS TO REDUCE VOLATILITY

1. Anchor Investor : Anchor investors are entities, which are offered and subscribed to shares in an IPO before the issue is opened for the public. They belong to the QIB category, which includes mutual funds, venture capital funds, pension funds, banks and foreign institutional investors (FIIs). Promoters are barred from being anchor investors. Anchor investors can be offered up to 30% of the QIB portion. They are in a better position to judge the fundamentals of a company. They must also deposit 25% margin up front and part with the balance within two days from the close of the issue.Anchor investors must remain locked in for a period of one month i.e. they cannot sell their stake within one month of the IPO listing. Sebi has introduced the concept of anchor investors in public issues to help price discovery process and control the listing day volatility in Indian markets. Adani Power was the first IPO in India to use anchor investors. It had brought in six anchor investors, including Credit Suisse (Singapore) and Sundaram BNP Paribas to raise ₹ 500 crores. An article by Economic Times suggested that the mere presence of anchor investors has not brought success to the IPOs. It further stated, *"Of the 16 IPOs that were listed in 2009, five issues had anchor investors. Of the five, four are trading below the issue price. Of the 11 IPOs that have not received investment from anchor investors, about six IPOs are trading above the issue price, and five IPOs are trading below the issue price."*
It may be true that IPOs with anchor investors have not been a *'success'* , but the purpose of an anchor investor is to reduce listing day volatility and help in price discovery. If such is the case, then anchor investors have been successful.

2. Price Band On Listing Day : Price band is placed on stocks to restrict their intra-day movements within a specific range. Normal stocks have a price band of 20% i.e. the stock cannot appreciate or fall from its previous day price by more than 20%. However, if SEBI finds certain other irregularities or feels that a certain stock is very volatile or subject to manipulations, then it can change its price band to 10% or 5%, thereby limiting the volatility in that stock to a great extent. IPOs are not subject to any price bands on the listing day. The reasoning behind it is that a stock should be allowed to find its correct price on the listing day, and so no restrictions are placed on the stock. Once though in 2008, SEBI pondered over placing a 25% price band on the issue price on the listing day of an IPO having an issue size of less than ₹ 250 crore. This was because SEBI felt that there was significant volatility in such issues on the listing day. The researchers' analysis also shows that such issues are highly volatile (43.7%) as compared to the volatility (23.3%) of IPOs which had an issue size of greater than ₹ 250 crore. This difference in volatility is also observable on subsequent days. One of the reasons for this can be simply that on an average, small-cap stocks are always much more volatile than the large-cap stocks. Placing a price band on the listing day should definitely reduce the listing day volatility. However, the big question is whether this drop in volatility would result in an increase in volatility on subsequent days because of the spill-over effect. This could also see a stock constantly locked in circuits for the opening days, if market participants feel that the true price is very different from the issue price.

3. Auction Method : Auction is an alternative to the book-building process, and it can greatly improve the accuracy of price discovery. Unlike traditional firm-commitment offerings, auctions incorporate the information of all market participants into the setting of the offer price. Under the auctions method, everyone is able to bid what they feel is the appropriate price for an issue, unlike book-building, where all the bids should be within the pre-defined price band. The biggest advantage of an auction is that the issue price is near the perceived market price. This results in lower volatility in the opening minutes compared to the book building process, where the issue discovers its price during initial trades. Its impact on the overall volatility for the whole day is still disputable. This is because many of the stocks fall or rise sharply as the day progresses on. The biggest disadvantage of auctions would be the removal of listing gains. This will significantly lower interest in new issues. Auctions would also remove retail participation, since retail participants have very less idea about the true value of the stock. In a country, where retail participation is still very low, and they are consistently offered discounts to encourage them to invest in new issues, implementing auctions would be a huge task.

4. Strengthening Derivatives Market : One of the major advantages of derivatives like futures and options is price discovery, portfolio diversification and risk hedging. Bandivadekar and Ghosh (2003) analyzed the effect of index futures on spot market volatility. They had used BSE Sensex and S&P CNX Nifty for benchmarking. They found that spot market volatility reduces even after market adjustments with the advent of index futures. One of the reasons

identified was increased information flow. Thenmozhi (2002) showed that due to increased information flow spot, index returns volatility has reduced. Similar conclusion was made by Raju and Karande (2003). Turnover in derivative markets in India is still very small as compared to the cash market. Strengthening the derivative market will help reduce the volatility. If the newly listed scrip is available for trading in derivatives market on the listing day itself, volatility may reduce sharply. However, implementing derivatives for IPOs in the Indian markets is a huge challenge as currently, only some of the stocks traded on NSE Nifty and BSE Sensex are traded in the derivatives markets.

SECTION IV

CONCLUSION

IPO underpricing has been proved by many authors, including the researchers, in the Indian context. The researchers observed 15% average listing gains for January 2007 to the August 2010 period. IPO underpricing has been justified by firms and investors as a measure to make an issue attractive. Book building method of IPO price-fixing and underpricing issues have made it difficult to accurately determine the fair value of the stock. In fact, the listing price

Table 12

IPOs Considered

Bajaj Corp.	DB Realty	Mahindra Holidays
SKS Microfinance	Emmbi Polyarns Ltd.	Rishabdev Technocable
Midfield	Vascon Engineers	Edserv Softsystems
Hindustan Media Ventures	Syncom Healthcare	Alkali Metals
Aster Silicates	Thangamayil Jewellery	20 microns
Technofab	Jubilant Foodworks	Resurgere mines
Parabolic Drugs	Aqua Logistics	Austral coke
Jaypee Infratech	Infinite Computer Solutions	NuTek
Mandhana Industries	DB Corp Ltd.	Birla Costyn
SJVN	Godrej Properties	KSK Energy ventures
Nitesh Estates	JSW Energy	Lotus eye healthcare
Tarapur Transformers	MBL infrastructure	Archidply
Talwalkars	Cox and Kings	First Winner Industries
Goenka Diamonds	Astec LifeSciences	Niraj Cement
Intrasoft	Den Networks	Gokul Refoils
Shree Ganesh Jewellery	Indiabulls Power	Aishwarya Telecom
Persistent Systems	Thinksoft Global	Titagarh Wagons Ltd.
IL&FS Transportation	Euro Multivision	Kiri Dyes
Pradip Overseas	Pipavav Shipyard	Sita Shree
DQ Entertainment	Jindal Cotex	Gammon Infra
United Bank of India	OIL India	Rural Electrification Corp.
Man Infraconstruction Ltd.	NHPC	GSS America
Texmo Pipes	Adani Power	V-Guard
ARSS Infra	Raj Oil Mills	Tulsi Extrusions
Hathway Cable	Excel Infoways	Shriram EPC
Globus Spirits	Reliance Power	Spice Communications
Bang Overseas	Maytas Infra Ltd.	Suryachakra Power
KNR Constructions	Supreme Infrastructure	Ankit Metal
IRB Infrastructure	Consolidated Construction	Vishal Retail
OnMobile Global	Koutons Retail	Roman Tarmat

Cords Cable	Dhanus Technologies	Nelcast Ltd.
J. Kumar Infraprojects	Kaveri Seed	Meghmani Organics
Future Capital Holding	Power Grid	DLF
Precision Pipes	Magnum Ventures	Decolight Ceramics
Manaksia Ltd.	Indowind Energy	Time Technoplast
Porwal Auto components	Motilal Oswal	Nitin Fire
Aries Agro	KPR Mill Ltd.	Asahi Songwon
Brigade Enterprises	Take Solutions	Insecticides India
Transformers and Rectifiers	Puravankara Projects	Binani Cement
eClerx Services	Sel Manufacturing	MIC Electronics
BGR Energy Systems	Asian Granito India	Bhagwait Banquets
Kaushalya Infrastructure	Zylog Systems	Fortis Healthcare
Jyothi Laboratories	Central Bank	Advanta India
Renaissance Jewellery	Omnitech Infosolutions	Orbit Corporation
Kolte-Patil Developers	Simplex Projects	ICRA Ltd.
Edelweiss Capital	Alpa Laboratories	Page Industries
Empee Distilleries	Omaxe Ltd.	Abhishek Mills
Barak Valley	Allied Digital	Raj Television
Mundra Port	Everonn Systems	AMD Metaplast
Religare Enterprises	HDIL	Indus Fila
Broadcast initiative	Idea Cellular	Pochiraju Industries
MindTree	Firstsource	House of Pearl
Evinix Accessories	Indian bank	Autoline Industries
Oriental Trimex	Transwarranty	Shree Ashtavinayak
Vijayeswari Textiles Ltd.	Redington	Pyramid Saimira
Mudra Lifestyle Ltd.	Power Finance	Tanla Solutions
Euro Ceramics Ltd.	Technocraft	Cairn India
C&C Construction	Akruti City	Cinemax India
SMS Pharmaceuticals		

should balance the market forces and suggest the true value. In such a case, the strong form efficiency principle is followed by the market. However, the present study shows that listing day average volatility is 37.4% and drops down to 8.7% on the sixth day (including listing day). Furthermore, the highest range of volatility is found on the listing day. Volumes too continue to drop from the listing day onwards, suggesting lesser interest from the investors. The regression analysis signifies that listing day volatility is inversely related to issue size. The low R square value (0.15) points that only 15% of the listing day volatility can be explained by the issue size. Statistically, volatility is not significantly related to the overall subscription.

The highest listing day volatility is recorded in the 3-10 overall subscription category, and lowest listing day volatility is recorded in the 10-50 overall subscription category. To contain listing day volatility, the researchers suggest various measures. Anchor investors, due to their position and size, are better placed to ascertain the fundamentals of the company. Furthermore, there is a minimum lock in the period of one month during which, they cannot sell their shares. Anchor investors can help better price discovery and reduce volatility.

Restricting intraday movements of listed IPOs in a 25% range can also reduce the volatility. However, a fear remains that volatility may increase on the subsequent days due to the spill over effect. An alternative method to book building, known as the auction method, can also help control volatility. Auctions include the information of all market participants into the setting of the offer price and thus setting a more reliable issue price. This method runs the risk of further alienating retail investors, whose participation is currently low . Strengthening derivatives market by providing access to derivatives market on the listing day can better facilitate price discovery of new issues.

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