

# INITIAL PUBLIC OFFERING (IPO) AND THE UNDERPRICING PHENOMENA

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## Abstract

The research paper presents the findings of study carried out to investigate the initial / short run underpricing of Initial Public Offerings (IPO) issued through NSE and listed on both the stock exchanges in India i.e. BSE and NSE during 2003-2010. The facts that emerge from the study confirm that like developed countries IPOs are underpriced in India in the short run. However, there has been a marked decline in underpricing over the years, which signifies improved market efficiency. Due to the presence of initial returns, the cost of equity capital is very high for issues in India. It was also observed that regulatory measures such as IPO grading and the concept of anchor investor introduced by SEBI to safeguard the interest of retail investor are not very effective. Investors' sentiments play an important role in the Indian IPO market as reflected by difference in initial returns due to phase of market and pricing of IPOs at higher or lower level of the price band.

Keywords: Initial public offerings, short-run performance, market efficiency, cost of capital

## Introduction

Throughout the world many companies enter the capital market to offer their shares to the public for the first time. This first time offering of the shares by the company to the public is technically called the initial public offer or more popularly by the abbreviation IPO. The IPOs are issued either by nascent companies raising capital to expand their operations or by existing large partnerships or private limited companies wanting to convert themselves into public limited companies. This process of going public is associated with many anomalies, the most well-known of which is underpricing of IPOs. The level of underpricing varies from market to market with higher underpricing being noticed in emerging capital markets. It is a puzzle which remains a challenge in a market like India where companies go public to finance their expansion in the presence of perverse underpricing in the IPO market.

The initial pricing performance of IPOs is the difference between the price at which the firm's stock was initially offered and the stock's closing price on the first day of trading (Ibbotson, 1975, Ritter, 1998). Underpricing

is a common occurrence for firms coming out with an IPO offer. As per the explanation provided by Ritter (1984), the greater the uncertainty about the true price of the new shares, the greater the advantage of the informed investors and the deeper the discount the firm must offer to entice uninformed investors into the market. Similar studies carried out by Ghosh (2005) for 1842 IPOs listed on BSE from 1993-2001, noted that that underpricing was less during hot period compared to slump period in the Indian IPO market. Initial underpricing seems to differ under various market related, regulatory and pricing conditions.

An IPO can be a risky investment for a retail investor as it is difficult to predict the price behaviour of the equity share on the listing day as well as the near future since very little historical data is available to analyze the newly listed corporate. Also, majority of IPOs are issued by firms going through a transitory growth period, and are therefore subject to additional uncertainty regarding their future value.

## Literature Review

Few financial market anomalies have received as much attention as underpricing of Initial Public Offerings (IPOs). Researchers have offered a variety of explanations and theoretical and empirical justification but without reaching a consensus on it. The empirical literature developed over the years shows that market faces great deal of difficulty in valuing IPOs appropriately. More specifically, IPOs are mainly associated with the anomaly of being systematically priced at a discount to their subsequent trading price. The competing theories and models advanced to explain underpricing of IPOs can be broadly grouped under four main theories.

1. Asymmetric information theories are considered the most relevant in explaining underpricing of IPOs. The theory assumes that one of the parties involved in an IPO knows more than the others. Rock (1986) posits that there are two groups of investors, the informed and the uninformed and that only the informed investor knows the true value of the share on offer. Due to this asymmetry, informed investor bid only for attractively priced IPOs whereas the uninformed bid indiscriminately. This creates an adverse selection problem of high probability of uninformed investor being allotted shares in 'bad' issues. This is also called the "the winner's curse".
2. The three institutional related theories for IPO underpricing are based on three factors: legal liability, price stabilization and tax. According to Ibbotson (1975) companies deliberately sell their stock at a discount to reduce the likelihood of future lawsuits from shareholders disappointed with the post-IPO performance of their shares. Benveniste, Busaba and Wilhelm (1996) describe price stabilization as "a mechanism that bonds underwriters and investors" because the dollar fees of the underwriter depends on gross proceeds raised. This also acts as a natural incentive to the underwriter to raise the offer price. According to Taranto, (2003) Tax laws may enhance senior managers' incentive to underprice.
3. The third sets of theories are based on separation of ownership and control. Brennan and Franks (1997) view underpricing as a means to entrench managerial control and attendant agency costs by avoiding monitoring by large number of outside shareholders. They hypothesize that IPO managers want to discourage new block holdings to reduce the likelihood of being monitored. Booth and Chua (1996) hypothesize that IPOs are underpriced to promote ownership dispersion, which in turn increases aftermarket liquidity of IPO stocks. Many researchers are not satisfied by the explanation provided by the rational theories as the reason given by them does not warrant underpricing of this scale and look at behavioural explanation for IPO underpricing.
4. Behavioral theories assume either the presence of 'irrational' investor who bid up the price of IPO shares beyond true value or that issuers are subject to behavioural biases. Ljungqvist, Nanda and Singh (2004) assume that sentimental investors hold optimistic beliefs about the future prospects for the IPO Company. The issuer's objective is to capture as much of the surplus under the sentimental investors downward-sloping demand curve as possible. Cook, Jarrel, and Kieschnick (2003) refine this analysis by considering both hot and cold markets. They find that IPO firms trade at higher valuation only in hot market.

Objective of the Study - To measure the extent of initial underpricing of IPOs in India.

## Research Methodology

The main data sources for the present study are the NSE home page and Prowess data base of Center for Monitoring India Economy (CMIE).

For the purpose of initial or short run under pricing, the sample consists of IPOs issued

through the NSE by book building method and listed on the NSE during the calendar year period 2003-2010. Only those IPOs for which complete data was available were included in our study. Summary of IPOs is provided in Table 1.

Table - 1 Summary of IPOs issued in India: 2003-2010

Year	Number of IPOs issued in India	Number of IPOs Issued through NSE		Sample for Study	
	Number	Number	Percentage	Number	Percentage
2003	11	5	45	4	80
2004	25	15	60	15	100
2005	72	40	55	37	93
2006	94	62	66	58	94
2007	107	93	87	83	89
2008	33	33	100	28	85
2009	20	20	100	20	100
2010	70	70	100	57	81

Data Source: CMIE data base & NSE Website

The initial returns on the first day of listing is calculated by ascertaining the difference between the offer price and the first day closing price and then dividing it by the offer price which is given in a formula as below:

The initial return  $R_{it}$  - on security  $i$  - in time  $t$  -- is calculated as

$$R_{it} = \frac{P_1 - P_0}{P_0} \quad (1.1)$$

Where  $P_1$  represents the closing price on the first day of trading and  $P_0$  the offering price of the security.

Hot and cold phase of the market is determined by the number of IPOs issued in a calendar year. Following the methodology of Garg et al. (2008), if the number of offers is equal to more than 30, we call it a hot phase;

otherwise it is cold phase as presented in Table 2:

Table - 2 Summary of Hot and Cold IPO markets in India: 2003-2010

Year	Number of IPOs issued on NSE	Phase
2003	5	Cold
2004	15	Cold
2005	40	Hot
2006	62	Hot
2007	93	Hot
2008	33	Hot
2009	20	Cold
2010	70	Hot

For identifying bull and bear phase of the market, the movements of Nifty were recorded. If the S&P CNX Nifty Index is on an upward swing, we identified it as bull phase, otherwise bear phase, as given below:

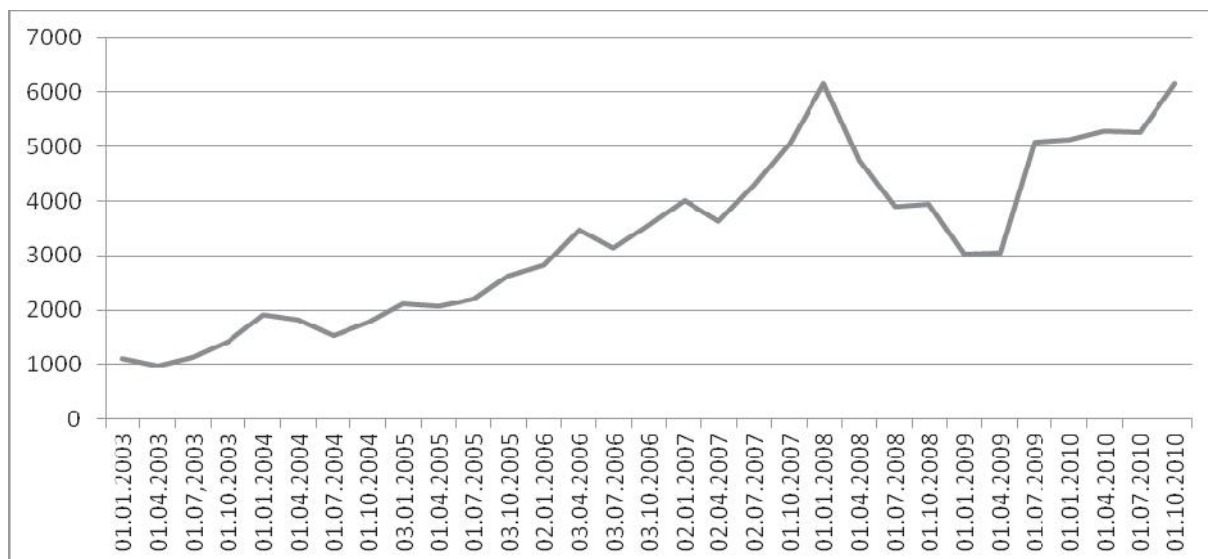


Chart 1: S&amp;P CNX Nifty 2003-2010

Data Source: NSE website

The midpoint of the offer price was considered to identify higher or lower price range. If the offer price was below or equal to the midpoint it is called the lower range otherwise higher range.

Information on IPO grading and existence or non-existence of anchor investor was hand collected from individual prospectus filed with ROC and available at SEBI home page. Grading is normally given on a scale of 1 to 5 with 5 considered the best grade. Grades of 5, 4 and 3 are considered high grade, otherwise low grade.

The final offer price at which securities were allotted to an investor as well as details

regarding price range for bidding, IPO grading was obtained from NSE homepage. Closing price of the security on the listing date, closing data for Nifty and Sensex was obtained from Prowess Database provided by CMIE.

For each new IPO offering, returns are calculated for the initial return period Day-1 i.e. the first day of listing.

### Results and Analysis

The Initial Performance of IPOs: The discrete statistics for short term underpricing based on the year of listing are presented in Table 3:

Table - 3 Initial abnormal returns on IPOs: 2003-2010

Year	Mean (Percentage)	S.D	Minimum (Percentage)	Maximum (Percentage)
2003	74.46	57.81	25.89	148.75
2004	50.30	70.53	-70.94	209.29
2005	26.84	37.56	-95.43	104.41
2006	24.45	42.84	-55.15	235.64
2007	30.28	54.39	-60.21	240.96
2008	4.94	32.69	-38.82	97.61
2009	11.02	31.64	-28.60	129.50
2010	21.06	83.13	-88.88	581.37

From the above table, it can be seen that underpricing has been diminishing over the years and the average underpricing is much less than 105.6 percent as reported by Shah (1995) as well as 96 percent average underpricing as reported by Ghosh (2005) for the entire period of 1992-2001. The table also reveals that even though there is wide variation in initial returns measured on yearly basis, underpricing is a consistent phenomenon. The findings also indicate that the IPOs in India are not efficiently priced and

therefore, the total cost of going public is high.

The analysis and the results of short run underpricing are as follows:

H1<sub>1</sub>: There is a significant initial return for IPOs in the short run.

The initial or short-run performance of IPOs was tested using one sample t-test and the results are presented in Table 4:

Table - 4 Results of 't' test for initial abnormal returns

Variable	Mean	S.D	t-statistics	Significance
Initial Abnormal Returns	18.95	37.64	8.631	0.000*

\*\*P<0.05 (Significance at 95% Confidence level) \*P<0.01 (Significance at 99% Confidence level)

Our findings confirm existence of significant initial underpricing and are consistent with the underpricing reported by earlier researchers such as Loughan and Ritter (2001) of 15 percent in the 1990s for US IPOs, 289 percent for a sample of 87 Shanghai IPOs listed from 1995 to 1998 by Yu Ting and Tse Y K (2006) and closer home by Sahoo and Rajib (2009) who in their study on Indian IPO relating to the period 2001-2005 document that IPOs are underpriced at 46.63 percent.

independent sample t-test was conducted. The independent sample t-test procedure compares means for two groups of cases. However, it does not indicate where the difference lies.

The hypothesis testing and the results and analysis of the 't' test with two categories for the variables, hot and cold phase, bear and bull phase, upper and lower price range, presence or absence of anchor investor and higher and lower grading have been provided in the following tables:

To ascertain whether or not there was significant difference in initial abnormal returns under different market conditions, pricing and regulatory variables - an

H1<sub>2</sub>: There is significant difference in the level of initial returns during the 'Hot and Cold' phase of IPO market.

Table - 5 Results of 't test' for 'Hot and Cold' IPO market

Variable	Group 1 (Cold Phase)		Group 2 (Hot Phase)		t	Significance
	Mean	Standard Deviation	Mean	Standard Deviation		
Abnormal Initial Returns	15.72	39.23	19.87	37.22	-0.783	0.434

\*P<0.01(Significance at 99%Confidence level) \*\*P<0.05 (Significance at 95% Confidence level)

It can be observed that even though there is a difference in the means of hot and cold phase of the market, the difference is not significant as the significance value of .434 is quite high. Therefore, we conclude that there is no significant difference in the level of underpricing in the hot and cold phase of the

IPO market. Our findings are very similar to that of Garg et al., (2008).

H1<sub>3</sub>: There is significant difference in the level of initial returns during the 'Bull and Bear' phase of IPO market.

Table - 6 Results of 't test' for 'Bull and Bear' phase of the IPO market

Variable	Group 1 (Bear Phase)		Group 2 (Bull Phase)		t	Significance
	Mean	Standard Deviation	Mean	Standard Deviation		
Abnormal Initial Returns	27.90	39.84	16.65	36.80	2.075	0.039**

\*P<0.01 (Significance at 99% Confidence level) \*\*P<0.05 (Significance at 95% Confidence level)

The difference between the mean returns during the bull and the bear phase is significant at 95 percent significance level. During the bear market the investor normally has a negative outlook on the stock market in general and is reluctant to enter the market. May be to attract investor to enter the market the issuer greatly underprices the issues

resulting in large abnormal returns on listing date. Our findings corroborate with that of Garg et al., (2008).

H1<sub>4</sub>: There is significant difference in the level of initial returns for IPOs offered at the 'lower range' than at the 'higher range' of offer price.

Table - 7 Results of 't test' for 'Higher or Lower range' of offer price

Variable	Group 1 (Lower Range)		Group 2 (Higher Range)		t	Significance
	Mean	Standard Deviation	Mean	Standard Deviation		
Abnormal Initial Returns	-3.90	25.54	24.21	38.05	-5.21	0.000*

\*P<0.01 (Significance at 99% Confidence level)\*\*P<0.05 (Significance at 95% Confidence level)

The issuer normally fixes the final offer price in consultation with the investment banker after all the bids have been received from the prospective investor. Theoretically, the price discovery takes place only after the bids are received and therefore, the investor has an important role to play in the final price. The investor is expected to judge the company based on its fundamentals and future prospects. However in reality, investors bid price and number of the bids made depends on investors' perception about the company. It has been observed that during the bull

phase such as the year 2006 in India, every IPO issue whether issued by fundamentally strong or weak company is oversubscribed. When the issue is oversubscribed, the issuer can fix the final price closer to the higher end of the range. Therefore, we conclude that the final price is fixed at the lower range only when the demand for the IPO is weak. Hence, we observe significant difference between the mean returns depending on whether the final offer price was fixed at higher or lower end of the offer price.



To attract the retail investors back into the primary market and boost their confidence, various measures have been taken by the SEBI in the last decade. Two important measures taken by the SEBI during the last two years are appointment of anchor investor

and grading of IPOs. The impact of these two measures on underpricing has been evaluated in our research and presented below:

H1<sub>5</sub>: There is significant difference in the level of initial returns for IPOs having 'Higher equity grade' than 'Lower equity grade'.

Table - 8 Results of 't test' for 'Higher or Lower Equity Grade' of an IPO

Variable	Group 1 (Lower Grade)		Group 2 (Higher Grade)		t	Significance
	Mean	Standard Deviation	Mean	Standard Deviation		
Abnormal Initial Returns	18.58	29.47	7.18	33.84	1.469	0.146

\*P<0.01 (Significance at 99% Confidence level) \*\*P<0.05 (Significance at 95% Confidence level)

It can be observed that even though there is a difference in the means of lower and higher grade IPOs, the difference is not significant as the significance value is .146. Since compulsory equity grading was introduced from 1<sup>st</sup> May 2007, the sample size was just 85. There is a possibility that the retail investor may have failed to understand the impact of grading on the risk associated with

the IPO. Also since grading does not take into consideration the offer price of the IPO its effect on risk perception of the retail investor seems to be very low.

H1<sub>6</sub>: There is significant difference in the level of initial returns for IPOs having 'Anchor Investor' than those having 'No Anchor Investor'.

Table - 9 Results of 't test' for 'Anchor Investor or No Anchor Investor' for an IPO

Variable	Group 1 (No Anchor Investor)		Group 2 (Anchor Investor)		t	Significance
	Mean	Standard Deviation	Mean	Standard Deviation		
Abnormal Initial Returns	10.29	38.26	11.66	30.50	-1.74	0.862

\*P<0.01 (Significance at 99% Confidence level) \*\*P<0.05 (Significance at 95% Confidence level)

It can be observed that even though there is a difference in the means of IPO returns having an anchor investor and having no anchor investor, the difference is not significant as the significance value of .862 is quite high. Theoretically, the concept of

anchor investor was introduced to provide stability and increase the confidence of the retail investor. However, our results do not support this proposition. The absence or presence of an anchor investor does not seem to have any effect on initial abnormal returns.

## Conclusion

The conclusions emerging from our analysis of short run underpricing are relatively clear-cut. First, IPOs are on an average underpriced by 18.95 percent in the short run. There has been a marked decline in underpricing over the years, which signifies increase in market efficiency. Due to the presence of initial returns, the cost of equity capital is very high for these firms. It was also observed that regulatory measures such as IPO grading and the concept of anchor investor introduced by SEBI to safeguard the interest of retail investor are not very effective. Investors' sentiments play an important role in the Indian IPO market as reflected by difference in initial returns due to phase of market and pricing of IPOs at higher or lower level of the price band.

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