

Price Performance of IPOS in Indian Stock Market

Ravi KIRAN¹, Rohini Inder CHOPRAM PHIL²

¹*School of Management and Social Sciences, India, rkiran@thapar.edu*

²*Thapar University, Patiala, India, shivani_i_chopra@yahoo.co.in*

Abstract: The present study has been undertaken to gauge the underpricing in NSE in the short run periods, i.e., from the listing day to the six months after the listing and for the long period. The results depict that the presence of underpricing. The study also tries to analyze the influence of factors on IPOs pricing performance. The results show that these factors viz. Subscription level, Issue size, Listing lead time and Age influence the initial returns, i.e., R_Ret. of the listing day of the company.

Keywords: Initial Price Offer; India; Underpricing

1. Introduction

An initial public offering is the sale of a company's stock to the public for the first time. The primary impetus for an IPO is generally either to raise capital or to offer an exit strategy to some of the firms existing owners, but a number of other motivations and considerations also influence a firm's decision to go public. This decision process illuminates a firm's goals in issuing an IPO, which are important to evaluate the potential reasons for the underpricing we observe. Start-up companies rarely have the resources, history, or credibility to conduct an IPO. In fact, firms in the most incipient stage of development generally rely entirely on personal loans, savings, family, and friends for their initial financing. Even as a company begins to develop and show some signs of promise, it will rarely attempt a public offering; instead, it will look to angel investors or venture capital. Angel investors are wealthy individuals, often prior entrepreneurs, who will provide financing in exchange for equity in the company.

Venture capital comes from firms rather than individuals, but the principle is the same: investors offer financing in return for a stake in the company. Both angel investors and venture capital firms frequently take an active role in the company, advising management on the most of issues it faces. The initial investors are naturally hesitant to provide all the funding upfront, and different private equity investors target companies at different stages of growth. Thus, successful companies will typically undergo multiple rounds of financing and will develop a base of investors that intend to eventually liquidate their stakes. When investors decide it is time to cash in on their investment, they have three choices: sell their equity to a larger or later-stage investment firm, sell the company to a larger company looking to make an acquisition, or sell their equity in an initial public offering of the company. Similarly, when an "IPO-ready" company requires additional financing, it has multiple options: pursue further equity financing

from the private market, issue debt, or conduct an IPO. So what prompts investors and the company to go with the IPO option?

In addition to provide an immediate capital influx and mechanism through which existing owners can cash in on their investment, there are other advantages of going public. Since the expectation is that a liquid aftermarket will develop following the offering, firms conducting an IPO can expect to be in a position to raise additional capital relatively easily and on favorable terms following the initial offering. The increased liquidity also makes it possible for public companies to offer stock-based incentives and compensation, which can help them attract and retain top employees and improve employee productivity.

Trading on an exchange also makes mergers and acquisitions easier since stock can be issued as part of the deal. Due to increased visibility, companies going public may also experience an increase in prestige, which can improve their credibility with suppliers and customers, resulting in better credit terms and more pricing leverage. Even the increased scrutiny of public companies is not all bad since it usually allows the company to issue debt at lower rates. The history of IPO mechanism can be traced back to period of CCI regime i.e. Controller of Capital Issues. Prior to nineties all the public issues have to take the permission of C.C.I. The latter determines all other aspects of the issue. The office of C.C.I. was abolished .In 1993 after the formation of SEBI during 1992. SEBI was honored to regulate all aspects of Capital market, including primary market and IPO's. IPO market has undergone a change with an introduction of fixed price regime and has further advanced with implementation of Book Building process as a result of Malegam Committee which was set up in 1995.

There exist two main mechanisms in India for the sale of public issues.

- i. Fixed Price Method.
- ii. Book Building Method.

Fixed Price Method - In a fixed priced offer, an issuer company is allowed to freely price the issue. The basis of issue Price is disclosed in the offer document where the issuer is closes in detail about the qualitative and quantitative factors justifying the issue price. The issuing firm (with the help of the underwriter) decides upon a selling price and offers a set number of shares at that price. The underwriter does not build a book of potential orders; instead, the price is based upon the underwriter's judgment of the market conditions and the intrinsic value of the company. The Issuer company can mention a price band of 20% (cap in price band should not be more than 20% of the floor price) in the Draft offer documents filed with SEBI and actual price can be determined at a later date before filing of the final offer document with SEBI / ROCs. In its offering materials, the issuer will give both a qualitative and quantitative justification for the chosen price. If the offering is oversubscribed, the shares are allocated on a pro rata basis. This type of offering is commonly used in Singapore, Finland, India and the U.K.

Book Building Process - In the traditional IPO process, an investment bank is always hired to "underwrite" an IPO. The issuing firm will choose a "lead underwriter" (book runner) or "co managers" risk, the investment banks themselves almost always form a syndicate, and each member of which will sell part of the issue .Deals can be structured in a variety of ways. One major consideration is whether it is a "firm commitment" or "best efforts" agreement. In a firm commitment, the underwriter buys the entire



offer and resells it to the public, thus guaranteeing the amount of money that will be raised; under a best efforts agreement the underwriter sells as much of the security to the public as it can sell at the offering price, but it does not guarantee the quantity. Underwriting contracts will also specify the underwriter fee (typically 5%) and the “green shoe” option (allows the underwriter to increase the number of shares offered, typically by 15%). After the details of the deal have been worked out, the underwriter files a registration statement with the SEBI. This document provides details on the offering, as well as company information, such as financial statements, management backgrounds, legal proceedings, and insider holdings.

Concept of Underpricing: Generally, it has been found that investors, who purchase IPO’s on the offering day, experience high returns on the first trading day, indicating that these shares may have been priced at the time of their offering to the public at values much below their intrinsic value. The phenomenon is known as underpricing. Underpricing of issue represents the first day returns generated by the firm, calculated as:

(Closing Price – Offer Price) / Offer Price

An issue is under (over) priced if the price received by the issuer in the primary market is lower (higher) than the price of the same securities in the secondary market. ‘Underpricing of IPOs is a universal phenomenon!’ Underpricing is ubiquitous but the amount of underpricing varies across countries. They have contended that differences in underpricing might result from differences in institutional arrangements. Making a firm public is significant turning point in the life of a firm with serious wealth implications for the existing shareholders. The success of the public listing depends, among other factors, on the ability to determine an offer price. This is a difficult process. Thus, if the firm’s shares are overvalued, their sale to the public will fail; if it succeeds, it will entail a transfer of wealth from the new shareholders to the old ones.

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In case the new shares are undervalued the old shares will relinquish a claim on the firm’s cash flows at a price below its fair value. To avoid certain uncertainties involved in the public sale of their securities, firms retain underwriters who undertake the risk of pricing and selling the new securities. The conditions under which new securities are offered to the public and the role of underwriter are both affected by the regulatory and institutional environment of local IPO market.

2. Literature Review

The concept of Underpricing has been examined by earlier researchers. Some important studies are discussed below:

Blum (1973) examined the issues of relative performance of the over-the-counter market with the initial common stock offerings, underpricing, and the risk involved thereof covering a period from Jan 19, 1965 to June 30, 1970 with a random sample of 400 initial common stock offerings. The market returns and risks associated with these 400 issues have been calculated for 16 time periods, ranging from one week to one year after the offering date. The study suggests that the investment bankers have either underpriced or pushed in the after-market those IPOs in which they held greatest financial interest.

COUNTRY CASE STUDIES

Ritter (1984) analysed the 'hot issue' market of 1980 by considering 1028 issues in 1977-82 period in the U.S. The study calculated the initial percentage returns that were not adjusted for market movements. For each month in the period January 1977 to December 1982, an equally weighted average initial return was calculated by taking the simple arithmetic average of the initial returns of all unseasoned new issues having offering dates in that calendar month. For the 1960-76 periods, a monthly time series of the number of issues and average initial returns has been collected, allowing an analysis of the time series behaviour of initial public offerings for the 23 years period i.e. for the 1960-82. The results of the study depict that there has been 3 or 4 periods during 1960-82 in which monthly average initial returns on unseasoned new issues has been extremely high for prolonged periods. During the hot issue market of 1980, for 15-month period the initial return is 48.4%, as compared to with the average initial return in the period 16.3% of 1977-82 periods, the cold issue market. Tinic (1988) has developed and tested the hypothesis that underpricing serves as a form of insurance against legal liabilities and the associated damages to the reputation of both the investment bankers and the issuers. The researcher had divided the sample size into two periods, the Pre-SEC period, i.e., from 1923 to 1933 and the Post-SEC period, i.e., from 1966 to 1971. The study shows that in post SEC the prestigious investment bankers/ underwriters had started to avoid underwriting speculative small issues. Moreover, in post SEC the magnitude of underpricing had paled off in comparison to excess returns in pre SEC period.

Mauer and Senbet (1992) analyzed the role of secondary market in pricing and underpricing of IPOs. The study considered 1002 IPOs during the period 1977- 1984. IPOs are above \$ 1.5 million, underwritten and subsequently traded on NASDAQ, AMEX or NYSE. The analysis is done with the use of Pearson correlation coefficients calculated between initial returns, Dimon Beta, Residual risk, Offering size, age and time of offering. They had argued that incomplete spanning of the primary issues in the secondary market and limited investors access play an important role in the pricing of IPOs. The study reveals that the IPO initial returns are positively related to IPO residual risk, negatively related to offering size and company age, and are not related to systematic or beta risk. 76

Chemmanur (1993) presents an information-theoretic model of IPO pricing in which insiders sell stock, in both the IPO and the secondary market, have costly private information about performance of the firm. High value firms, which know that they are going to pool with the low-value firms, induced outsiders to engage in information production by underpricing, which compensates outsiders for the cost of producing information. So underpricing results from insiders inducing information production in order to have a more precise valuation of their firm in secondary market. Jegadeesh, et al. (1993) had tested the signaling model of underpricing from 1980 to 1986. The study has included all IPOs of the given sample period but it has considered only 'firm commitment' IPOs and has excluded the best effort offerings. The results suggest a positive relation between IPO underpricing and the probability and size of subsequent seasoned offering. But contrary to the basic implication of the signaling hypothesis, the evidence shows that issuers do not have to rely on the costly underpricing mechanism to signal to the market information relevant for future equity issues. Therefore the support for the signaling hypothesis as a major determinant of IPO underpricing is weak.

Shah (1995) has analysed the stylized empirical regularities about India's IPO market, via dataset of 2056, IPOs between time period of 1991-1995 using a time series regression analysis. The empirical

findings of the research study highlight that the price at first listing was 105.6% above the offer price on an average. Secondly, listing delay affects the IPO underpricing and is strongly related with the issue size. And finally, Underpricing gently increases with offer price. Madhusoodanan and Thiripalraju (1997) also examine the impact of the issue size on the extent of underpricing in these offerings and the performance of the merchant bankers in pricing these issues. The study indicates that, in general, the underpricing in the Indian IPOs in the short run is higher than the experiences of other countries. In the long-run too, Indian offerings have given high returns compared to negative returns reported from other countries. The study also reveals that none of the merchant bankers showed any better pricing capabilities.

Chen, et al. (2000) investigates the post-issue market performance of 277 A-share and 65 B share IPOs listed on China's new stock market during the period 1992-1995. The results highlight that A-share IPOs are more severely underpriced than B-share IPOs during initial return period; and B-share IPOs underperform for post three years period in the market. It is found that on an average both gross proceeds and pre-IPO book value of equity is greater for B-share IPOs than for A-share IPOs. All the returns data used in this study were adjusted for stock splits, stock dividends and rights offerings. They have bifurcated the study into two parts for evaluating the aftermarket performance of IPOs, which are (i) the initial returns, for the period of offering date to the 1st trading date (ii) the aftermarket period return, for one, two and three years after IPOs. The results showed that the initial returns on A-shares are extremely high and exceeded those reported in other countries. Aftermarket performance is positive in first year after listing but thereafter returns declines. Lowry and Schwert (2000) analyzed the aggregate IPO market activity and also have examined the initial returns at the firm level from 1960 to 1997. The statistical measures being used in the study are mean, median, standard deviation and auto-correlations. The results show that IPOs cycles occurs and has subsequent effect on returns and underperformance. Clustering of IPOs happens in the market and is also associated with predictably different initial returns and the information about the value of an IPO which is being available during registration period has an effect on the prices and offering decisions of other firms.

Alvarez and Gonzalez (2001) analyzed all the IPOs in Spanish market during 1987-1997, with a sample of 56 firms to provide evidence on initial underpricing and long run underperformance of IPOs. They have used Buy and Hold Returns (BHR), Calendar time portfolios and the Fama and French three factor Model for their analysis. The results of study show there exists long run underperformance when BHR are used and not when mean calendar time returns are employed. Secondly the study also shows that neither the characteristics of IPO i.e. IPO's size, underwriters reputation nor those of the firm in the year prior to going public have a statistically significant influence on the stock return of the firm three or five years after going public. Gompers and Lerner (2001) analyzed the performance of nearly 3661 IPOs in the United States from 1935 to 1975 for 5 years considering a Pre-NASDAQ period. The results display the evidence of underperformance when event time buy and hold abnormal returns are used. However the underperformance disappears when cumulative abnormal returns are used.

Ljungquist, et al. (2001) suggests a model of the pricing and other features of IPO process. The results of the study show that there are three main empirical IPO 'anomalies' – underpricing, hot issue markets and long run underperformance; and the emergence of hot markets result in increase in optimism of Sentiment traders which causes IPO swings in the market. Ritter and Welch (2002) presents both theoretical and



empirical evidence for short run and long run underperformance of IPOs and shows that the underpricing is sensitive to methodology and to the time period being chosen. Second, Fama-French Multifactor regressions could produce odd results.

Krishnamurti (2002) provides an evidence for the wide spread underpricing of Indian IPOs by analysing 386 IPOs in post liberalizing era, from the period July 1992 to Dec 1994. The empirical evidence confirms the underpricing phenomenon in Indian Market by using Raw returns, Market Adjusted Returns. It also analyzed the factors responsible for pervasive and persistent occurrence of underpricing in the IPO market. The research findings highlight that underpricing comes down with increasing offer prices and believed that the offer is the proxy for the size of the firm. Secondly smaller firms are more risky because there exists a greater degree of information asymmetry between insiders of the firm and outside investors. (a main reason considered for underpricing) The initial listing returns of IPOs are related to subscription levels and raw returns. Market adjusted returns are strongly related with subscription levels. Underpricing is due to the merchant bankers' inability the extent of demand for the issue at the offer price. Large time lags between setting up of the offer price and the offer opening date cause underpricing. In India, the lag period is typically three to four months long. Adverse market movements during the time lag may create mis-pricing. Singh (2003) has reported that Indian investors get very high returns up to a period of six months and thereafter the returns declines. The long-term investors, who continue to hold their investments for a period of two–three years, experience negative returns.

Yan and Cai (2003) analyze long run performance of 718 IPOs in Japanese over-the-counter market (JASDAQ) from the period 1991-2001 to determine how the phenomenal market and operating underperformance are intrinsically associated and mutually explicable by behavioral hypothesis. The study analyzes the systematic over-optimism of market investors and managers at the time of IPO events and uses the hypotheses of “Windows of Opportunity” and market timing. The performance measures being used are post-issue long-run holding period stock returns (HPRs) for JASDAQ IPOs adjusted by alternative benchmarks, along with profitability ratios; growth rates; M/B; P/E; and Tobin's Q measures of market expectations for potential earnings growth. The results shows that although median offer price of JASDAQ IPOs are lower than non-JASDAQ by about 23%, the initial returns are higher by 26%, which have shed light on the hypothesis of “leave more money under the table” in JASDAQ market. It shows that the JASDAQ IPOs suffer homogeneous collapses not only in financial performance, but in market expectation measures by M/B, P/E and Tobin's Q as well. The results of this study show that the continuing operating long run under-performance and explains that “Agency problem theory” is not effective in explaining the long run operating underperformance of JASDAQ IPOs.

Pastor and Veronesi (2003) analyzed IPOs from the period Jan 1960 to Dec 2002 and observed 16 IPO waves and used regression analysis for analyzing IPO performance. The researchers have used Market Returns (MKT), Market Volatility (MVOL), and Aggregate M/B ratio and time series analysis. The study presents a theoretical framework on different aspects such as IPO waves, Optimal IPO timing, and IPO valuations. Empirical evidence shows that the results are inconsistent with the long run underperformance of IPOs.



Vaidayanathan (2007) studies the price performance of IPOs in the NSE. The study has verified that the demand generated for an issue during book building and the listing delay positively impact the first day underpricing whereas the effect of money spent on the marketing of the IPO is insignificant. The study considers the data from March 2004 to Oct 2006 and takes into account 55 companies for analysis. The degree of underpricing in the sample is varying from -33.04% to 82.5% with a mean value of 22.62%. There are only 27.27% which got listed at a discount to their offer price (i.e. overpricing of issues), whereas 72.73% firms showed underpricing phenomenon. The average underpricing has gone down up to 22.62% during the period in context, as compared to 105.6% (reported by Shah, 1995) during the period 1991 to 1995, due to change in regulation whereby the allocations to informed investors are allowed, which makes the market more efficient. There are a large number of firms (54.5%) in the sample which give a negative return, unadjusted for market returns just one month after their listing, when at the same time adjusted for market returns (more than 58% of the firms in the sample) give a negative return in a period of one month. An investor would be better off by investing in index based mutual funds during the period of the study rather than investing in IPOs if only a short term horizon of one month is considered. One of the important and unique contributions of this study is that the aftermarket in India regards the final offer price which has been set after book building as a credible signal for the firm's underpricing. Another finding of the study is that the returns from IPOs get diffused within one month of the listing of the firms and on an average the gains in one month after listing are lesser than those of the market.

Kumar (2007) has analysed the long run as well as short run price performance with respect to the book building process in India and has verified the presence of underpricing phenomenon in Indian IPOs up to the time span of twenty four months from the date of listing. The study examines 156 firms (which issued their IPOs through book building route on the NSE) over the period of 1999 to May 2007. The short run performance has been analysed by applying the simple returns and market adjusted returns to capture the market movements during the period between the offer closures to listing. The long run performance analysis is done by studying the buy and hold adjusted returns (BHAR) and monthly market adjusted returns (MMAR) at regular monthly intervals from the second day of their listing using Nifty. The empirical evidence shows that 156 IPOs on an average got listed with 26.35% premium over the offer price and the median premium of around 18%. The researcher has applied a regression technique which shows that the offer to open returns explain the variation in offer to close returns to an extent of 80%. Also cross sectional regression has been used with initial returns (dependent variable) and size, before market condition, offer price quotient to explain underpricing (independent variable). The results suggest that the larger the issue price, the lesser is the underpricing. If the general market conditions are optimistic, the issue attracts more investors thus leading to higher premium in returns. The empirical research of long run analysis shows that the IPOs give better performance up to two years but after that they start underperforming and a comparison with international evidence shows the after-market performance over three years period is -14.69%. An important finding of the paper is that with the introduction of book building process in India the extent of IPO underpricing has gone down.

Janakiraman (2007) has examined the evidence of the long run underperformance in the Indian market using the data set of firms over the period of 2000-02, by using CAPM and three factor models as benchmarks taking a sample of 116 companies from various industries. The sample of the study consists

of 116 IPOs issued by companies in the Indian market during the period 2000 -2001. The aftermarket performance is taken for five years. The study total return, market adjusted abnormal return for short run as well as for long run. The study employs the basic capital asset pricing model (CAPM), the Fama and French three factor model and the average return model. The results for the three factor model imply a greater positive return as compared to the CAPM in the long run. The results depict that the three factor model may be better suited for explaining long-run underperformance. The long term performance of these companies shows that investment in Indian IPOs provides positive abnormal return by the end of 60 days. The abnormal return is greater for investment in smaller companies to investment in larger companies.

Khurshed, et al. (2008) has examined the timing and subscription pattern of different groups of investors' viz. retail investors, QIB's, NII's dividing the study into two parts, the Pre-listing period and Post-listing period underpricing. The sample period for the study is March 1999 to March 2008 and the sample size is 239 IPOs. The results indicate that subscription level of non-institutional investors and retail investors is significantly influenced by the subscription pattern of qualified institutional buyers. Moreover, the findings show that the transparency of the book-building process in Indian IPOs helps to nullify the winner's curse problem for the non-institutional and retail investors. Singh and Kumar (2008) have analyzed short and long run underpricing of IPOs in the Indian Capital markets and propose a model of underpricing taking oversubscription variables along with age and issue size. They have performed industry wise analysis from the time period of Jan. 2006 to Oct.2006 by taking 116 IPOs. The study shows that Indian Capital markets are found to follow industry specific waves. The sectors which are performing well are more underpriced in short run as well as perform well in long run.

Objectives of the study

Although enough research has been done on pricing performance of IPOs, still there are certain gray areas, which have drawn the researchers to conduct this study. More specifically, the study has been designed to achieve the following objectives:

- i. To measure the initial underpricing of IPOs in India from the date of offer to the public to the date of their listing.
- ii. To examine the extent of short run underpricing of IPOs in India
- iii. To analyze the underpricing for the long run up to a period of 3 years.
- iv. To analyze the factors influencing price performance of IPOs.

To achieve these objectives the following hypotheses have been proposed:

H₁: There is no relation between age and pricing performance of the IPOs

H₂: There is no relation between Issue size and pricing performance of the IPOs

H₃ : There is no relation between Subscription level and pricing performance of the IPOs

H₄: There is no relation between Listing Lead time and pricing performance of the IPOs



H₅: Long run underpricing is more than Short run underpricing.

3. Research Design And Methodology

The study has been aimed at appraising the price performance of the Indian IPOs and to judge the extent of underpricing. The study is based on the secondary data. Secondary data has been collected from the National Stock Exchange of India, SEBI etc. The study includes the prices of those companies which satisfy the following criteria:

- i. The IPO is listed on the NSE and has been traded for six months for short run analysis, and up to three years for long run analysis.
- ii. Data regarding offer price, listing date, listing price and the prices subsequently required are available.
- iii. Short-run analysis: All IPOs, with equity share as an instrument, listed on NSE for the time period from year 1999 to Dec 2008 have been considered and 244 companies have been taken for the short run analysis.
- iv. For Long-run analysis: All IPOs, with equity share as an instrument, listed on NSE for the time period from year 1999 to 2005 have been considered. For the long run analysis the total no. of companies is 65.
- v. For the factors affecting IPOs price performance analysis: All IPOs that's data has been available are considered for study.

To test whether a stock has been priced at its intrinsic worth or not and to determine the magnitude and degree of the deviations of market price of the stock from its offer price, returns have been computed. If the returns are positive, the indication is that of underpricing, while negative returns imply overpricing. It is not possible to compare these returns across the board, because the market was in different phases during the period. So, this return has been adjusted using the returns on the CNX S&P Nifty Index for the corresponding period. In order to analyze the short run underpricing, one week, one month, three months and six months time intervals have been taken. In case the share prices are not available for a particular date, a seven days window has been considered and the price available on the nearest date has been selected. The initial return on IPOs has been computed as the difference between the closing price on the first day of trading and the offer price, divided by the offer price.

$R_Ret = [(P_1 - P_0) / P_0 * 100] \dots \dots \dots (i)$

Where R_Ret. = subscriber's initial return (hereafter raw return)

P₁ = closing price on the first day of trading

P₀ = Offer price

The return measured by Equation (i) would be valid in a perfect market, where there is no time gap between the application closing date and the first day of trading, no opportunity cost of money deposited with the application (or demand for shares does not exceed the supply of shares and hence no rationing takes place), and no other costs associated with lodging an application. If the first condition is not

fulfilled, returns should be adjusted for changes in market conditions during this period. In most cases the gap between the application closing date and the first day of trading would be very small and is likely to have a negligible effect. But, in India this gap is quite long. During this period, a major change could occur in market conditions and the observed premium (discount) measured by equation (i) could be caused by a change in market conditions rather than initial mispricing. Therefore, the raw return estimated by equation (i) has been adjusted for market return.

$$\text{MAER} = [(P_1 - P_0/P_0) - (M_1 - M_0/M_0)] * 100 \dots\dots\dots(ii)$$

Where MAER = Market adjusted excess return

M_1 = Closing value of Market Index on the first trading day

M_0 = Closing value of Market Index on the offer closing date.

Since for different companies, the time taken to list varies, so to normalize for this, annualized returns will be calculated by multiplying Raw and MAER by the following factor.

$$\text{Annualising Factor} = 365 / \text{Listing Lead Time} \dots\dots\dots(iii)$$

The returns for the different time period gaps considered is calculated by taking closing prices of the given stock after the specified time gap (i.e. one week, 1 month, 3 months, 6 months, 1 year, 2 year or 3 years) from the listing day. So the formula used in equation (i) is adjusted as follows:

$$R_Ret_t = [(P_t - P_0/P_0) * 100] \dots\dots\dots(iv)$$

Where $R_Ret.t$ = raw return of the stock at time t after listing day

P_t = closing price at time t

P_0 = closing price on Listing day

Similarly, the market adjusted excess returns are calculated for the given time periods, by using the following formula

$$\text{MAER}_t = [(P_t - P_0/P_0) - (M_t - M_0/M_0)] * 100 \dots\dots\dots 4$$

Where MAER = Market adjusted excess return at the end of time period t

M_t = Closing value of the index at time period t

M_0 = Closing value of the index on Listing day

The average of R_Ret_t values, for all securities gives the return on days 't' for the sample. To examine the short-run underpricing, another measure Wealth Relative (Index) has been calculated. The magnitude of this measure is an indication of the performance of IPOs vis-à-vis

The market. A wealth relative of value greater than unity implies that IPOs outperformed the market in that period, while a wealth relative below 1 indicates under-performance. When an IPO outperform the market then that means that it has given higher returns than the market

Which implies that it was underpriced previously and when it gained its actual worth in the market it outperformed the market in terms of returns. WR_{it} for a sample of n stocks at time t is calculated using the formula:

$$\text{Wealth Relative, } WR_{it} = \frac{1 + \frac{1}{N} \sum_{i=1}^N R_Ret_t}{1 + \frac{1}{N} \sum_{i=1}^N MR_Ret_t} \text{ ----- (vi)}$$

Where $R_Ret_t = R_Ret. /100$

$MR_Ret_t = MR_Ret. /100$

N = total number of IPOs in the sample

4. Results and Discussion

IPO Activity in Indian Stock Market

IPO market in India has seen many ups and down during the last decade. It has seen a steep rise in the initial years of the post liberalization. The growth observed during the first half of the 90s is mostly attributed to the financial liberalization of the economy. Capital market reforms like abolition of the office of controller of capital issues (CCI), constitution of SEBI under the new security and regulation act and relaxation in pricing of capital issues played an important role in such upsurge. Table 1 shows that IPO market has witnessed an exploding growth from 158 issues during 1991-1992 amounting to Rs. 724 crore to 1357 IPOs for Rs. 10924.11 crore during 1995-1996. There was a marked decline in the number of IPOs and amount raised through them in 1996-1997, largely as a result of stricter eligibility criteria for public issues imposed by SEBI. The number of IPOs declined to 717 amounting to Rs. 5958.60 crores during 1996-1997 (Annual Report, SEBI, 1996-97). The number of IPOs further declined in 1997-98 to 52 amounting to Rs. 1047.52 crores. The decline in the share of IPOs can be partly attributed to the decline in industrial activity in the country and partly due to strict entry point norms, which prevented green field projects without track record from accessing the market (Annual Report, SEBI, 1997-98).

For the financial year 1998-99, only 18 IPOs for Rs. 404.21 crores were floated. The absence of issues of good quality, lack of confidence of investors in new companies and depressed secondary market, were some of the factors, which hindered the growth of IPOs (Annual Report, SEBI, 1998-99). There was a marked increase in the number of IPOs during 1999-00 to 51 from 18 IPOs and their successful subscription indicated the restored willingness and confidence of investors to invest in new companies especially in knowledge based industries particularly in information technology and healthcare IPOs which came to the market in a big way. This was also a worldwide trend. And this trend continued for 2000-01 when number of IPOs increased to 114 amounting to Rs. 2722.38 crores. The number again

tumbled down to 7 IPOs amounting Rs. 1201.8 crores during 2001-02. But it was back to spring time again by the end of 2004-05.

Thus, it can be concluded from table 1 that IPO market experienced boom during 1997-99 and recovery during 1999-01. Things again looked down for 2001-03 but back to good times by the end of financial year 2006-07 & 2007-2008. Hence, IPO market in India presents an interesting case for study because of its various nuances for a period 1992-05.

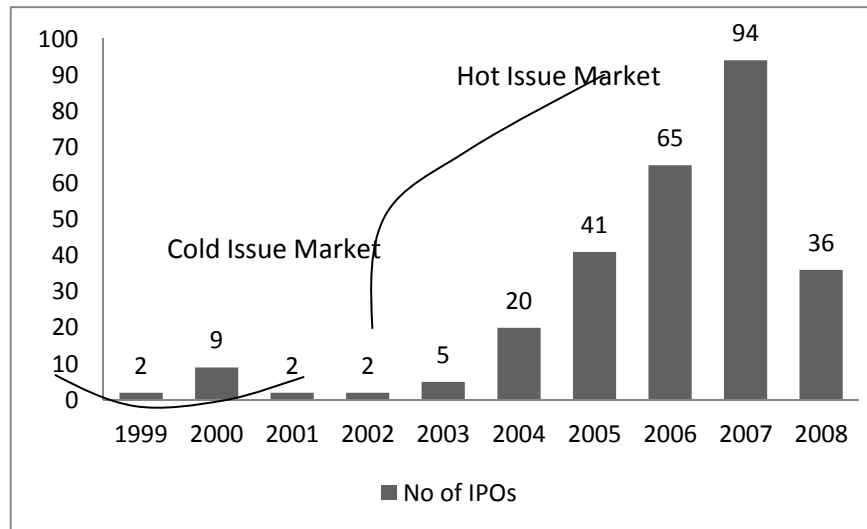
Table 1: Growth of IPO market in India

Year	No of IPOS	Amount (Rs Cr.)	Year	No of IPOS	Amount (Rs Cr.)
1991-92	158	724	2000-01	114	2722.38
1992-93	467	3673	2001-02	7	1201.8
1993-94	693	7650	2002-03	6	1038.68
1994-95	1231	9919	2003-04	14	1412
1995-96	1357	10924.1	2004-05	23	12382
1996-97	717	5958.6	2005-06	79	10936
1997-98	52	1047.52	2006-07	77	28504
1998-99	18	404.21	2007-08	85	42595
1999-2000	51	2719.04			

IPO Activity in NSE

As it is clear from Fig. I over a period of 1999-2003, there is cold issue market, i.e., the issuance of no. of IPOs in NSE is far less than in hot issue market, i.e., from 2004 to 2007. Then again there is a fall in no. of IPOs being issued in NSE. The main reason for the increase in IPOs over a time period, is that during 2003 to 2007, there has been a boom period in India. Besides this SEBI has made a no. of amendments increasing the investors' confidence in Primary market viz. no. of IPOs are being launched through Book-Building process due SEBI initiatives, IPO Grading system (mandatory w.e.f. May 2007) and moreover protecting retail investors by revising DIP Guidelines from time to time. Regarding the recent fall in issuance of IPOs in 2008 is the current slowdown in India due to recession in developed economies.

Fig. I. IPO Activity in NSE



Price Performance of IPOs: Short Run Analysis

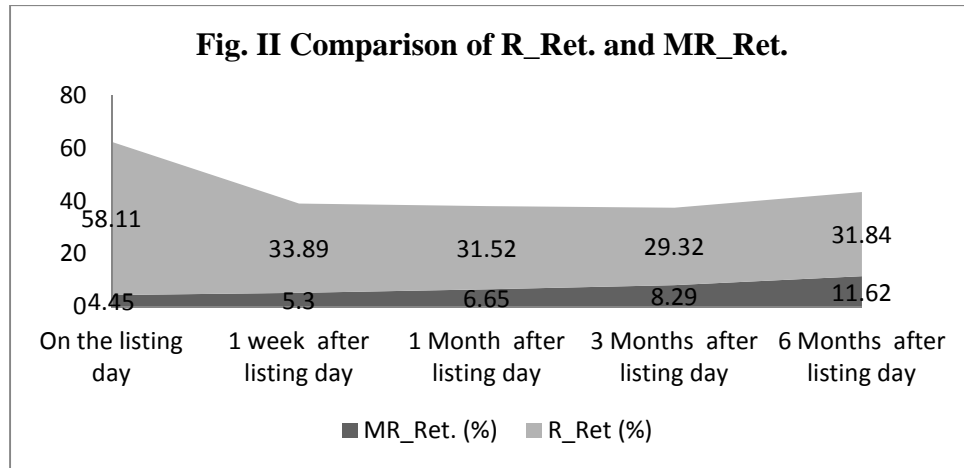
Short run analysis of price performance of the IPOs is essential to study the extent of underpricing. For this purpose, the buy and hold period of first trading day i.e. listing day, 1 week after listing day, 1 month after listing day, 3 months after listing day and 6 months after listing day have been considered.

Table 2. Returns over short run

Time Frame	R_Ret	MR_Ret.	Max. R_Ret	Max. MR_Ret.	Min. R_Ret	Min. MR_Ret.
On the listing day	58.11	4.45	6589.86	911.84	-88.9	-214.4
1 week after listing day	33.89	5.3	1010	916.17	-55.5	-22.77
1 Month after listing day	31.52	6.65	964.58	952.16	-67	-36.29
3 Months after listing day	29.32	8.29	683.12	868.9	-80.7	-87.31
6 Months after listing day	31.84	11.62	572.92	987.9	-83.3	-45.88

The overall returns obtained from the IPOs are shown in the table 2. The returns, thus, calculated are the Raw Returns taken on the listing day, one week after listing day, one month after listing day, three months after listing day and six months after listing day so as to analyze the price performance of the IPOs in the short run. These returns are in turn compared with that of the market returns, which are calculated by taking into consideration the S&P CNX Nifty Index (so as to represent the market behavior during the exactly same time span).

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As we can see from fig.II the R_Ret are quite high on the listing day and have fallen considerably over the short run time period. Also, the MR_Ret are not showing so much variation like the R_Ret. These returns show the extent of underpricing of the IPOs which generate returns to the investors on the first trading day of price discovery. The returns fell down dramatically after one week from the listing day and subsequently to compensate for the price appreciation and tend to normalize thereon. The maximum R_ret from the IPOs that an investor can earn on the listing day is 6589.856 % whereas the minimum loss is 88.9%. These figures itself shows the scope or the wide range for the profit. The higher end for the profit is quite high as compared to losing end along with the overall raw return is approx. 12 times the market raw return. Similarly, we can observe that the raw returns are 6times, 5 times, 3.5 times and 2.6 times the market raw returns on 1week, 1 month, 3 months & 6 months after listing respectively.

Table 3. Values of Ann. R_Ret. and MR_Ret.

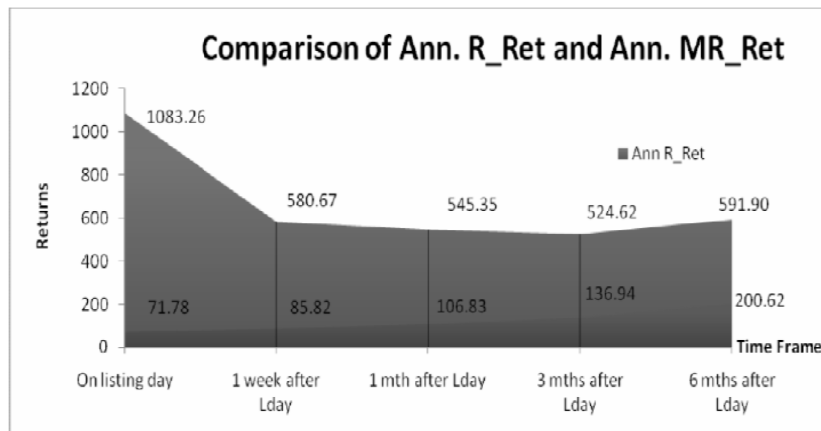
Time Frame	No	Ann R_Ret	Max Ann R_Ret	Min. R_Ret	Ann MR_Ret	Max. MR_Ret	Min MR_Ret.
On the listing day	244	1083.26	133627.81	-1545.32	71.78	15128.2	-339.63
1 week after listing day	244	580.67	20480.55	-913.87	85.82	15200.15	-295.83
1 Month after listing day	244	545.35	199559.6	-997.4	106.83	15797.12	-575.85
3 Months after listing day	244	524.62	13852.25	-1472.5	136.94	14415.89	-1448.61
6 Months after listing day	244	591.9	11617.47	-1519.81	200.62	16387.54	-729.31

In order to make returns obtained from the various IPOs more comparable the listing lead time has been considered and the annualized raw returns both for the IPOs and the market have been calculated. The

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inclusion of this factor provides a similar basis for the study of extent of underpricing in the IPOs by nullifying the effect of the time taken or varying number of days taken by the companies for getting their stocks listed thus annualized raw returns provide a better picture of the price performance of the IPOs and the phenomenon of IPOs. In the short run the results highlight that there is a good difference of annualized raw returns over the annualized market raw returns.

Fig. III. Comparison of Ann. R_Ret. and Ann. MR_ret.



The fig. III supports the phenomenon of excessively high annualized raw returns in the short run as compared to the lesser amount of loss possibilities which are equivalent to that of normal market loss. MAER or Market Adjusted Excess Return and Ann. MAER clearly define the excessive amount of returns that goes into the pocket of an investor over and above the market returns. Moreover when we consider Annualized MAER the effect of the varying listing delay gets nullified and the phenomenon of underpricing reflects itself in the true manner. It is quite clear from the table 4 and fig.3 that when we simply take MAER the returns are so but when the Ann. MAER are considered then they simply surpass the MAER and shows the scope of underpricing present in the market.

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Table 4. Values of MAER and Ann. MAER

Time Frame	No	MAER	Max MAER	Min. MAER	Ann MRER	Max. Ann MAER	Min Ann MAER
On the listing day	244	53.66	6603.34	-676.19	1011.47	133901.2	-11218.7
1 week after listing day	244	28.59	1005.66	-756.94	494.85	20392.64	-12558.4
1 Month after listing day	244	24.87	960.94	-904.97	438.51	19485.84	15014.37
3 Months after listing day	244	21.03	680.32	-861.33	387.68	13795.54	-14290.4
6 Months after listing day	244	20.21	561.91	-1006.84	391.27	11394.43	-16704.5

Wealth Relative: Wealth Relatives is an efficient measure to evaluate short run underpricing of IPOs. In figure IV the values for the wealth relative index has been compared with the unity. The value greater

than unity shows that the IPOs have been underpriced. In case of the sample taken for study, the values are greater than one and are highest on the listing day which implies that underpricing of IPOs had been discovered on the first day of trading itself. Also the phenomenon of underpricing persisted in the short run till six months after listing.

Fig. IV. Wealth Relative

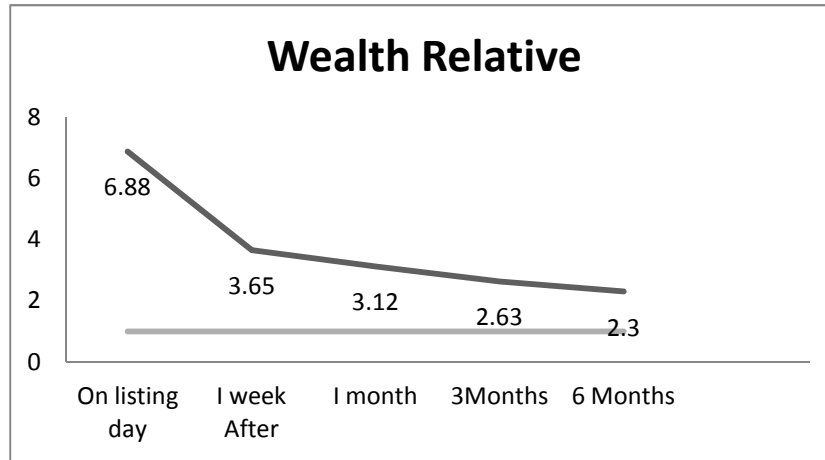
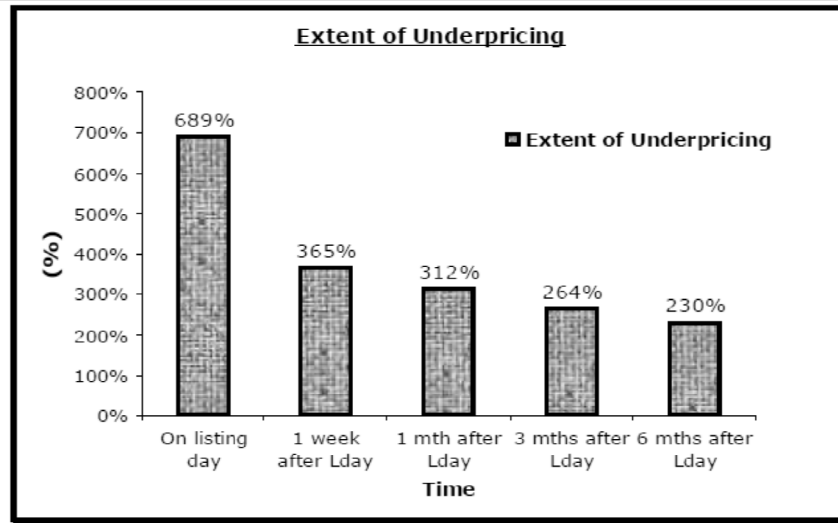


Figure IV shows the percentage values of the extent of underpricing and it is evident that the IPOs generated 689 % (approx) returns on the first day of listing and outperformed market index returns by 589%. Thereafter, they tended to normalize their returns and generated high returns for the investors all through the short run time period. But what is worth noticing here is that though the returns remain quite high in the short run but they show a declining trend which infers that the price behaviour tends to normalize the returns so as to make the IPO generated returns equivalent to the market returns. These returns actually normalize themselves along the market behaviour in the long run after the market players have taken the fruits of underpricing. Thus, this measure verifies the high extent of underpricing present in the IPO market in the short run.

Fig. V. Extent of Underpricing



Factors Affecting IPO Price Performance

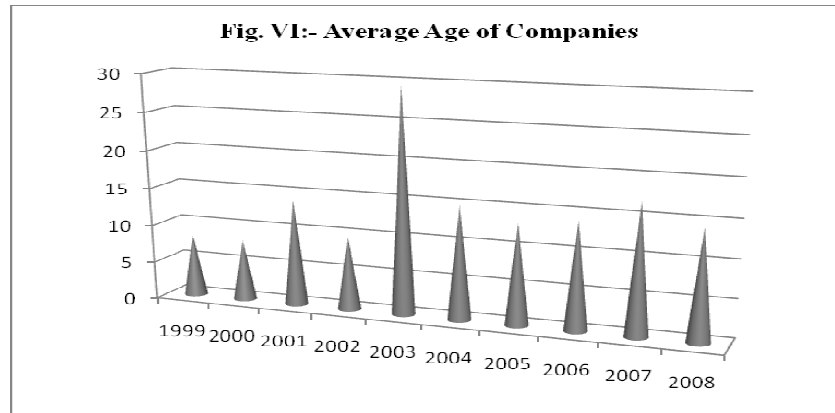
Comparative Study of factor Age over the considered time period: Age of a company is the difference between the incorporation date of a company and its listing date irrespective of the company’s name change and sifting over from private to public limited.

Table 5. Average Age of Companies (Opting for IPOs) 89

Year	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
N (244)	1	9	2	2	5	15	40	60	82	29
Mean	8.15	8.08	14.05	9.69	29.55	15.03	13.25	14.1	17	14.4
Median	8.15	6.24	14.05	9.69	12.42	15.7	10.7	12.1	2.84	12.1
Std. Dev.	-	4.33	8.5	4.33	42.16	10.97	13.15	7.89	15.2	12.1
Max.	8.15	16.74	20.07	12.76	103.82	35.55	73.43	36.7	100	66.9
Min,	8.15	4.93	8.03	6.62	4.05	1.05	0.32	0.39	2.32	2.29

From the above Table 5 and fig.VI it is clearly shown that over the time period the mean age of companies has declined. In other words, we can say that the young and middle-aged companies are coming to market more rigorously in the considered time period, except for the period 2003 in which the mean age is high because of launch of IPO of Vardhman Acrylics Limited which is 103 years old.

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Many research studies have empirically tested the relation between age and underpricing. The present study highlight (table 6) that age affects the underpricing significantly, which is also shown in table 8. The highest returns are given by from the age group of 20 to30. The results highlight that with an increase in age, the raw returns also increase though in the age group of more than 30 years the returns have declined. It is due to the reason that the data variation in this group is significant as companies' age is ranging from 30 years to even 100 years.

Table 6. Initial Listing Returns of IPOs by Age

Sample	Av. Age	Raw Ret.	MAER	Offer Price	Listing Lead Time	Issue Size	Ann. Raw Ret.	Ann. MAER
N	Years	%	%	Rs	Days	Lakh Shares	%	%
242	All	23.85	21.56	211.19	27.8	318.28	444.5	711.8
79	A≤10	30.24	31.72	204.02	24.68	408	505.47	1644.22
117	10≤A≤20	76.09	68.62	230.06	226.49	205.57	1474.17	1949.59
32	20≤A≤30	148.84	113.31	182.25	37.03	404.62	2406.45	3291.26
14	A≥30	88.41	63.32	160.21	35.36	551.82	1487.14	7505.39

Issue-Size and Price Performance: Issue size is the offer size of a company i.e. the total no. of shares a company is selling in their IPOs. According to SEBI guidelines the issue size that is being offered should be disclosed in Red- Herring Prospectus. The overall mean issue size over the considered time period (1999-2008) is 445.16 .The maximum offer size is 8658.3 of NTPC (2004) and minimum is 13.71 of D-LINK (2001) with raw returns 21.85 and -48.85 respectively.

Table 7. Initial Listing Returns of IPOs by Issue Size

Sample size	Issue Size I	Raw ret.	MAER	Offer Price	Listing Lead Time	Issue Size	Ann Raw Ret.	Ann. MAER
N	Years	%	%	Rs	Days	Lakh Shares	%	%
244	All I	23.31	21.49	212.44	27.75	321.708	442.73	707.01
108	$I \leq 60$	26.37	25.04	248.42	30.01	39.72	457.64	1029.52
60	$60 \leq I \leq 120$	27.73	4.17	203.35	27.7	83.79	491.65	1936.48
23	$120 \leq I \leq 180$	168.98	162.19	226.26	23.21	147.34	3210.82	4216.05
11	$180 \leq I \leq 240$	114.98	94.95	132.09	20.81	201.25	2059.426	1727.45
41	$I \geq 240$	478.01	478.85	146.4	26.31	1513.46	9435.43	707.01

Table 7 shows the relation between underpricing with the Issue size. All the average raw returns and mean MAER given by IPOs basis on Issue sizes are positive. From the Table 9, it is clearly shows that the optimum issue size for an IPO is between 120 and 180 (lakh shares). With an increase in the issue size, there is a gradual increase in raw returns. So from an investor point of view this is the optimum size to invest in. For the last sample of the table i.e. above 240 lakh shares, the returns are high because of data variation as it includes the shares ranging from 584.99 of PTC to 8658.3 of NTPC lakh shares. So the variation is obvious. The correlation and regression value between the above two factors is 0.27 and R^2 is 0.015.

Subscription level and Price Performance: Subscription level of IPOs (Table 8) depicts the total demand of the issue generated in market by investors' viz. retail investors, NIIs and QIBs. Subscription level is being calculated by dividing total demand (of the issue) by total offer size. The benchmark value of subscription level is 1. If the subscription level value is less than 1 then the issue is undersubscribed and if it is more than 1, it is over-subscribed.

Table 8. Initial Listing Returns of IPOs by Listing Lead Time

Sample Size	Listing Lead Time	Raw Ret.	MAER	Offer Price	Listing Lead Time	Issue Size	Ann. Raw ret.	Ann. MAER
N	(no of days	%	%	Rs	Days	Lakh Shares	%	%
244	All	23.37	21.54	212.44	27.75	321.71	1082.4	1723.64
5	$L \leq 15$	880.62	785.94	47	13	484.47	26338.62	23693.99
221	$15 \leq L \leq 30$	27.37	25.27	219.89	21.34	306.08	517.76	839.81
18	$L \geq 30$	75.66	64.86	167	110.89	468.32	995.1	1046.24

From the table 8 it is crystal clear that with an increase in subscription level there is a subsequent increase in raw returns. This shows the clear correlation between the two indicating that the issues which are more subscribed are bound to give significant positive raw returns indicating underpricing. The multiple R is 0.27 and R² is .07 for these factors.

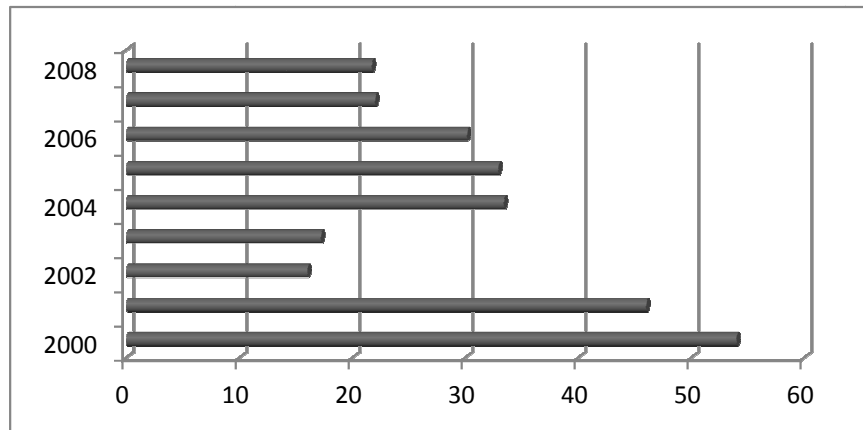
Listing Lead Time and Price Performance: Lead-time is the time lag between the closing date of the issue and the time when it gets enlisted with the stock exchange. Different issues take different time spans for listing. The listing delay in the sample used in the present study ranges between 18days to as many as 576 days and this lead-time averages at 27 days. So to scrutinize the effect of delay in IPO listing performance, a cross-sectional analysis was made slicing the lead-time in three categories.

Table 9. Listing Lead Time over a considered Time Period

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008
N (244)	9	2	3	5	15	40	60	82	29
Mean	54	46	16	17.2	33.4	32.9	30.13	22	21.7
Median	52	46	16	20	21	21	21	22	21
Std. Dev.	15.8	2.8	2.8	5.2	50.9	77.7	50.3	2.3	2.3
Max.	92	48	18	22	217	512	352	36	27
Min.	42	44	14	11	13	17	16	17	17

Table 9 shows that the raw returns as well as market adjusted return estimated on the basis of number of days for listing indicate that when the listing delay is between 15 to30 days, the returns are significantly different from zero. 90% of IPOs are falling in the category of 15 to 30 of listing lead time. But the IPOs which are falling in the range of less than and equal to 15 days are giving highest raw returns though they are only 2%. So, the above analyses support the hypothesis that lower listing delays give better performance though no. of firms chose to have listing delays of 15 to 30 days. The value of R is 0.15 and R² 0.024

Fig. VII. Mean Lead Listing Time



From the table 9 and Figure VII it can be concluded that the listing lead time has come down over a period of time. The mean listing delays have declined from 54 of year 2000 to 21.7 of year 2008. The maximum and minimum has come down from 92 and 42 to 27 and 17 respectively from 2000 to 2008.

Long Run Analysis

Generally, the investor envisages, what would be his return after one year, or two years, or three years or in subsequent years if he invested his money today in an investment avenue. Initial public offerings are an interesting investment opportunity which generally ensures positive return in the short run. But do they offer the same thing in the long run also? Do the IPOs remain underpriced in the long run or not? To answer these questions the long run price performance analysis has been done, which is presented below. The overall returns obtained from IPOs are shown in the table 13. The returns, thus, calculated are the raw returns taken on the listing day, one year after the listing day, two years after the listing day and three years after the listing day, to analyze the price performance of the IPO in the long run. These returns are in turn compared with that of the market returns, which are calculated by taking into considerations the S&P CNX Nifty Index (so as to represent the market behavior during the exactly same time span).

Table 10. Raw Returns and Market Returns

Time Span	R_ Ret.	MR _ Ret.	Ann.R_ Ret.	Ann. MR_ Ret.	Max.Ann. R_ Ret.	MaxAnn. MR_Ret.	Min.Ann. R_ Ret.	Min.Ann. MR_Ret.
On Listing Day	32.29	-0.15	573.78	14.51	4774.33	218.43	-1576.86	-217.26
After 1 Year	85.15	30.85	1773.03	599.29	21669.47	1669.47	-967.53	-250.89
After 2 Years	121.4	77.9	2514.44	1482.7	48301.66	2935.26	-1104.48	-256.05
After 3 Years	142.83	88.36	3071.5	1673.23	74357.54	5906.02	-1709.38	-260.85

It is generally observed in the equity market that IPOs would come to their intrinsic value in the long run but there are various factors which also play an important role, like market sentiments of the considered time period, global market trend etc. In my study there are 65 IPOs over a time period of 1999- 2005 in the long run analysis. Their returns have been calculated after 1, 2 and 3 years respectively. In India there was a Boom-Period during 2003- 2007, so the raw returns are greater than market returns even after 1, 2 and 3 years and have not come to their true value (so it is an exception in the taken time period due to market sentiments). The above table explain the comparison of max. and min. R_Ret. and MR_Ret. It shows that the max raw returns are very high compared to max. market returns and same is the case with min. raw returns.

Comparison between Ann.R_Ret and Ann. MR_Ret:-Ann. R_Ret represent the raw returns being annualized in effect to nullify the impact of time taken by an IPO for getting on to the stock exchange floor .While on the other day Ann MR_Ret shows the annualized raw returns for the same considered time period of the market as to provide a comparable benchmark. When we compare the annualized returns with annualized market raw returns we can clarify whether the IPO has given investor a better return or not, for the considered time period in the same regulatory framework and market sentiments.

Table 11:- Comparative values of MAER and Ann. MAER

	MAER	Ann. MAER
On listing Day	31.45	559.27
After 1 Year	54.3	1173.73
After 2 Years	43.5	1031.73
After 3 Years	52.35	1398.27

The table 11 depicts that an investor remains in the profit even after holding the equities for 3 years. The highest annualized raw returns are made by IndiaBulls IPO for the successive three years. The maximum return came in 2007 i.e. 74357.54(ann. Raw returns). Over the considered time period Ann. Raw returns grow very fast as compared to market ann. raw returns.

Maximum and Minimum Ann. R_Ret and Ann. MR_Ret.: The max. and min. Ann. R_Ret & Ann. MR_Ret. show the range of the data i.e. what can be the highest data range and lowest data range. Moreover it also depicts by how many times a market can jump up to its higher end and slope down towards its lower end and also the IPOs returns. The table 15 shows that Ann. R_Ret in both cases, i.e., max. and min. are fared well as compared to the Ann. MR_Ret. So, it can be concluded that an investor is well off in the considered time period than market in the same time period. *Comparison of MAER and Ann. MAER:* By studying the comparison, it can be explained that how much an investor can earn from the market. By taking Ann. MAER, the effect of listing delays can be nullified and so underpricing can be shown more clearly. However in the MAER, there is an effect of listing delays but in long run it has to be wiped out to show the real picture.

The above results depict that after nullifying the effect of listing delays, the underpricing (Fig VIII and IX) is shown more clearly. It is also shows the level of underpricing present in the market.

Fig. VIII. Wealth Relative

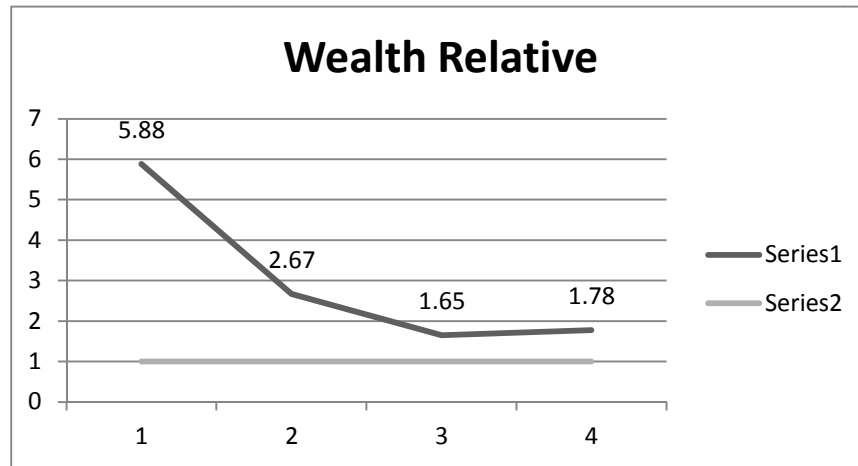
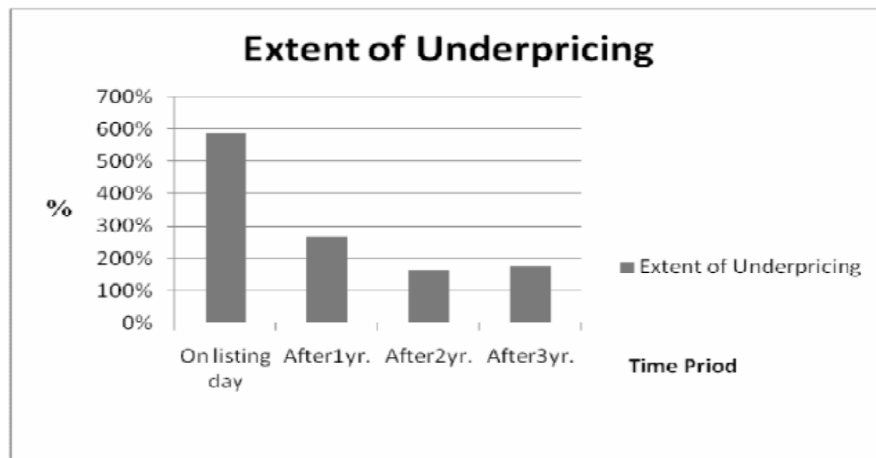


Fig. IX. Extent of Underpricing



5. Conclusion

From the foregoing analysis, it can be concluded that underpricing is present in NSE. It can also be concluded that underpricing is more severe in the short run periods, i.e., from the listing day to the six months after the listing. However the long run IPOs tends to move to their intrinsic value or true value wiping out much of the underpricing. The difference between the extents of underpricing in the two time intervals is very much. For long time interval is taken up to 3 years from the day of the listing of the company. It shows that if an investor buys and holds the equities, how much he is going to earn over the considered time period. In addition to that an analysis of the influence of factors on IPOs pricing performance has been done. The factors taken in to consideration are: Subscription level, Issue size,



Listing lead time and Age. The results show that these factors influence the initial returns, i.e., R_Ret. of the listing day of the company.

6. Limitations of the Study

The limitations of the average that is being impacted by the extreme values can't be avoided in return calculation while examining the performance for annualized raw returns and annualized market adjusted raw returns. The non-availability of data of prices for few companies' resulted in not including these for this analysis purpose. The volatility and the changing market conditions, which do have an impact on the prices of the shares and thus the returns generated thereof, could not be avoided. The other limitation of this study was the shortage of time for completing such a vast topic, due to which the sample of limited companies on NSE has been taken.

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