Chapter 1

Introduction

1.1 Backdrop

The Indian capital market had witnessed a paradigm shift with the implementation of some favourable economic policies and introduction of important institutional mechanisms during the early part of the millennium in the realms of primary and secondary market. These initiatives were aimed at bringing in the best practices and making up the market comparable to the global standard. A very significant reform in the primary market sphere is the introduction of book building process of issuing shares. A corporate entity generally raises capital from the primary market either through initial public offering (IPO), follow-on public offer (FPO), rights issue, and private placement or through euro issue. An IPO is usually the first public offer of securities in the primary market by a company at its inception. The transition from being a private company to a public company is one of the most eventful occasions in the lifecycle of a corporate entity, and this transition is availed of by the corporate entities through IPO process. The obvious reason for going public is to raise fund which is critical for the sustenance and future health of companies.

The earlier mechanism of determining the offer price during the regime of Controller of Capital Issues (CCI) was to present the shares at a fixed price without taking into account the concern of issuing company and investor’s feedback. Empirical evidences showed that this fixed price offerings resulted in high cost of capital for firms due to underpricing of shares for attracting subscription. The pricing pattern subsequently changed to free-pricing mechanism after the repelling of CCI Act and formation of Securities and Exchange Board of India (SEBI). This era was characterised by unrealistic and abrupt pricing structure, which stripped the radiance of the capital market. Investors used to shy away from the market after burning their fingers in some of those premium issues which are, at present, being quoted much lesser than their issue price and even below their par value.

The book building, introduced in US market, is a recognised price discovery mechanism. It usually means that the ‘book is being built’ based on the demand feedback of the investors for shares at their offer price within a price band fixed for
the issue. During the process, investors can understand the bid price and the number of shares being ordered for the particular issue. On the basis of the resulting demand generated, the firm and its investment bankers determine the IPO offer price. Ostensibly, the aim of this exercise, started in India at the behest of the market regulator, is to make the investors aware and make them more informed about the fundamentals of the firms in which they are investing their money. It is also likely to have an understanding on the huge over-subscriptions that most of the issues by the corporate entities in India have generated during the past years. The first public issue in the annals of National Stock Exchange (NSE) which successfully follows the path of book building mechanism was Hughes Software Limited in the year 1999.

The NSE is the first fully demutualised stock exchange in India. It is also the largest exchange in India in terms of market capitalisation in equity and derivative segments. It has developed a system of managing the primary issues through screen-based automated trading mechanism and offers its nationwide network in conducting online IPO through the book building process. The screen-based bidding system, called NEAT IPO, enables trading members to make bids directly from their own places through a sophisticated telecommunication network.

As per the data provided by SEBI, as many as 637 corporates had participated in the IPO process and a sum of Rs. 167,750.98 crores were raised during the period 1998-99 to 2011-12. It is, thus, evident that IPO has created a special place in Indian capital market. In India the first IPO driven boom was experienced during 1977-80, when the FERA (Foreign Exchange Regulation Act) regulated (presently it is replaced by FEMA [foreign exchange management act]) companies were asked to reduce their foreign holdings through public offers. Ponds, Hindustan Lever Limited (now Hindustan Unilever limited), Colgate and dozens of other companies were very much successful in attracting a large number of new investors to the capital market. Since then the market has been witnessing an increase in the issues through IPO. However, the IPO boom during 2003 to 2007, showed some fundamental difference with the previous booms that was efficiently managed by the market, the investors and the regulators. This eventually led to development of new innovations and ideas in respect to issue management. The fascination of individual investors for IPO’s has also brought about new vistas in the dimensions of the primary market as well.
A distinguishing feature about this offering is that most of the investors, whether institutional or individual, have considered this opportunity as a short term venture rather than a long term investment avenue and accordingly the IPO market thrives on listing gains and leads to the momentum of the secondary market. It is found that there has always been a huge enthusiasm whenever a mega IPO issue knocks the market and also creates a major impact on the complexion of the market. Examples of this nature in the Indian IPO scenario include the issues offered by National Thermal Power Corporation Ltd, Tata Consultancy Services Ltd., Suzlon Energy, Reliance Power, Coal India limited and others.

It is observed by the financial researchers that some of the issues through IPO process are found underpriced in the short-run, though some issues have done well both in the short-run and long-run. From the viewpoint of those researchers, IPO underpricing has been found common in nearly every country in the world. This suggests that IPO underpricing may be the outcome of basic problems of information and uncertainty in the process. In our research we have made a humble attempt to measure the performance of some selected issues through IPO in the short-run and try to ascertain the extent of under/over pricing of such issues. We have also aspired to analyse the long-run performance of those issues as very little work has been done so far in Indian context on this subject.

1.2 Rationality of the study

The Indian capital market seems to be positioned well on the growth trajectory and has observed a phenomenal growth in the last two decades. During the last decade many companies have joined the IPO bandwagon. It is observed that as the international markets become more volatile, India has emerged as one of the prominent demand driver for more participation of foreign institutional investors (FIIs) and domestic financial institutions (DFIs). To sustain this huge demand, the Indian companies currently go on increasing the capacity and to attain these needs the Indian corporate entities have gone for IPO spree during 2003 to 2007. Despite the global financial meltdown triggered by US subprime crisis and its consequent repercussions in European economies since 2008 onwards, the Indian capital market has observed a strong increase in the number of foreign direct investment (FDI) projects in India. This shows that the global investors view the country as an attractive
investment destination. In fact, India is ranked fourth most attractive destination in terms of FDI project and in terms of FDI value, it is the third best country in the world just behind China and Brazil. The fundamentals that make India attractive to the global investors’ community remain intact for the last couple of decades. The attractiveness of India is largely attributed to factors such as the high potential of the domestic market driven by an emerging middle class, cost competitiveness and an enormous pool of talent. These are some of the inherent strengths that give India an edge over other nations as one of the most preferred destinations for investment.

Thus, the rationality of the study can be viewed from three distinct but interrelated aspects viz. from the point of view of the (i) issuing companies, (ii) society, and (iii) the investors.

**(i) From the point of view of issuing companies**

The issuing companies’ desire to access the capital market, since going public raises cash and this fund can be utilised for various purposes. Particularly, it is seen that the reason for going public is to raise capital for modernization, expansion and diversification and too some extent to retire old debt and raise money for working capital requirement. So initial public offering is the safest bet for companies to raise capital but this involves some cost.

So, from the point of view of the company the issuing securities to the primary market are always risky especially, for newly established companies. However, we observed that some profit making PSUs have already taken the IPO route and still many more are wishing to embrace the same. Other reasons for going public include increased visibility and reputation of the company, which is very essential in today’s market scenario, and enables the company to better valuation in future.

**(ii) From the point of view of the society**

In a capital starved nation like India, where there is a dearth of investment in priority sectors, wastage of resources is an unpardonable offence. The implementation of liberalization process and subsequent reform measures initiated in 1991, when the country had unsustainable current account and public sector deficit, the external reserves were just $1 billion. From there the current external reserve stood at around $290 billion and the GDP growth was nearly 7% to 8% per year during the last decade till 2010. So, all these developments found encouraging for Indian economy and that
the country definitely shown more vibrant compared to the era of license raj and strict regulations. The foreign capital inflows during the last couple of years also established the recognition by the foreign institutions of our country as one of the most attractive destinations for investment.

India, however, needs heavy dose of investments to upgrade and develop infrastructure and also to achieve financial independence and full employment. The road is still very far. Moreover, channelising the small savings of the public through IPOs to the sectors that are considered essential to the community is what required today for rapid industrialization. As such, ensuring maximum utilization of such scarce resources of the country is of paramount importance.

(iii) From the point of view of investors

With the diminishing returns of bank deposit and the continuous increase in the standard of living and what is even more visible is the increased aspiration of middle class Indians; they are left with no other choice but to look for greener pastures and thereby compelled to move into the by lanes of capital market.

But unlike developed nations, Indian middle class investors are handicapped by numerous factors besides the usual risk inherent in any investment. The lack of depth in domestic capital market was another major impediment that hindered India’s drive to increase the level along with efficient utilisation of vast domestic savings and the required investment to achieve economic growth.

Technically, investors provide risk capital to the business. They need regular updated and quality information to assess whether to buy, hold or sell their equity investment. Also, they are interested to know the ability of the business to survive, prosper and to pay dividends on a continuously increasing scale. There arises an inherent question in the minds of the investors regarding the real worth of the business in which they want to put their hard-earned money. It is only found possible through an efficient analysis of the performance of the concerned company, the reputation of the promoters and host of other important factors. In fact, it has been noticed that the biggest dilemma facing the small investors is that they cannot judge the right entry and right exit time in the market. Poor quality and voluminous information as is
provided in the prospectus of the public issue is often camouflaged through some elusive information which often mislead the common investors.

During boom in the stock market it is the market operators and the speculators who used to reap the benefit of the situation, where the small investors fail to take any advantage out of it. In most of the cases they enter the market so late that the tidal waves of the market by then starts settling down and that time may be the ideal time to exit from the market.

The aim of this study is to make aware the common investors about the changing paradigm in equity investment and it is not only reliance on the advertisement and information in the prospectus as the sole guiding factor in equity market; but the other vital information which investors must bear in mind while choosing a particular company to invest, so that they are not misled or carried away by the bandwagon effect. The IPO market may look so attractive based on the results of some companies; however, it is not so easy to choose the right company. So our motive is to give some basics of investing in primary market and more specifically the overall performance that have gone through the IPO process.

1.3 Review of Literature

The anomalies in the IPO literature have inspired a multitude of research work to make endeavours in explaining the critical issues. The evidences demonstrate that the IPO market had undergone three stages of performance comprising bandwagon, underperformance and equilibrium stage as were observed by Rajan and Servaes, (1997). They examined data for a sample of IPOs and documented “three anomalies” associated with IPOs. These are short-run underpricing, hot issue markets and long-run underperformance stage as pointed out earlier and whether these anomalies are examples of market inefficiency, and if so, whether they are caused by the behavior of irrational investors or do they reflect institutional constraints. They found that higher underpricing leads to increased analyst following. They also observed that more firms complete IPO process when analysts are particularly optimistic about the growth prospects of the IPOs and the markets are upbeat, often referred to as hot issue periods. They concluded that the anomalies documented in the IPO literature may at least, be partially driven by overoptimism.
The areas on underpricing of IPOs have been dealt with by the various researchers in different ways. Some of the literature which deals with the underpricing issues has been explored. They may be modelled as: (i) the winner’s curse hypothesis, (ii) the signaling hypothesis and (iii) the market feedback hypothesis. Under the winner’s curse hypothesis (Rock, 1986), the argument proposed depends upon the existence of a group of investors whose information is not only superior to that of other investors but also superior to even the issuing firm. Due to these reasons it is known as asymmetric information model. According to the model, if the new shares are priced at their expected values, these privileged investors (informed investors) crowd out others (uninformed investors). Thus, when good issues are offered the former remains in the market and withdraw from the market when not so lucrative issues are offered. According to Rock, the offering of new issue must be priced at a discount in order to guarantee that the uninformed investors will be unwilling to bid for IPO allocations, so the IPO market will be populated only with (equally) informed investors. He further assumes that the primary market is dependent on the continued participation of uninformed investors, in the sense that demand of the informed investors are insufficient to take up all shares on offer even in attractively pricing IPOs. The winner’s curse hypothesis is thus, framed in respect to those uninformed investors who receive all the shares they have applied for the IPOs. This is because of the fact that the better-informed investors do not want the share. The winners curse for the uninformed investors is that by getting the allotment they realize that they have got the full allotment due to the lack of interest by the informed investors.

The signaling hypothesis (Allen and Faulhaber, 1989) is based on the premise that insiders possess more complete information about the firm and its prospect. As such, this group has a more accurate evaluation of the economic value of the IPO. Since outsiders do not have this inside information, a method of transferring this knowledge is needed and this transfer of information can be achieved by some reliable signals that outsiders may observe. According to them, the investment banker plays little active role in underpricing except as the role of rationing administrator. In the absence of this role, the methods by which investment banks distribute stock would appear to have little appeal to their client firm. In the context of IPOs, firms typically can signal their quality of offer with several variables other than the offer price. Some of the prominent signaling hypotheses for outsiders to look out for are (i)
the ownership retention hypothesis, [Fan, Q (2007)] (ii) the underwriter reputation hypothesis [Carter and Manaster (1990)] and the (iii) flippers theory [Fishe, R (2002)]. Some of the other variables which may also convey information about the firm’s quality refer to operating results before going public, the quality of the board of directors, the quality of bank loans, the provision of funds by venture capitalists, and the compensation structure for management. As per their observations, price is likely to be just one of several signals used to convey information.

The market feedback hypothesis (Beaty and Ritter, 1986) is based on the premise that investment bankers have an incentive to ensure that new issues are underpriced purposively lest they lose underwriting commissions in the future. Therefore, the investment bank as a repeat players, thus compel issuers into underpricing. On the other hand, they cannot coerce too much for fear of losing the underwriting market share. They demonstrate that there is a relation between the expected underpricing of an initial public offering and the uncertainty of investors regarding its value. They argue that the resulting underpricing equilibrium is enforced by investment bankers who have reputation capital at stake. If an investment banker does not underprice enough or if it underprices too much it will lose either potential investors or issuers. Consequently, their reputation as an investment banker will be seriously affected. In fact, they have developed two propositions in support of them. First proposition they framed, as “the greater is the ex-ante uncertainty about the value of an issue, the greater is the expected underpricing.” The other proposition developed can be described as, “underwriters whose offerings have average initial returns that are not commensurate with their ex-ante uncertainty lose subsequent market share.” They have tested both these propositions and found empirical evidences supporting it.

Ritter and Welch (2002) in a study observed that during the period from 1980 to 2001, the number of companies going public in the United States exceeded one per business day though as expected, the number of initial public offerings has varied from year to year. At the end of the first day of trading, these shares traded on an average at 18.8 percent above the price at which the company issued them. They further observed that if an investor bought shares at the first-day closing price and hold them for three years, the total return earned by them was estimated around 22.6
percent more than the first day return. After reviewing the existing theory and the
evidences on the IPO activity, they raised some fundamental issues such as why did
firms go public, why did they reward first-day investors with considerable
underpricing, and how did IPOs perform in the long run. They challenged some of the
popular theories explaining underpricing such as asymmetric information model and
reversed some of the assumptions made by Rock (1986). They strongly believe that
the IPO phenomena are not stationary and the future IPO literature will come from
behavioral theorist to address agency conflict and share allocation issues. According
to them, the most important unanswered question is why issuing volumes drops so
precipitously following stock market crash. In some cases the offer prices are
lowered, but in many cases firms withdraw their offering rather than proceed with
their IPO. In other words, it is seen that instead of price, the quantity is adjusted. This
is a puzzle not only for the IPO market but also for follow on offering as well.

While there is a consensus that average initial underpricing should and does
exist in the IPO market, the aftermath performance provides conflicting findings.
Article by Ibbotson (1975) reported a negative relation between initial return and
long-run performance of US IPO. He found a saucer shaped pattern for randomly
selected IPOs for the study period of 1960-69 for US market. After examining the
random sample, he also found positive returns near the offering, followed by below
market returns and from the fourth year onward the returns tending towards normal.
The distribution of returns was highly skewed with most returns found negative and
few were very high, indicating that these investments were individually very risky.
Another observation of Ibbotson includes a very high standard deviation of the sample
IPOs which is not statistically significant. Two prominent theories are proposed for
long-run underperformance.

The divergence of opinion hypothesis (Miller 1977) is based on the premise
that there exists difference of opinion of the value of IPO. The fact is that investors
differ in their valuation of securities and the market prices are determined by the
optimistic investors who rate highly enough of the investment merit of the new issue
and include it in their portfolio. Here, it is assumed that the valuation of the optimistic
investors will always be more than the valuation made by the pessimistic investors or
even the securities fundamental values. With the passage of time as the divergence of
opinion between optimistic and pessimistic investors becomes narrow and the IPO stocks are treated like an ordinary shares and consequently the market price will drop and price will approach to its fundamental values. According to windows of opportunities hypothesis (Ritter 1988, 1991), the term window of opportunity means a period of short time during which an otherwise unattainable opportunity exists. This theory predicts that an IPO firm going public in high volume periods is more likely to be overvalued than its peer on low volume period. Ritter (1991) in his study on the long run performance of IPO during 1975-84 observed that a sample of matching IPO firms substantially underperformed for the first three year period after going public. There also existed substantial variation in the underperformance as was observed on year to year basis and across industries. He further noted that the companies which assumed the new issue route usually preferred high volume year simply to cash in on the window of opportunity and made “time” of the issue accordingly. In order to evaluating the long-run performances of initial public offerings, two measures were used namely Cumulative Abnormal Return (CAR) and 3-year buy and hold returns for both the IPOs and on a set of matching firms. He calculated returns for two intervals: the initial return (normally 1 day), defined as the offering date to the first closing price listed on the CRSP daily return tapes (both Nasdaq and Amex-NYSE), and the after-market period, defined as the 3-years after the IPO exclusive of the initial return period. The initial return period is defined to be the month 0, and the after-market period includes the following 36 months.

He also calculated the monthly benchmark-adjusted returns as the monthly raw return on a stock minus the monthly benchmark return for the corresponding trading day period. The benchmark employed are (1) the CRSP value-weighted NASDAQ index, (2) the CRSP value weighted Amex-NYSE index, (3) listed firms matched by industry and size, and (4) an index of the smallest size deciles of the NYSE. Besides these methodologies, he also used wealth relative to enquire whether the sample of IPOs outperformed a portfolio of matching firms. Finally, he performed the cross-sectional regression analysis to find out the pattern of long-run underperformance using the 3-year total returns as the dependent variable.

There have been numerous works undertaken on the international arena in respect to the performance of IPO. Among them, the work undertaken by Loughran...
& Ritter (1995) for the study period of 1970-1990 is worth mentioning. They enquired whether an Initial Public Offering or Seasoned Equity Offering (SEO) significantly underperforms relative to non-issuing firms for five years after the offering date. To be specific, investors have received average return of only 5 percent per year for companies going public and only 7 percent per year for companies conducting a seasoned equity offer. They calculated the statistical significance test of the underperformance using three different procedures. The first procedure has calculated t-statistics using annual holding-period returns on issuing firms. Where the second procedure calculated t-statistics using a time-series of cross-sectional regressions on monthly individual firm returns and the third procedure on the other calculated t-statistics using 3-factor time-series regressions of monthly returns of portfolios of issuing and non-issuing firms. With all these methodologies, they concluded that all three procedures resulted in rejection of the null hypothesis of no underperformance at high degree of statistical significance.

Levis (1993) pointed out that earlier researches have demonstrated the presence of positive initial return for IPOs of almost every capital market in the world. According to the author, the firms which had gone through IPO process during the 1970s and 1980s had underperformed similar size and industry firm by around 29% by the third anniversary of their first-day trading. According to him, the studies based on UK IPO market shed light on a number of issues left unresolved by the US studies. His observation is relevant even today. Some of the observations he made about the IPO market in general and UK IPO market in particular, showed that the long-run underperformance phenomenon was not unique to US new issues. In fact poor aftermarket performance had emerged as a persistent feature of Initial Public Offerings. Using the sample of UK IPOs during 1980-85, the results suggested that the long-run underperformance extended beyond 36 months. A detailed analysis of subsequent changes in listing also provided useful insight into the causes of the long-run underperformance of initial public offerings. Finally, he observed that the apparent tendency for the firms with the highest initial returns showed worst aftermarket performance of firms with moderate first day returns. This has created further doubt on the conventional belief that positive initial returns were entirely due to deliberate underpricing. Levis also used wealth relative to study the impact of long-run performance of IPOs in UK.
Other prominent researches in this field were made by Aggarwal, Leal and Hernandez (1993) in respect to IPOs in Latin American country. They observed that the pre-offering demand for IPOs was related to their aftermarket performance, both in the short-run and in the long-run. More specifically, their findings revealed that investors demand was positively correlated with IPOs first day returns, and that this relation becomes negative when longer performance was considered. In fact, most of the researchers agree on this notion of underperformance in the long run by the IPOs. The only exception was found in the research work undertaken by Kim, Krinsky and Lee (1995), who reported a positive long-run return observed in the Korean market. They investigated Korean initial public offerings of 169 firms during the period of 1985-89. The results revealed that the Korean IPOs outperformed in respect to performance of the seasoned firms with similar characteristics. Most of the over-performance takes place during the first month, where long-run performance of Korean IPOs is not statistically different from that of seasoned firms. Furthermore, the deregulation of the Korean market in June 1988 is found to reduce initial underpricing, but has no impact on long-run IPO performance.

Brav et al. (2000) examined the long-run stock performance and demonstrate the long-run anomalous characteristics of stock returns. They show that the poor long-run stock returns following equity issues are not unique. Using both buy and hold abnormal returns and cumulative abnormal returns to calculate abnormal performance, they observe that buy and hold abnormal returns tend to magnify the underperformance of IPOs and SEOs. They reported further that underperformance was concentrated primarily in small issuing firms with low book-to-market ratio. According to them, this suggested that many of the long-run stock return anomalies found in the finance literature were manifestation of the same return pattern in the data. To test the underperformance, they utilised time-series factors models and found that Fama and French’s (1993) three factor model can capture joint covariation of IPO returns. They demonstrate that the low average return on equity issuer stock is not a distinct anomaly; rather it is a manifestation of a broader pattern in returns. In addition, evidence is provided showing that tests of long-run abnormal returns suffer from model misspecification, a concern shared by many other stalwarts in this field.
Lucas, J and McDonald, R (1990) in their study presents an information-theoretic, infinite horizon model of the firm’s equity issue decision under adverse selection. More specifically, the model predicts certain empirical observations about equity issue. The observation of them can be stated as: a) stock prices of issuing firms on average exhibit a large and extended positive abnormal return prior to an equity issue and a sizeable fraction of firms, however, have declining price in the period preceding an issue, b) there is substantial variation over time in the volume of equity issues and issues on an average increase in the market as a whole, and c) the stock price drop significantly upon the announcement of an equity issue. After the announcement, returns appear to be normal. There are, of course, other explanations, not based on adverse selection, for each of these above mentioned facts. However, they concluded that the ability of the model to explain all these phenomena in a unified framework, adds support to the contention that adverse selection is of major importance in understanding equilibrium.

To evaluate both the short-run and long -run performance of IPO, the standard literatures and theories excessively rely on event study methodology. The event study methodology, as is considered for empirical analysis, provides useful evidence on how stock price respond to information. According to Kothari and Warner (2005), the number of published event studies exceeds five hundreds, and the literature continues to grow. In their opinion, short-horizon methods using event study methodology are quite reliable and robust in most of the occasion. While over the years the long-horizon methods have also improved considerably but serious limitations still exist. They further observed that event studies also serve an important purpose in capital market related research as the principle means of testing market efficiency. The existing literatures on event study format warranted some of the popular method of ascertaining the abnormal or excess return based on:

- Mean-adjusted return model
- Market-adjusted return model
- Market model or OLS market model
- CAPM based abnormal return model
- Fama- French multi factor model.
Economists and financial analysts have used event studies to examine the impact of abnormal rate of return to significant economic information. In this form of analysis, usually, the average of the abnormal returns is calculated based on the method mentioned above for a number of months before and after the date of a particular event. They further observed that for a given performance measure, such as the CAR, a test statistic is typically computed and compared to its assumed distribution under the null hypothesis that the mean abnormal performance is equal to zero. The convention generally employed is to use either daily return or monthly stock return for calculating the excess or abnormal return and to ascertain thereby the cumulative abnormal returns (CARs). The result thus obtained (CAR) are tested for statistical relevance and usually the standard parametric test is followed; the test-statistics they employed is student t-test. The null hypothesis is rejected if the test statistic exceeds a critical value, typically corresponding to the 5% or 1% tail region. According to them, “while the specification and power of a test can be statistically determined, however, it s not easy to give a straight forward economic interpretation because all tests are joint tests.” That is, event study tests are well specified only to the extent that the assumptions underlying their estimation are correct. In fact, the joint tests that are undertaken answers two question, a) whether abnormal returns are zero and b) whether the assumed model of expected return (for ex. CAPM, Market model etc.) is correct. The entire test is done based on the event study methodology as was coined by Fama et al. (1969). The event study methodology has also achieved its theoretical impetus from the Efficient Market Hypothesis (EMH), and has produced evidence on the responses by stock price to information. It provides useful evidence on how does stock price respond to information. In his study, Fama has attempted to examine evidence on two related questions regarding the announcement of stock split and its repercussions in the behaviour of security returns. He observed that stock splits are usually preceded by a period during which the rates of return (including dividends and capital appreciation) on the securities to be split are unusually high. Thus, he has empirically proved that splits tend to occur during “boom” periods, and those stocks which are going to be split will generally performed “unusually” well during the periods of general price rise. Event studies are aimed at testing the EMH by examining how an abnormal rate of return reacts to significant economic information. And it is seen that returns would adjust very quickly to announcement of new information as is observed by the proponents. This implies that it is not possible for
individual investors to earn positive excess or abnormal return by responding positively to the announcement.

Ever since, plethora of papers has documented security price reaction to the release of different information. The studies of Ball and Brown (1968), Fama (1981), French and Roll (1986), Vermaelen (1981), Geske and Roll (1983), Chen et al. (1986), Mitton (2002), Su (2003), are some of the most relevant studies, we have come across in this arena, and focused on a set of events related either to individual firms (earning announcement, dividend announcement, announcement of share repurchase, stock splits, corporate governance reporting) or macroeconomic variables (announcement of monetary policy, unemployment rate, inflation data, industrial production, growth etc.).

Brown et al. (1988) are first to introduce the proposition of uncertain information hypothesis (UIH) which implies that a favourable or unfavourable news immediately lead investors to set stock prices significantly below their expected values. But, as the uncertainty over the news gets resolved, subsequent price changes, irrespective of the nature of the news, tend to be positive on average. Using data on an equally weighted CRSP index and 200 largest individual stocks in the S&P 500 over the period of 1962 to 1985, they test investors’ behaviour in situations of major uncertainty generated by unexpected events and find support for overreaction hypothesis in case of bad events implying large declines and are followed by successive positive adjustments. But in case of good news, the study contradicts the hypothesis by suggesting that large increases in the share prices are followed by a series of small positive i.e. non-negative adjustments.

Fama (1998) observed that the anomalies are chance results and the pattern do not portray any consensus on investor reactions. Moreover, he confirms that some of the market efficiency anomalies disappear entirely after accounting for size and book-to-market value effects. He concluded that the myriad of stock price behavioral models proposed to date by economists, none are robust predictor of the systematic patterns in average stock price returns over any window of time. In fact the conclusion drawn by Fama is very pertinent in this regard when he observed, “ In short, bad-model problems are unavoidable, and they are more serious in tests on long run returns.” Fama justifies the use of CAR approach over BHAR approach though
the CAR approach implicitly assumes frequent portfolio rebalancing. According to him, “the bad model problems are ubiquitous, and they are more serious in tests on long-term returns.” He also observed that bad model errors in expected returns grow faster with the return horizon than the volatility of returns and suggested that the formal inferences about long run returns should be based on averages or sums of short-term abnormal returns (AARs or CARs) rather than the currently popular buy- and-hold-abnormal-returns (BHARs) model.

For long-run price performance the literature is virtually divided into two most well known abnormal return models that is cumulative abnormal return (CARs) and buy and hold abnormal return (BHARs) model. There has been significant debate regarding whether researchers should use CAR or BHAR method of calculating abnormal returns when conducting event studies. Lyon et al. (1999) document that if the research question is whether or not investors earn abnormal stock return over a particular time horizon then BHAR should be used to answer this question. While the CAR approach is to be employed to answer question like do sample firms persistently earn abnormal return. Lyon et al. again argue that the BHAR is the appropriate estimator because it “accurately represents investors’ experience” and that statistical inference should be performed by following skewness adjusted bootstrapped t-statistics in order to mitigate the statistical biases. It is also documented that BHAR model could become effective to answer when investors ask for earning abnormal stock return over a particular time horizon. Ritter (1991) preferred the use of both CAR and BHAR model. Barber and Lyon (1997) favors’ the use of buy-and-hold-abnormal-return model over cumulative abnormal return model as the proponents of the BHAR model often argue that they are interested in evaluating the investors buy and hold investment experience. They also observe that the use of buy and hold abnormal returns suffers from three drawbacks.

1. New listing bias, which arises because in long-run event studies analysis, sample firms generally have a long post-event history of returns, while firms, that constitute the index, typically include new firms that may have just hit the market.

2. Rebalancing bias, which according to Barber and Lyon (1997) arises because the compound returns of a reference portfolio, such as an equally weighted
market index, are typically calculated assuming periodic (generally monthly) rebalancing, while the returns of sample firms are compounded without rebalancing, and

3. Skewness bias, which occurs because long-run abnormal returns are positively skewed.

Both of them found that monthly cumulative return yields positively biased test statistics, while buy and hold returns yield negatively biased test statistics. The difference between CARs and BHARs result from the effect of monthly compounding. While CARs ignore compounding, BHARs include the effect of compounding. According to them, “if individual security returns are more volatile than the returns on the market index, it can be shown that CARs will be greater than BHARs if the BHAR is less than or equal to zero. As the annual BHAR becomes increasingly positive, the difference between the CAR and BHAR will approach zero and eventually become negative.” Mitchell and Stafford (2000) strongly emphasis that the method of BHARs have poor statistical properties and is often produced biased statistics in random samples. They raise an important observation regarding the long-term abnormal return subsequent to major corporate events. According to them, the long-run event studies can possibly help identifying systematic mispricing of securities up to five years following major corporate decisions. These findings strongly negate the notion of stock market efficiency. At the same time, this is at odds with the conventional view that the stock prices quickly and completely incorporate all the information available in the public domain. Finally, they conclude that the popular approach of measuring long-term abnormal performance with mean BHARs in conjunction with bootstrapping is not an adequate method.

Questions are asked when considering the IPO literature: how is the abnormal return measured? What should be the size of sample to conform to parametric test? Sampling interval has been another debated area in many research articles especially in the event study literature, given that returns data is available at different intervals with daily and monthly intervals being most common. MacKinley (1997) conducted research in this field and stressed that there was a wide variation in post-acquisition performance going from a daily interval to a monthly interval. In his study he gave an elaborated discourse of when, how and where to apply the event study methodology.
According to him, the initial task of conducting an event study is to define the event of interest and identify the period over which the security prices of the firm involved will be examined. He categorizes two approaches to calculate the normal return of a given security. These are defined as statistical and economic approach. According to Mackinlay, a general type of statistical model is the factor model. Factor models are motivated by the benefits of reducing the variance of the abnormal return and the market model is one such example of a single factor model. He observed that the gains from employing multifactor models for event studies are limited. The reason for limited gains is the empirical fact that the marginal explanatory power of additional factors is small, and hence, there is little reduction in the variance of the abnormal return. He further noted that the use of other models is dictated by data availability. An example of a normal performance return model implemented in situations with limited data is the market-adjusted return model. He reasoned that for some events it is not feasible to have a present estimation period for the normal model parameters, and a market-adjusted abnormal return and application of market-adjusted return can do the needful. According to him, the market-adjusted return model can be viewed as a restricted market model with alpha of individual securities constrained to be zero and beta to be one. As because the model coefficients are pre-specified, an estimation period is not required to obtain parameter estimates.

Another area, prominent in the IPO literature, is in respect to measuring the abnormal return [Brown and Warner (1980)] to evaluate the price performance of securities using event study methodology and its impact on some firm-specific events which may affect the performance has also been considered in various literatures. The size of sample to be employed in order to conform to parametric test and many such issues which sometimes baffled the analyst in this field have also been explored by various researchers.

Brown and Warner (1985) in their study did not find any obvious impact of non-normality on event studies and that standard parametric test for significance was well specified in samples comprising as few as five securities. They examined the properties of daily stock returns and showed how the particular characteristics of these data affected event study methodologies for ascertaining the share price impact of firm specific events. The statistical properties of both observed daily stock returns and
daily excess returns, given a variety of alternative models for measuring excess returns were considered. However, they have identified the following problems usually associated with daily data.

- **Non-normality**
  
  The daily stock return for an individual security exhibits substantial departure from normality which is generally not experienced with monthly data.

- **Non-synchronous trading and market model parameter estimation**
  
  When each of the return of an individual security and the return on the market index are measured over different trading intervals ordinary least square estimates of market model parameters are found biased and inconsistent. In case of daily data, on the other, the problem is observed even more severe.

- **Variance estimation**
  
  When investigating the properties of several variance estimation issues. It is observed that the daily excess returns can exhibit serial dependence.

The researchers have made a special reference to smaller sample properties and its efficacy on parametric test while considering for sample size of either five or 20 securities, they observed specification of the test statistics is not dramatically altered even for such small sample. The degree of skewness and kurtosis in the test statistics is found higher for sample of size five and 20 than for samples of say 50. To conclude on the debate on time interval, they observed and reinforced the conclusion of their previous work with monthly data. According to them, methodologies based on the OLS market model and using standard parametric tests are well specified under variety of conditions. They further noted that using daily data can sometimes be proved advantageous. For example, in a case where variance increases or there is unusually high autocorrelation, then the characteristics of daily data generally present few difficulties in the context of event study methodologies. These further vindicate the common perception that the use of daily data is straightforward. Furthermore, the non-normality of daily returns has no obvious impact on event study methodologies although daily excess returns are highly non-normal. They have shown that the mean excess return in a cross section of securities converges to normality as the sample size increases.
Sapusek (2000) analyzes the long-run performance of IPOs in Germany. He has considered the matching-firm-adjusted returns for calculating abnormal return along with market model adjusted returns which are the residuals of market model. He also shows that the results of over-and under-performance do not substantially depend on the choice of adjustment method. According to him, the market model adjustment has the advantage over market-adjustment as the beta is estimated from the data and is, therefore, not set a priori to one. Although the beta is non-stationary over time, He also stressed that a beta unequal one is a weaker assumption than a priori beta of one in market adjustment. In contrast, to the CAPM- adjustment, the market model adjustment method does not involve the non-stationary problems of interest rate over time. He has estimated the value of alpha and beta, market model parameter from the post-issue period unlike most of the studies which have calculated the market model parameters from pre-event window. He concluded that depending on the benchmark used for comparison and the IPO cohort (matching-firm) considered, he found neutral, over-, or under-performance of the German IPOs.

Chan et al. (2004) investigated the short-run and long-run performance of IPOs of common stocks in China. They have studied the undrpricing and long-term performance of 570 A-share IPOs and 39 B-share IPOs issued in China during 1993 to 1998. They also investigate the underpricing of IPOs which is affected by some institutional factors in the centrally planned IPO market in China. Five categories of shares are available in China like (1) government shares, (2) legal entity shares (or C shares), (3) employee shares (4) ordinary domestic individual shares (or A-shares), and (5) foreign shares (B-share), in Hong Kong (H-share) or on the NYSE (N-share). Only the A-share and B-shares are listed on the Shanghai and Shenzhen stock exchanges. Using the data retrieved from the Taiwan Economic Journal (TEJ) database, the underpricing of an IPO issue is calculated as the return on the first day of trading. They have also incorporated several variables to explain cross-sectional variations of underpricing. For long-run performance, they have considered performance of the IPOs during the 36 months after listing. They have also adopted another approach in examining the underpricing and the long-run performance of IPOs by comparing the Price/Earnings ratios and the Book/Market ratio of the new issues with the market overtime. They have found that there is a huge underpricing of IPOs in A-share as the average return of the A-share IPO on the first-trading day is
In contrast, the underpricing for B-share IPOs is much smaller, as they have an average return of only 11.6% on the first-trading day. They have also observed some evidence of overreaction for A-share IPOs, as these IPOs underperform in the market during the first month after the trading day. On the contrary, the evidence of under-reaction was observed in case of B-share IPOs. However, in the long-run, both A-share and B-share IPOs outperform their corresponding market index by about 25% and 31% respectively.

**Takei, H. and Samii, M. (2001)** have examined the post-issue IPO performance of stocks in the US and Japan, the two major economies in the world. They have studied the behavioral aspects of IPOs of these countries. Their article has focused on the comparative structure of post IPO performance of US and Japan. In particular, it attempts to determine whether Japanese IPOs also go through the three stages of bandwagon, underperformance and readjustment described and identified by Ritter (1991), Rajan and Servanes (1997). According to them, in the US, market reaction focuses on the speed of adjustment. That is, those who first predict the direction of the movement of stock prices and react to it more quickly than others are benefited the most. Thus, first in first out (FIFO) mechanism seems to be the winning strategy. Whereas in Japan, one would expect that there would be resistance to the major fluctuations and that those investing in new IPOs would resist market temptations of quick profit for as long as possible before taking corrective action.

Traditionally, Japanese institutional stock holders have a long-term orientation. Using the sample of seventeen IT companies both from Japan and the United States in order to test the pattern of performance of IPOs. They have used simple linear regression for each stage of post IPO separately. The slope of the regression line, price performance with respect to time, for each stage is shown by beta whereas t-statistics indicates that the time variable is significant for all stages. The positive values of beta for stage I (bandwagon) signify initial underpricing which leads to the hot-market issue. The negative beta of stage II (underperformance) leads to the conclusion that the bandwagon effect eventually results in underperformance. Finally, under stage III the positive beta coefficient shows rebound toward long-term price equilibrium.

**Kiyamaz (2000)** examines empirically the initial and aftermarket returns for the Turkish IPOs in the Istanbul Stock Exchange during the period of 1990-1996. The
results show that the Turkish IPOs are underpriced on initial trading day on average of 13.1%. He has also studied the extent of underpricing for cross-section of industries and observed their returns in terms of various sub-section. The highest return is registered in tourism/transportation sector, while the lowest return is observed in Machinery/Equipment sector. He has also investigated various factors influencing the initial performance. The cross-sectional multivariate regression is used to identify the factors which may have a bearing on the performance of IPO. According to him, since it is not possible to measure ex-ante uncertainty directly, three variables, acting as potential proxies are the size of the firms, the gross proceeds from going public, and the age of the firm.

Lyngqvist (2007) observed that the theories of underpricing can be grouped under four broad headings like asymmetric information, institutional reasons, control considerations and behavioural approaches. According to him, the best established of these theories explaining underpricing is the asymmetric information based models. He also put forward several explanations in support of the underpricing theory. According to him, the greater is ex-ante uncertainty, the higher is expected underpricing. It is one of the key empirical implications about the short-run underpricing and the value of the IPO firm. Though this hypothesis has received overwhelming empirical support, it is worth noting that all other asymmetric information models of IPO underpricing predict a positive relation between initial returns and ex-ante uncertainty. Therefore, empirical studies are often facing the challenge of controlling for ex-ante uncertainty in underpricing situation. The various proxies that have been used in the literature are usually of four types: 1) company characteristics, 2) offering characteristics, 3) prospectus disclosure, and 4) aftermarket variables. Popular proxies include age, [Ritter (1984, 1991), Megginson and Weiss (1991), Ljungqvist and Wilhelm (2003) and others] measures of size such as log of sales [Ritter (1984)], gross proceeds [Habib and Lyngqvist (2001)] etc.

Cowan A. (1992) in his article titled ‘non-parametric event study tests” perhaps provides the first documentation of the power and specification of the generalized sign test. He observed that many event studies rely on parametric test statistics, however, according to him; a disadvantage of parametric statistics is that they embody detailed assumptions about the probability distributions of returns.
Whereas non-parametric statistics do not require as stringent assumptions about return distributions as parametric tests. Using event studies the results are reported for abnormal returns based on the market model. They further observe that the generalized sign test can properly interpret the result by observing the median CAR. They also used Kolmogrov-Smirnov test to ascertain whether the generalized sign test statistic follow normal distribution or not. He concluded that the non-parametric event study especially the generalised sign test can be used as a viable alternative not only to parametric test statistic but also in comparison to rank test under certain condition.

In the Indian context, Shah (1995) has documented a phenomenal excess return over the offer price (105.6 %) from a data set of 2056 IPOs between January 1991 and April 1995. He also observed that the delay between issue date and listing date for Indian IPOs was approximately 11 weeks. This delay was strongly associated with the size of the issue and the bigger the issues shorter is the delay. Madhusoodhan and Raju (1997), from a study on IPO listed in BSE during 1992-95, observed that under-pricing of IPO is more prominent here than the international experiences during the short-run. In the long-run, however, they yield is higher compared to the negative returns in the international markets. Besides the short-run and long-run performance of IPO, they 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 also reveals that none of the merchant bankers has showed any better pricing capabilities. Krishnamurti and Kumar (2002), working on a sample of 386 IPOs during 1992-94, demonstrated underpricing. They consider the environment for making initial public offerings in India and the applicability of various research explanations for underpricing process in new issue market along with the role of reputable merchant bankers in underpricing. They also observed that issues with high risk and/or smaller offer prices were more underpriced and that returns were strongly correlated with subscription levels. Sahoo, S., and Rajib, P. (2010) in their study during the study period 2002-06 reported that on an average Indian IPOs were under-priced to the tune of 46.55% on the listing day compared to the market index. They have further reported the possible explanations for long-run underperformance of Indian IPOs referring to listing day return, offer size, ex-ante uncertainty, timing of issue etc. Using both wealth relatives (WRs) and buy-and-hold-abnormal returns (BHARs) as price performance measures they have
estimated the long-run performance for the sample IPOs for a period of 36 months from the date of listing and found that the IPOs significantly underperform as compared to the market benchmark upto a period of 12 months from the date of listing and subdue thereafter. According to them, the age of the IPO firm, promoter’s retention, price to book value may also play as key determinants in influencing the long-run underperformance of IPOs in Indian context.

**Kumar, SSS. (2010)** in his paper, examines the efficiency of IPO issuing mechanisms using a sample of Indian IPOs that tapped the primary market during 2003-07 by taking into consideration the total costs the issuers have to incur (both direct and indirect costs). He finds that the issuers fare neither better nor worse using either bookbuilding or the fixed price offers in terms of total cost incurred. He also shows that the issue expenses associated with bookbuilding is more than those associated with fixed price offers controlling for issue size and firm specific characteristics. Further analysis evidences that employing US based lead managers do not translate into higher issue proceeds. Finally, in his study, Kumar showed that the costs of the services of US lead managers are more significantly different from those of Indian lead managers. Using the sample of Indian IPOs which went public during 2003 to 2007, listed either in BSE or in NSE and following either bookbuilding mechanism or fixed price offer during that period, he calculated raw returns. Using these raw returns he detected underpriced, overpriced or aptly priced securities. In order to find whether total costs of fixed price offers are different from book built offers, he performs multiple regression analysis.

Finally, to sum up the section of review of literature, we find that IPO related literature has a rich history both in exploratory and empirical level internationally. The literature can be segmented in six broad headings. These are: a) IPO underpricing in the short-run and possible explanation of such underpricing, b) IPO market moves in cycles and there are periods when (i) number of IPOs are large in number, known as hot market, (ii) the reverse of that period known as cold market, when the number of IPOs dwindle significantly. c) most of the studies have addressed the relationship between IPO cycles, IPO volumes and initial returns, d) most of the studies we surveyed are empirical in nature and the methods that they employed are almost identical with moderate variation and modifications, e) a large number of literature
deals with long-run performance of IPOs and the various issues in support of the underperformance phenomenon are observed specifically in the long-run analysis, f) the other important area which is presumed to be the premise of the studies of IPOs is market efficiency (especially EMH) and its different form.

1.4 Objectives of the study

The activity of the Indian capital market has made a paradigm shift since opening up of the economy in 1991 and surges appreciably during last decade. There has been a marked transformation from staid and conventional sources of funding to some bold initiatives undertaken by the regulators of the capital market in India. This also attracts a large number of companies venturing into the primary market through IPO process and many of these new issues have played a significant role to take up the investors in this venture of free pricing era.

The objectives of the study can be viewed from the point of view of the general investors. Earlier the middle class investors have little option to put their hard earned money in productive investment avenues. They usually preferred the fixed deposit offered by banks or post office. The traditional investment instruments were hugely popular because they were safe, gave decent returns and were easy to invest in. But today, investors find that traditional instruments are more about wealth preservation than wealth creation, when they are better served by investment alternatives like mutual funds and IPOs. Another critical feature of Indian stock market is that whenever the market has witnessed a boom it is the resultant of unholy nexus of market operators and insiders who have reaped the benefit where the common investors are either failed to take the advantage or the worst sufferers.

A detailed review of literature, however, reveals that there is a dearth of research work on the performance of IPOs, especially in Indian context from the investment perspective. Keeping this backdrop in mind, the proposed study aspires to take a humble attempt to enquire about the aftermath performance of a sample of IPO during 1999-2007. The proposed study aims in addressing the following issues:

- To understand the pattern and direction of the IPO market scenario in India and its role especially in post reform era.
To examine the conceptual discourse of investment and security analysis and various relevant issues pertaining to IPO market.

To discuss the regulatory framework guiding the IPO mechanism.

To explore the current trend and dimension of international scenario of IPO markets and its impact.

To make an objective assessment about the extent of underpricing phenomena and the trend of overall IPO performance in India in the short-run.

To observe the long-run price behavior of IPO issues and whether the long-run underperformance phenomena has been experienced in Indian IPO market.

A plenty of research work has been done in this context globally considering both the short-run and long-run performance of equities through IPO process but there are very few attempts to identify the performance of Indian securities going through IPO process, the present study aspires to make a humble attempt to gauge the return generated by IPO stock over benchmark index both during short-run and long-run.

1.5 Data and its source

This study examines the initial, short-run and long-run price performance of selected Indian companies which went public for the first time in the primary market for raising their corpus during 1999-2007. We have restricted our study to 47 companies listed in National Stock Exchange (NSE) based on the following parameters.

I. In evaluating the performance of IPOs, both during short-run as well as long-run period, we have selected only those companies which have gone through the IPO process and have not made any subsequent public offering or follow on public offering (FPO) or any offer for sale during the study period.

II. For the purpose of our study, we have selected those companies for which the complete price data series from the day of listing till its next five years maximum are available. We want to ensure that same numbers of companies are represented in the analysis of performance both in the short-run and in the long-run, unlike other studies where different number of companies are selected for short-run and long-run analysis of performance.
III. By short-run we have considered the period during the first six months from the date of its listing in the primary market and by long-run we have considered a period from one year to the next five years.

IV. The other important parameters for selection include the availability of information pertaining to various financial statements (such as Trading, Profit & Loss A/c, the Balance Sheet, the book value and market value and other related ratios calculated as per the published reports). The information relating to dividend announcement, its effective rate and date, split and bonus issue and its effect on stock prices are also considered for selection.

V. While selecting companies we have noticed that a) shares of some of the companies which have gone through IPO process, but have not been traded consistently for a considerable period of certain months to make any observation, b) there are companies that are not listed during the period in which they offer public issue and c) in very rare occasion, some of the issues by companies were cancelled. We have simply ignored those cases from our sample.

VI. For selecting the companies, the age of the firm, issue size, total assets value, book value of the shares at the time of IPO and the market value of shares along with the sectors in which they belong to are also looked into.

VII. The analysis is restricted to the post issue price performance of the selected companies till 2012, so that a company listed in March 2007 can complete its full five years or sixty months period for the sake of uniformity.

VIII. SEBI has mandated that all firms desirous to tap the equity market in India for the first time after 1st of May 2007 needs to be graded. This imposes a restriction on us since the grading of IPO may vitiate the results of the performance. Therefore, we chose to ignore the issue after the grading process made mandatory by SEBI.

Based on above, we have restricted our study to 47 companies, out of total 154 companies (excluding follow on issue and offer for sale) that hit the primary market through IPO process during 1999-2007. The price data series of the selected companies are secured from NSE’s official website (www.nseindia.com) and the other financial and non financial data are taken from the annual reports of the various
companies, magazines, newspapers and different authenticated websites for the specific years.

The CNX Nifty 500 is considered as our benchmark index which comprises a well diversified portfolio representing different sectors of Indian industry. It represents about 96% of total market capitalization and about 93% of the total turnover of the NSE. It is to be noted that to calculate the parameter of market model, the application of broad based stock index (such as S&P 500) is preferred to proxy the market return (Mackinlay, 1997). For these reasons we preferred CNX Nifty 500 as our benchmark index instead of other popular index maintained by NSE.

Selection of sample IPO companies

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of companies gone through IPO process during 1999-2007 (Including FPO and OFS)</td>
<td>183</td>
</tr>
<tr>
<td>Less: FPO and OFS (Offer For Sale)</td>
<td>29</td>
</tr>
<tr>
<td>Eligible companies gone through exclusive IPO process</td>
<td>154</td>
</tr>
<tr>
<td>Less: exclusion of 18 IPO firms due to non availability of reliable secondary market data</td>
<td>18</td>
</tr>
<tr>
<td>Remaining companies</td>
<td>136</td>
</tr>
<tr>
<td>Less: a sample of 21 companies IPOs is excluded on account of non-availability of complete information</td>
<td>21</td>
</tr>
<tr>
<td>Companies finally available for selection</td>
<td>115</td>
</tr>
<tr>
<td><strong>Final number of Selected companies</strong></td>
<td>47</td>
</tr>
</tbody>
</table>

While selecting the sample companies, we have first collected the total number of IPOs that hit the primary market from the official NSE website during 1999-2000 to 2006-2007. The reason for opting the year 1999 is important; because it was from this very year a new mechanism for pricing of new issue called book building was introduced. This indeed has changed the entire gamut of pricing from the conventional fixed price regime to flexible method of pricing. The first IPO in the annals of NSE, which successfully followed the book-building method of pricing IPO,
was the Hughes software Ltd. in the year 1999. Out of 183 companies we subtracted 
the FPO and OFS companies, since we are interested only on IPO. Again we have 
removed the 18 companies for lack of reliable secondary market data which arises 
because some of the issues are not traded frequently at the bourses for a considerable 
period of time and sometimes they traded only for few months and then there data set cannot be traced. Finally, we have deleted another set of 21 companies on account of 
non availability of certain information such as financial statement, book value, issue 
size, total asset value or the date and year of actual incorporation etc. Consequently 
we are left with 115 companies which actually is our population and from there we 
have selected the sample using the random sampling method. It is to be noted that the 
number of companies selected (47 IPO companies) is around 30 percent of the total 
companies that went public (154 IPO companies) and around 40 percent in terms of 
number of companies available for final selection (115 IPO companies) during the 
study period after considering all the parameter.

1.6 Methodology

The methodology we have employed here for measuring price performance 
(both for short-run and long-run) is coined by Aggarwal, Leal and Hernandez (1993). 
The relevant characteristic of the method shows that the return calculation is relatively 
straightforward and provides satisfactory result in most of the occasions.

Using daily returns we have calculated the market adjusted abnormal return 
(MAAR) for each IPO on the 1st day of trading. It is well documented that IPO gave 
unusually high abnormal return in the short-run period and the first day return is of 
paramount importance to the investing communities in IPO throughout the globe. The 
detail of these methods has been discussed in chapter 7.

The other methodology to identify the short-run performance as well as the 
long run performance is the calculation of abnormal return (AR) and the cumulative 
abnormal return (CAR) using the event study methodology. The literatures on event 
study require the notion of AR to be defined clearly. It is also to be noted that the 
concept of AR is recommended in the semi-strong form of Efficient Market 
Hypothesis, which is the theoretical backbone in our study. We have considered using 
Market Adjusted Excess Return (MAER) model and the Market Model Adjusted
Return (MMAR) to study the performance of IPOs, both for short-run and long-run performance analysis. The detail of these methods has been discussed in chapter 7.

We have constructed the null hypothesis and the corresponding alternative hypothesis using cumulative abnormal return (CAR) to test the null hypothesis that the after-market price performance of the selected company’s abnormal return is zero.

Finally, to assess whether the CAAR using MAER and MMAR model are significantly different from zero, we have employed ‘student t-tests’ as per the convention of IPO literatures.

We have also considered employing Buy and Hold Abnormal Return (BHAR) by using the monthly return in our long-run price performance as has been evidenced in the literatures extensively by many exponents in this field. BHAR simply measures the difference between the compounded actual return and the compounded predicted return or market return. Since we are employing the two models with and without adjusting for market sensitivity coefficient i.e. beta and alpha, we have two different sets of BHAR.

Our principal statistical test for the null hypothesis is that the abnormal returns are zero over any event window at 1% and 5% level of significance as conventionally followed in statistical method. It is also to be mentioned that we have given more emphasis on market model abnormal return (MMAR) which relates the return of any given security to the return of the market portfolio.

Besides these methodologies for calculating the underpricing phenomena in the short- run and underperformance evidence in the long-run, we have applied the regression analysis to find out the determinant of firm specific CARs and tried to explain the potential factors influencing the underpricing of IPOs. We have also considered adopting the wealth relative as a measure of relative performance of IPOs. We have used the p-value which is the probability of obtaining a test statistic as the one that is actually observed, assuming that the null hypothesis is true. Since we are using parametric t-test as our test statistic we have used studentised p-value. The detail discussion on the data and methodology is described in Chapter -7. Finally we have employed the non-parametric binomial test which segregates the data into two distinct proportions for performance analysis of IPOs.
1.7 Limitations of the study

Following are some of the limitations of the study, which deserve mentioning:

I. The study is limited to a sample size of 47 companies which had gone through the IPO process during the study period 1999 to 2007. Inclusion of more number of companies and study period into the sample units might have produced different results.

II. Though we have designed our sample initially to at least 50% of the total IPOs that went public during the study period, however, we could manage only 47 companies due to the fact that the needed information on many other parameters besides the price-data series are either not available or difficult to collect.

III. Usually event study methodology requires pre-event estimation window and $\alpha$ and $\beta$ are estimated for any security over this trading window. Here, our data on Market Model Abnormal Return (MMAR) parameter of $\alpha$ and $\beta$ are observed from the post-event price-data series (Sapusek, 2000) because for IPOs pre-event data series are not available.

IV. One of the pre-requisite for making any statistical analysis is the assumption of normality specifically for conducting parametric test procedure. However, we have come across with several studies which did not address this issue of normality assumption at all. Here, in this study we have tried to address the issue of normality wherever possible but in some cases we have not been able to maintain that assumption strictly.

V. We have employed two models based on event study methodology. Though there are many other methodologies available from more simple to complicate Fama-French multi-factor model, but we have restricted our study to those two methods (MAER and MMAR) only.

VI. As noted earlier, the long-run performance of IPO firms depends to a great extent on the benchmark used and the period analyzed. Ritter (1991) observed a significant underperformance of IPO companies in the U.S. relative to various benchmarks. We have employed only one benchmark in our study to proxy the market return (i.e. Nifty 500).
VII. Though we have delineated the theories explaining anomalies in the IPO literature. It is to be noted that we have not tested those theories. The theories are only described with a view to assimilate the knowledge of IPO behaviour.

1.8 Chapter Planning

To complete our research work, the rest of the study is segmented into the following chapters:

- Chapter: 1  Introduction
- Chapter 2  Conceptual discourse regarding equity issue and Investment analysis
- Chapter: 3  Genesis and Development of IPO
- Chapter: 4  Issue management: Discussion on SEBI Rules and Regulations
- Chapter: 5  International scenario of IPO
- Chapter: 6  Indian scenario of IPO market
- Chapter: 7  Short-run and Long-run IPO Performance analysis
- Chapter: 8  Summary and Conclusion