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Abstract

Purpose: The purpose of this paper is to examine the underpricing of initial public offers (IPOs), which were announced by Indian firms for the period 2007 through 2009. It is motivated by the fact that a well-developed capital market is a function of economic growth and a reflection of the financial system. Thus, this study investigates aftermarket pricing performance of IPOs during the recent global financial crisis.

Methodology: This paper studies the underpricing of 133 IPOs in three groups, namely house-full collections, short-run and long-run periods. To do so, it uses event study method to observe underpricing, which is examined in various window periods. Further, industry- and year-wise offers are analyzed and interpreted. Accordingly, hypotheses are being developed and tested through a static 'analysis of variance'.

Findings: The study explores that post-listing IPOs assure positive returns in short-run, but they tend to plunge and become negative in long-run. In particular, highest returns have been observed in the first week of post-listing.

Research limitations: Limitations include, the study does not compute market adjusted returns to find abnormal performance of stocks, and does not apply regression statistic to examine the factors that affect underpricing.

Practical implications: Eventually, conclusions are drawn from India-International results and thus, it would add some new insights on investor perspectives (e.g. price signalling) to the existing IPOs literature, especially from Asian markets context.

Originality: This paper is an original research that examines the underpricing of Indian IPOs during the recent financial crisis, particularly in three groups: house-full collections, short-run and long-run periods.
Keywords: Indian capital market; Asian emerging economies; Event-study; Initial public offers; IPOs; Equity issues; Stock returns; International insights; Underpricing.
Paper type: Research paper

1. Introduction

Dynamic companies from emerging markets continue to list on their local stock exchanges. The principal exchanges in China, India, Brazil, and other emerging markets are now mature enough to source funding for the very largest companies seeking listings.

– Gregory Ericksen, Global Vice-Chairman of Strategic Growth Markets at Ernst & Young (Financial News, 2009).

A well known way for a firm to raise capital is by selling its shares in the public financial markets–a technique called going public. In other words, going public means that the owner gives up private benefits of control for the benefit of being a publicly traded firm (Benninga *et al.,* 2005; Latham and Braun, 2010). It is also referred as initial public offers (hereinafter, IPOs) and unseasoned equity offers, where shares are sold to investors, often at a price below those prevailing on the first day of trading [*a phenomenon called underpricing*] (e.g. Hanley and Hoberg, 2012; Krishnamurti and Kumar, 2002). Strategically, IPO is a tool for entrepreneurs while moving from private to public ownership (Poulsen and Stegemoller, 2008). Specifically, IPOs help the inorganic growth of a firm–for example, in mergers and acquisitions (e.g. Celikyurt *et al.,* 2010; Hovakimian and Hutton, 2010).

In general, public offers provide a chance for investors to participate in the ownership of a growing firm (Akhigbe *et al.,* 2006). Hence, it is subjected to fads in early aftermarket trading (Ritter, 1991). On the other hand, underpricing refers to the positive returns over the offer price to listing dates of the new issue (e.g. Cai *et al.,* 2011). While Ghosh (2005) states that underpricing captures the difference between investor's willingness to pay and the actual respect of the new issuers. It is a percentage of difference between the closing price on the listing day and the offer price of the issue (p. 45). Empirically, Kenourgios *et al.* (2007) suggest that underpricing varies from one market to another market, for example, 5.4% in Canada to 388% in China. In fact, it is more costly than under-issuing, because the firm must amplify the number of shares in IPO in order to raise the required amount of capital, which reduces the original owners claim in future earnings; at the same time, it is more effective in signalling quality than under-issuing (Cao and Shi, 2006). In a 2010 study, Lowry *et al.* found significant volatility in initial returns. With regard to developed as well as developing countries, many researchers have found that IPOs assure superior results in the short run but tend to fall in the long run—an observation which has led scholars to declare that underpricing exists. This phenomenon accords with the argument of Rahul Mitra that corporate strategy in India is more likely to succeed by looking beyond stakeholders such as consumers and employees and delving deeper into the organization-society relationships (Mitra, 2013, p. 28).

There are extensive theoretical arguments and ample of empirical papers explaining the existence of underpricing in equity markets in various economies, and our paper contribute to this knowledge by focusing on the Indian market. It has been initiated by studies, for instance, on pricing performance of initial listings in U.S. (Ritter, 1991); Korea (Kim *et al.,* 1995); Germany (Ljungqvist, 1997); India (Ghosh, 2005); UK (Goergen *et al.,* 2007); Hong Kong (Vong and Trigueiros, 2010) and a recent study in Malaysia (Ahmad-Zaluki *et al.,* 2011). Accordingly, we aim to test if the existence of underpricing in India is a myth or a reality by undertaking 133 public issues [through book building] during 2007-2009. To do so, earnings management method (event-study) is employed to observe price signalling in three groups: house-full collections, short-run period and long-run period. Further, it also notifies the price performance both in segment- and in year-wise to draw a stock trend for insightful findings. More specifically, it compares India and international underpricing evidence to sum-up and conclude the study. Lastly, it brings to a close that Indian IPOs also assure high returns in short-run but tend to plummet in long-run. Therefore, the contribution of this paper to the literature is twofold. First, it investigates the underpricing of Indian IPOs during the period of global financial crisis, which would bring some new insights on investor perspectives (e.g. price signalling) that would help new venture capitalists, investment bankers, and other stock market intermediaries. Second, it specifically breaks up the sample size/duration into three groups: house-full collections, short-run and long-run.

The remaining paper is structured as follows. The remainder of Section 1 shows IPOs market both at global- and country-level. Section 2 presents review of exiting literature in the developed and developing markets, and hypotheses development. Section 3 describes data set and research method. Section 4 discusses test results and infers India–international insights. Section 5 concludes the paper.

1.1. Global IPOs market

Global IPOs market (see Figure 1) has been driven largely by Asia and South America in the second half of 2009. Thus, these regions have raised US$ 68.6 billion (Nov 2009), which accounts for 72% of the value of the IPOs. According to Ernst & Young Global IPO Report-2009 (Ernst & Young, 2009a, 2009b), there were three huge public issues raised by emerging nations. First, Banco Santander SA raised US$ 7.5 billion, which was the biggest in Brazilian financial market history, second China State Construction Engineering Corporation raised US$ 7.3 billion, and third Metallurgical Corporation of China Ltd raised US$ 5.2 billion. Further, Hong Kong, New York and Shanghai stock exchanges have accounted approximately 18.7% (US$ 17.7 billion), 17.9% (US$ 16.9 billion), and 17% (US$ 16.1 billion) of capital raised

respectively. In particular, the leading sectors by number of issues include industrial 77, material 68, and high technology 55. In terms of offer size, principal sectors include finance US$ 21.7 billion, industrial US$ 16.1 billion and real estate US$ 9.5 billion. By contrast, the U.S. share has dropped to the lowest point of 11% while India, China and Malaysia have pounded myriad offers during 2009-10 (Businessweek, 2010).

[Insert Figure 1 about here]

1.2. Indian IPOs Market

Since the economic-liberalization reforms in India during the 1990s, equity market has become an efficient and transparent price discovery process with high disclosure where the Securities and Exchange Board of India (SEBI) is governing the regulatory procedures. Subsequently, many proactive steps have been initiated in the recent decade thus positively affected the capital market activities, for example, easing transaction costs, enhanced efficiency, transparency, and safety (Bhole and Mahakud, 2009). In due course of time, the country has gained international reputation by inviting foreign institutional investors and private equity players in the banking and capital market system.

Indian capital market's growth story[1] has grown-up sharply in numerous market indicators, for instance, growing number of intermediaries, listed stocks, market turnover, instruments, and investor population. According to SEBI database (SEBI, 2011), there were 19 stock exchanges, 8922 stock brokers, 4478 corporate brokers, 77163 sub-brokers, 1767 foreign institutional investors, 199 merchant bankers, 56 bankers to an issue, 3 underwriters, 30 debenture trusties, 74 registrar to an issue, 6 credit rating agencies, 205 venture capital funds, 51 mutual funds, 2 depositories, 823 depository participants and 19 custodians actively participate in the functioning and development of capital market.

In the first quarter of 2010, 20 firms raised US$ 1.2 billion through IPOs, while the total amount raised globally over US$ 53 billion (Business Standard, 2010; Economic Times, 2010). Thus, the leading sectors include infrastructure (real estate, logistics and construction), information technology, and retail. The IPOs market has become third largest after China and the U.S., because of continuing healthy growth in Asian market and the stimulation of European listings (Asian Age, 2010). In addition, we show the trend line of Indian IPO market; in other words, resources mobilized from primary market, 1993-94 through 2010-11 (see Figure 2).

[Insert Figure 2 about here]

[1] In addition, one may refer to the Indian primary market witnessed a boom and slump over the past two decades (In *developments in the Indian IPO market*, Ghosh, 2005, p. 47, 50 and 57).

2. Review of previous studies and Hypotheses development

Numerous researchers have addressed the subject of underpricing in many markets and concluded that IPOs assure positive and highest abnormal returns in short-run, however returns tend to fall in long-run. In this paper, the review of literature is organized into two groups: developed and developing markets. For example, studies in developed markets include Australia (Brooks *et al.,* 2009); Canada (Kooli and Suret, 2004); Germany (Bessler and Thies, 2007; Ljungqvist, 1997); the UK (Goergen *et al.,* 2007; Sahi and Lee, 2011) and the U.S. (Akhigbe *et al.,* 2006; Ang and Boyer, 2009; Ritter, 1991). On the other hand, studies in developing nations comprise Greece (Kenourgios *et al.,* 2007; Tsangarakis, 2004); Portugal (Almeida and Dugue, 2000); Hong Kong (Vong and Trigueiros, 2010); India (Ghosh, 2005; Kumar, 2007; Madhusoodanan and Thiripalraju, 1997; Pandey and Kumar, 2001); Korea (Kim *et al.,* 1995); Malaysia (Ahmad-Zaluki *et al.,* 2011; Corhay *et al.,* 2002); Mexico (Hensler *et al.,* 2000); Pakistan (Sohail and Nasr, 2007); Sri Lanka (Peter, 2007); Thailand (Chorruk and Worthington, 2010), and finally, Turkey (Durukan, 2002). Briefly, Loughran *et al.* (1994 In Krishnamurti and Kumar, 2002) provide data on the initial listing performance in 25 markets. They show that the level of underpricing ranges from 4.2% in France to 80.3% in Malaysia. Ritter (2003) also shows the underpricing effect in 38 nations. In a recent study, Engelen and van Essen (2010) mention 3–14% for France, 11–30% for Australia, 30–47% for Taiwan, 48–64% for Greece, 74–78.5% for Brazil, and 127–950% for China.

2.1 Studies in developed markets

To the best of our knowledge, Ritter (1991) is the first to examine the long-run performance of 1254 IPOs in the U.S. during 1975-1984 and revealed initially positive, but then increasingly negative abnormal returns 29.1% after 36-month trading (In Bessler and Thies, 2007, p. 422). Thereafter, Ritter and Welch (2002) show that public offers underperform the market about 23% in the first three years of listing. Akhigbe *et al.* (2006) describe that corresponding industry-rival portfolios experience unfavourable price performance on average over the 36-month period. While comparing performance between new and established industries, Ang and Boyer (2009) show that new industries outperform established industries during holding periods of one to ten years, because of greater uncertainty regarding future earnings, less competition and fewer barriers to entry. Jones and Ligon (2009) focus on analyzing day effect in public offers during 1980-2003 by undertaking 6427 public issues and notice mean initial return to be 18.64%, and 76% of total issues have resulted in positive initial return. A relevant study in the Canadian market taken up by Kooli and Suret (2004) assesses the issue market during 1991-1998 and concludes that issues underperform in long-run. However, they argue that the observed pattern is

not always statistically considerable and depends on the method used and on the weighting schemes. When performance is examined using value-weighted cumulative abnormal returns, IPOs underperform significantly after the first 5 years.

In the UK, Goergen *et al.* (2007) discover that the percentage of equity issued and the degree of multi-nationality of a firm are the key predictors of aftermarket performance of IPOs. They find that first day market adjusted mean to be 9.74%. A study focuses on property related offers by Sahi and Lee (2011) examine 48 issues during 1986-1995, and notice first day returns mean to be 7.8%, market adjusted returns to be 5.32% and market un-adjusted returns to be 4.11%.

In Germany, during 1970-1993 Ljungqvist (1997) noticed mean initial abnormal return to be 10.57%. In addition, stock market returns, macroeconomic climate, insider retention rates, and inverse offer size affect underpricing positively. Bessler and Thies (2007) argue that firms with highest returns on the first day have the lowest performance after that day, and report buy and hold returns for 12 months to be 2.1%, 24 months to be 3.1%, and 36 months to be -12.7%. Therefore, it is found that German IPOs also assure positive earnings in short-run and tend to fall after two-year of listing.

In Australia, Brooks *et al.* (2009) analyze the time to listing of 834 public issues during 1994-2004. They show that a shorter time to listing is associated with higher issue prices, and the use of an underwriter.

2.2 Studies in developing markets

In Greece IPOs market, Tsangarakis (2004) examines the price performance during 1993-1997 and finds Greek IPOs had high positive initial returns. It is said that investors who bought newly listed shares on the first trading day realized positive average returns for period up to 12 months; notices first day mean to be 9.07% and 12-month mean to be 78.51%. A subsequent work during 1997-2002, carried by Kenourgios *et al.* (2007) exemplifies the evidence of underpricing. Their results show that underwriters' prestige and times of over subscription significantly affect the underpricing. They report raw returns mean for first day to be 52.7% and mean adjusted return to be 54.28%. A small sample size in Portugal market examines by Almeida and Dugue (2000) report 10.5% of mean underpricing for first day. Durukan (2002) assesses 173 Turkey public issues for the period 1990-1997 and shows mean underpricing 14.16%. In Mexican issue market, Hensler *et al.* (2000) reveal the difference of bank and non-bank IPOs during 1987-1993 and find that excess returns for banks, industrials and services are not significant in the post-listing.

An interesting study by Yong (2007) reviews the status of research in Asian IPOs market with emphasis on short-term underpricing and long-run performance. The author addresses some

issues for future research, for example, research related to market microstructure during the post-listing. In Hong Kong, Vong and Trigueiros (2010) assess 483 offers during 1994-2005 and show mean excess returns for the first trading day to be 6.9%. Conversely, in Korean market IPOs over performance takes place during the first month of seasoning and long-run performance is not statistically significant (Kim *et al.,* 1995). They show raw and market adjusted returns to be 78.58 and 51.51%; 155.61 and 80.63% for 2 and 3 years holding period respectively.

In Malaysia, Corhay *et al.* (2002) examine the aftermarket performance of public issues during 1992-1996 and report that IPOs tend to outperform the market, for instance, cumulative adjusted market return to be 41.7% over three years from the listing day. A recent work of Ahmad-Zaluki *et al.* (2011) finds high level ownership concentration (often-involving family ownership) and higher levels of post-IPO involvement can reduce short-term incentives. Their results are median market adjusted return to be -26.87% and median matched-firm adjusted return to be -5.77%. Likewise, in Thailand market Chorruk and Worthington (2010) investigate the pricing performance during 1997-2008 and show that Thai offers outperform the market benchmarks until 24 months and underperform relative to the market at the end of a 36-month post-listing period.

In Pakistan, Sohail and Nasr (2007) study 50 offers during 2000-2006 and report significant and positive impact of oversubscription on underpricing. Lastly, in Sri Lanka, Peter (2007) notices that IPOs outperform the market, specifically privatized offers offer superior returns to the non-privatized. Thus, Peter shows cumulative returns mean for 6 months to be 14.18%, 12 months to be 11.69% and 1 year to be 21.35%.

2.3 Other related literature

A few studies focus on various aspects of public offers, for example, regarding firm-owners cost Dalziel *et al.* (2011) argue that principals (or owners) seek to get private advantage through governance procedures in IPOs. Based on the illustration of 582 firms, Chui *et al.* (2001) describe that accounting performance decline subsequent to the IPO year. The overall mean return on equity to be 14.37% and mean return on assets to be 7.22%. Specifically, Benninga *et al.* (2005) examine the timing measurement of decision to go public and suggest that entrepreneur trades-off the gains of diversification against the benefits of being private.

Abhyankar *et al.* (2006, p. 635) inspect long-run performance of 6961 public offers using the idea of stochastic dominance[2] during 1977-2002 and find that there is no first order stochastic dominance relation between the IPO portfolio and the benchmark of a broad index or a portfolio

[2] It is a non-event study method to evaluate long-run financial and accounting performance. In recent days, most of the finance scholars are applying this technique in behavioral finance.

including either small size or low book-to-market stocks. Regarding earnings management affect, Nagata and Hachiya (2007) investigate 581 IPO firms and report offer price reflects earnings management to some extent; conversely, underwriters adjust the effect of earnings management to appropriately pricing the issues. Sachdeva and Shah (2009) study 35 equity carve-out and 11 divesture issues and results suggest that carve-outs have found to be underpriced. In particular, Engelen and van Essen (2010) examine 2920 offers in 21 economies, and show a 10% variation in the level of underpricing. They suggest that goodness (or quality) of a given country's legal system reduces the level of underpricing.

2.4 Studies on Indian issue market

The present study undertakes Indian public issue market to find if existence of underpricing is a saga or truth. However, few scholars have analyzed this phenomenon in previous years and found underpricing is subsisting. For instance, Madhusoodanan and Thiripalraju (1997) use a sample of 1922 offers during 1992-95 and notice that underpricing is higher in short-run. Pandey and Kumar (2001) carried out a study on 1243 public issues for the period 1993 through 1995 and infer that signals of underpricing, inside equity, pre-public offer firm reservations made for the institutions and mutual funds determine oversubscription.

Krishnamurti and Kumar (2002) examine 386 offers during 1992-1994 and report raw returns to be 77.94% and market adjusted returns to be 72.34%. They argue that underpricing is related to the level of subscription, further document some reasons in this regard, which are replica of Yong (2007) that include information disclosure in the pre-selling period, informational cascades, litigation avoidance, signalling for a future issue, information asymmetry between firms and investment bankers, regulatory constrains, political goals and market incompleteness. Similarly, Ghosh (2005) investigates the factors cause underpricing by using 1842 offers during 1993-2001. He reports that uncertainty played a role in perverse underpricing; further, large issues and those that went for seasoned offers had less underpricing. The average underpricing over the entire period to be 96%; raw underpricing into whole-period mean to be 95.86%, boom-period mean to be 66.64%, and slump-period mean to be 316.13%. Kumar (2007) observes that IPOs issued through book building process fare in short-run and long run, hence these offers continue to be underpriced and finds positive returns on listing day and offers outperform the market up to two years.

In summary, we understood that most studies found positive, some studies showed high earnings and few studies noticed neutral in short-run, subsequently these returns tended to decline and became negative in long-run (e.g. after one year).

2.5. Hypotheses development

Ritter (1991) asserts that the existence of long-run systematic price patterns raises questions concerning aftermarket efficiency. However, it is now widely accepted that IPOs offer enormous abnormal returns on their first day of trading. By contrast, underpricing is being noticed in many studies. It is clearly a concern for entrepreneurs, venture capitalists and private equity investors as it reduces the amount received by going public (Chorruk and Worthington, 2010). Considering the relevant empirical work on public offers abroad as well as in India, this paper aims to investigate the aftermarket pricing performance of IPOs.

The hypotheses are as follows.

H1: No significant difference between the means of select windows (TD1–TD7) in house-full collections group.

H2: No significant variation between the means of select windows (Per1–Per8) in short-run group.

H3: No significant deviation between the means of select windows (Per9–Per16) in long-run group.

3. Data set and Research method

3.1 Data set

The study covers 133 IPOs, issued through book building route, during January 2007 through December 2009 and subsequently listed on National Stock Exchange of India Ltd (NSE). The data set includes share prices of each script extracted from *NSE*, and the Indian based *CMIE-Prowess* and *Capitaline* databases. Later, it collects this information for one year with reference to listing date. Thus, it identifies 152 offers issued through book building during 2007-2009. In particular, it finds that four issues were withdrawn, one cancelled issue, and 14 offers were unlisted, therefore, final sample is 133 IPOs (see Table I).

[Insert Table I about here]

While examining the sector-specific underpricing, Ghosh (2005) has divided his sample by sector, namely primary, manufacturing, software and services. Likewise, in this paper, sample has been classified into industry- and year-wise public issues (see Table II). The range of industries varies from agro chemicals and fertilizers to tours and travels. Certainly, data has been occupied by reality, construction and engineering (24); IT consulting and software (12); finance and banking (10) and so on. Further, 32 industries are classified into six segments. However, we have not found any relevant study that relates to industry classification (or segment-wise) results in the past literature, but a few studies have focused on shipping offers in U.S. (Grammenos and Papapostolou, 2012), property-allied offers in UK (Sahi and Lee, 2011), and biotechnology offers in Japan (Fukugawa, 2012).

[Insert Table II about here]

Additionally, based on IPO issue size (Rs. billion) sample is partitioned (see Table III). Particularly, fifty per cent of sample is below Rs.1 billion that is 58 offers, 39 offers notify between Rs. 1 to 3 billion, 13 offers for Rs. 3–5 billion and so on. Exclusively, the year 2007 (83) reports highest number of offers compared to 2008 (30) and 2009 (20).

[Insert Table III about here]

3.2 Research method

Since, there are critiques about employing an earnings management method to compute simple returns and market-adjusted (or abnormal) returns while assessing a share price around various financial restructuring announcements, for example, after-market performance of IPOs, mergers, acquisitions, dividend distribution and share repurchases (e.g. Reddy *et al.,* 2013b, 2013c). Kenourgios *et al.* (2007) measure initial performance of IPOs by using two formulas, namely raw returns and adjusted returns of the first, fifth and 21st day respectively. Similarly, performance is measured in terms of initial market return, cumulative 6-month and 12-month returns; and 1-, 2- and 3-year holding period returns (Peter, 2007). Conversely, Chorruk and Worthington (2010), and Goergen *et al.* (2007) compute three-year returns of issues by using buy-and-hold returns and cumulative abnormal returns. Contrary to these observations, Bessler and Thies (2007) argue that raw returns are not considered as the best measure to determine the performance of public offers.

To test the hypotheses formulated, the study computes simple returns (R_{it}) and market returns for the given sample. Afterward, analysis of variance is used to find the statistical difference at 95% confidence level.

Simple returns are computed using the expression given below, which has been used in recent studies in the Indian context (e.g. Reddy *et al.,* 2013a, 2013c).

$$R_{it} = \sum_{i=1}^{n} \left(\frac{P_{it} - P_{it-1}}{P_{it-1}} \right)$$

Where, R_{it} – simple returns; P_{it} – closing price of a stock; P_{it-1} – offer price/listing price of a stock. This leads us to summation of simple returns, which represents as follows. Mean of stock returns:

$$\bar{X} = \frac{1}{N} \left(\sum R_{it} \right)$$

Where, N – Sample size

After that, market returns are calculated by using the following expression (e.g. Reddy *et al.,* 2013c). We use S&P CNX 500 Index as a proxy.

$$R_{mt} = \sum_{i=1}^{n} \left(\frac{P_{mt} - P_{mt-1}}{P_{mt-1}} \right)$$

Where, R_{mt} – returns for market index; P_{mt} – closing index value; P_{mt-1} – previous day closing index value.

The long-run performance refers to the price behaviour of newly issued shares beyond the day of their listing (Tsangarakis, 2004). Hence, the quantitative measurement of the long-run performance of IPOs is very sensitive to the benchmark employed (Ritter, 1991). However, Ahmad-Zaluki *et al.* (2011) describe that post-IPO market based performance depends on the benchmark adopted by IPO companies. They find that there is no significant difference in performance when a matched company benchmark was used. After reviewing various scholarly arguments, this study measures returns for each stock in three groups: house-full collections, short-run and long-run (see Table IV).

[Insert Table IV about here]

4. Results and discussions

4.1 Overall results and inferences

It is worth mentioning that public offering is a channel for financing, in other words, helps in capitalization of new ventures and start-ups, and firm diversification. Numerous early studies state that IPOs generate superior returns in short-run, after that tend to fall in long-run (e.g. Bessler and Thies, 2007; Ritter, 1991; Sahi and Lee, 2011). In detail, there was no study that divided the timeline into three groups, but most academic scholars examine aftermarket pricing performance in short-run and long-run (e.g. Ahmad-Zaluki *et al.,* 2011; Jones and Ligon, 2009; Kooli and Suret, 2004). Prior to classifying timing dimensions, we investigate price assessment of select individual stocks in the post-listing period and find substantial variation during first week, one month, and two month and up to one year. Therefore, it has categorized the results into house-full collections, short-run and long-run groups (see Table V).

[Insert Table V about here]

In house-full collections group, it observes superior earnings 23.82% (TD2), 23.52% (TD3), and 22.22% (TD1 or listing day). Further, earnings decline until TD7 (20.23%). In short-run group, Per1, Per2 and Per3 show positive results, but lower than house-full collections. Subsequently, Per4 to Per7 happen to be negative and observe neutral on Per8. More interestingly, in long-run group Per9 notices significant returns and remaining periods present negative results. Per12 has shown the highest negative growth (24.13%) in overall study. Thus, it

also finds very close corresponding relation between mean of IPO stocks and percentage of firms with positive returns (PFPR). Certainly, PFPR notices highest performers on second and third trading days by 65.41% each during post-listing; afterward, number of performers has plunged in short-run and long-run. To observe aftermarket performance, it portrays a graphical outlay for better inference and perceptive (see Figure 3).

[Insert Figure 3 about here]

As sated earlier, it employs event-study method to find any significant difference between select groups. However, market-adjusted returns (Ljungqvist, 1997), buy-and-hold returns (Chorruk and Worthington, 2010; Kim *et al.,* 1995) and factors causing underpricing (e.g. Bessler and Thies, 2007) have not been computed and investigated in this paper. Hence, this study is based on simple returns in the post-listing period (Krishnamurti and Kumar, 2002). Later, it employs analysis of variance to find any significant difference between means in each group. To attain this, Table VI presents test results for three groups. Thus, it accepts hypothesis H1 for house-fill collections (see Panel A) at 5% significant level, because p-value 0.996 is higher than critical value 0.05. It infers that there is no significant variation between the means of stock earnings during TD1-TD7. Further, short-run and long-run group results appear in Panel B and Panel C respectively.

By contrast, it rejects[3] hypothesis H2, because *F-value* 4.788 is greater than *F-crit value* 2.018 at 95% confidence level. Therefore, results describe that significant difference has been observed between the means of select periods in short-run group. Likewise, long-run results are similar to short-run group. As a result, it rejects hypothesis H3, because p-value 0.032 is comparatively lower than 0.05. In sum, it accepts H1, and rejects H2 and H3. Briefly, house-full collections results are similar during TD1-TD7.

[Insert Table VI about here]

4.2 Segment-wise results

More specifically, it investigates segment-wise price performance of select IPOs (see Table VII). Sample has been classified into six segments: banking, finance & telecom (BFT: 15), core sector (46), FMCG (16), industrial machinery (12), IT&ITES (14), and manufacturing, production & distribution (30). Among all, IT&ITES has shown impressive stock earnings during house-full collections, for example, 57.6% (TD1) to 60.51% (TD7). Further, BFT and

[3] To test hypothesis H2, the study ignores p-value for testing the mean difference. Because, p-value notices 2.565E-05 conversely F value shows highest result compare to F crit. Consequently, we consider F value for examining difference between the means.

IEM considerably register similar results, for example, BFT shows 46.86% on TD1, 50.39% on TD2 and so on. Conversely, IEM observes an average 48% in the first week trading after listing.

Likewise, it also states that FMCG and MAPP significantly materialize analogous results in house-full collections; interestingly, while their PFPR notices the same. For example, FMCG appears to be 17.5% on TD1 to 20.94% on TD7 and MAPD notices to be 16.34% on TD2, and then appear to be falling (low earnings). Particularly, core sector notices lower earnings in all periods compared to other segments, for instance, 7.85% on TD1 to 0.43% on TD7. For graphical view, segment-wise evaluation is portrayed (see Figure 4).

[Insert Table VII about here] and **[Insert Figure 4 about here]**

On the other hand, short-run and long-run results exhibit lower performance compared to house-full collections. By contrast, IT&ITES notices superior earnings in short-run while comparing the same with first week trading. Miserably, core sector reports negative performance in short-run and residual segments show both positive and negative earnings. For example, BFT appears 41.83% on Per1, and then becomes negative at -9.44% on Per8. In the same vein, MAPD notices downward tendency from 3.73% (Per1) to -0.58% (Per8). Similarly, long-run performance exhibit equivalent returns, for example, IEM notices 13.7% (Per9) to -29.92% (Per16). In sum, all segments except core sector show positive returns on Per1 and Per9 in short-run and long-run respectively. Further, PFPR also follows the mean correspondingly.

4.3 Year-wise results

We have classified our results' year-wise with respect to sample size (see Table VIII and Figure 5). Prior to discussing the results in detail, it is crucial to note that global financial crisis has dampened both banking and capital market activities during 2007-2008. Thus, emerging economies (e.g. Brazil, India, China and Russia) have been affected, but the effect is lower than the U.S., UK and the European region.

Results indicate that the year 2007 recorded finest IPO returns during house full collections; the highest mean returns observe on third trading day to be 33.42% (69.88% of PFPR). Partially, it observed positive earnings for few windows during short-run and long run. From the above observations, it is inferred that negative returns are found in long-run because of financial crisis and its impact on business transactions. The year 2008 IPO market is the prime evidence and showed that performance has tumbled to one fifth of past success results in the Indian capital market context. Thus, it illustrates comparatively positive returns during house full collections and confirms negative performance in all 16 periods during short run and long run.

[Insert Table VIII about here] and **[Insert Figure 5 about here]**

Thereafter, capital market has recovered from the crisis break in 2007-08, and we evidence that IPO returns in 2009 show superior earnings compared to 2008. Further, it notices positive returns in house-full collections, for instance, highest mean on listing day (TD1) to be 11%. In that order, 70% of PFPR has been noticed on three continuous trading days. It is a fact that PFPR in 2009 is considerably better than 2007 and 2008 during TD1 to Per16; it is because of altering investment patterns, growing household savings and investment in capital market were expected to be the utmost factors for success of IPOs in 2009. However, IPO earnings during 2008-2009 were significantly lower than the year 2007 returns, for example, earnings on listing day for 2007 (30.7%), 2008 (6.24%) and 2009 (11%). Undertaking these discussions as backdrop, this study proceeds to find India's position in international arena for possible inferences.

4.4 India-International comparative empirical inferences

To add-up these findings and support Indian evidence in international arena, it presents few relevant studies that coincide with this research. Loughran *et al.* (1994) demonstrate that the initial earnings' range from 4.2% in France to 80.3% in Malaysia. Ritter (2003) observe 38 markets and shows underpricing has placed in India about 15.10%, which is the average initial return. In particular, average returns on listing day in Germany to be 10.57% (Ljungqvist, 1997); Portugal 10.5% (Almeida and Dugue, 2000); Turkey 14.16% (Durukan, 2002); Greece 9.07% (Tsangarakis, 2004), 52.7% (Kenourgios *et al.,* 2007); the U.S. 18.64% (Jones and Ligon, 2009), and the UK 7.8% (Sahi and Lee, 2011). On the other hand, few earlier studies in India have shown first day returns 77.94% (Krishnamurti and Kumar, 2002) and this study report 22.22%.

Kim *et al.* (1995) state investors purchasing IPOs at the offer price earn abnormal returns in the early aftermarket period. Likewise, investors who bought newly listed shares on the first trading day realized positive average returns for periods up to a year (Tsangarakis, 2004). Bessler and Thies (2007, p. 435) argued that firms with the highest first day returns may have the lowest performance after words if the price on the first day of trading was for whatever reason to high. In contrast, firms with low initial returns, i.e. a relatively low price on the first day of trading, may experience smaller negative abnormal returns thereafter. In some instances, shares in public offers are underpriced when they have large price gains shortly after IPO (Cao and Shi, 2006).

5. Concluding remarks

Many scholars in both developed and developing nations (e.g. Ritter, 1991; Chorruk and Worthington, 2010) have argued that issue market gives higher returns compared to secondary market. This study has undertaken 133 public offers issued through book building during 2007-2009. Like previous studies, the chosen sample of Indian offers also reported negative returns in

long-run (e.g. Ang and Boyer, 2009; Kumar, 2007; Sahi and Lee, 2011; Tsangarakis, 2004). Briefly, it concluded that underpricing has occurred in the Indian IPOs market. In addition, results inferred that post-market offers assure positive returns in short-run, but tend to plunge and become negative in long-run. It has been proved high returns in the first week after listing. The price performance of offers during house-full collections noticed finest earnings in financial sector at an average 24%. Further, IT&ITES segment has noticed highest returns by 58%, followed by BFT 45% and so on.

Yet, there are few limitations to this study. It does not compute market adjusted returns to find abnormal performance of stocks, and does not apply regression statistic to examine the factors that affect underpricing. Like few previous studies, duration of study is one of the shortcomings. Hence, it suggests that factors behind choice of investors while choosing primary market, and causes behind underpricing in emerging markets are favourable avenues for future research. Additionally, scholars may further investigate the underpricing of IPOs with emphasis to market microstructure because it could reveal the problems when underpricing is estimated to be lower at stronger legal structure and the accessibility of accounting information. Moreover, market microstructure implications are worth considering in the Asian and other emerging economies IPOs market.

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Table I. Data set					
		2009	2008	2007	Total
a.	Number of public issues	21	36	95	152
b.	Issues withdrawn	-	3	1	4
c.	Issues cancelled	-	-	1	1
d.	Number of listed companies	20	30	83	133
e.	Number of unlisted companies	1	3	10	14
	Sample size	20	30	83	133

Table II. Sample of initial public offers: Industry-wise breakup

Name of the Industry/Sector	2009	2008	2007	Sample	Name of the Industry/Sector	2009	2008	2007	Sample
Agro chemicals and Fertilizers	1		5	6	Industrial Machinery, Iron & Steel/Ship building	1		1	2
Auto Tyres, Parts & Equipment			1	1	IT Consulting & Software	3	2	7	12
BPO/KPO			1	1	Mining and Mineral products		3		3
Broadcasting & Cable TV	2		3	5	Misce. Commercial services		1	1	2
Cement & Cement Products			2	2	Paper and Paper products			1	1
Commodity Chemicals				0	Pharma and Health care		1	2	3
Consumer durables and Household Electronics	1		2	3	Plastic Products and Furniture, Painting		1	4	5
Crude Oil and Natural gas	1			1	Power generation & Distribution	4	2		6
Distilleries	1		1	2	Reality, Construction & Engineering	2	5	17	24
Education and Training			1	1	Retail, Jewellery and Stores			6	6
Electrical and Electric equipments			4	4	Specialty Chemicals and Bio-tech		2	2	4
Financial Services, Banking		2	8	10	Textiles & Apparels	1	3	6	10
FMCG	1	2		3	Telecom Equipment & Cables		1		1
Glass and Glass products		1		1	Telecom Services		1	2	3
Hotels & Restaurants	1		1	2	Transportation - Logistics and Container, Port services			3	3
Industrial Goods and Gasses		3	2	5	Tours and Travels	1			1
Sample size						20	30	83	133

Table III. Sample description: IPOs issue size				
Quintiles (Rs. billion)	2009	2008	2007	Total
Below 1.00	7	14	37	58
1.01 – 3.00	3	10	26	39
3.01 – 5.00	4	2	7	13
5.01 – 10.00	1	2	8	11
10.01 – 30.00	3	1	4	8
Above 30.00	2	1	1	4
Sample size	20	30	83	133

Table IV. Event-windows: Group-wise	
Panel A: House-full collections group	
TD 1	Offer price to first day closing value (Listing day)
TD 2	Offer price to second trading day closing value
TD 3	Offer price to third trading day closing value
TD 4	Offer price to fourth trading day closing value
TD 5	Offer price to fifth trading day closing value
TD 6	Offer price to sixth trading day closing value
TD 7	Offer price to seventh trading day closing value
Panel B: Short-run group	
Period 1	Offer price to one month after closing value
Period 2	Offer price to three months after closing value
Period 3	Offer price to six months after closing value
Period 4	Day one closing to one month after closing value
Period 5	Day one closing to three months after closing value
Period 6	Day one closing to six months after closing value
Period 7	One week after closing to six months after closing value
Period 8	One month after closing to six months after closing value
Panel C: Long-run group	
Period 9	Offer price to nine months after closing value
Period 10	Day one closing to nine months after closing value
Period 11	Offer price to one year after closing value
Period 12	Day one closing to one year after closing value
Period 13	One week after closing to one year after closing value
Period 14	One month after closing to one year after closing value
Period 15	Three months after closing to one year after closing value
Period 16	Six months after closing to one year after closing value

Notes: (a) House-full collections group: It assumes the first week or seven continuous trading days of post-listing IPOs as a 'house-full collections group'. (b) Short-run group: It assumes the duration "from the first day to six-month post-listing of IPOs as a 'short-run group'. (c) Long-run group: It assumes the duration beyond six-month post-listing of IPOs (maximum, one year) as a 'long-run group'.

Table V. Descriptive statistics during House-full collections, Short-run and Long-run

	House full Collections							Short-run								Long-run							
	TD 1	*TD 2*	*TD 3*	*TD 4*	*TD 5*	*TD 6*	*TD 7*	*Per 1*	*Per 2*	*Per 3*	*Per 4*	*Per 5*	*Per 6*	*Per 7*	*Per 8*	*Per 9*	*Per 10*	*Per 11*	*Per 12*	*Per 13*	*Per 14*	*Per 15*	*Per 16*
Mean	22.22	23.82	23.52	21.34	20.31	21.90	20.23	17.20	13.71	17.14	-5.43	-7.86	-7.09	-6.69	0.08	16.63	-8.06	-2.12	-24.13	-21.26	-9.85	-9.16	-17.69
Median	9.643	11.081	10.324	11.190	10.833	10.833	8.196	5.15	-7.19	-12.09	-7.04	-11.37	-18.25	-15.54	-9.60	-24.73	-28.64	-42.21	-44.25	-41.90	-36.55	-37.90	-30.63
SD	49.043	50.805	50.727	50.491	52.887	52.421	53.419	62.925	71.404	94.430	25.937	40.235	54.289	49.854	56.004	121.322	83.557	100.668	62.399	75.794	133.133	108.212	48.351
Min	-83.67	-91.59	-80.40	-89.91	-90.18	-59.73	-88.95	-67.42	-91.90	-83.28	-85.80	-92.63	-91.54	-85.88	-84.52	-89.40	-89.42	-89.76	-90.13	-89.55	-87.93	-77.62	-75.98
Max	240.96	242.86	238.75	220.71	274.82	273.89	257.46	354.64	339.07	530.04	81.23	194.01	339.78	261.87	350.38	766.32	643.33	395.90	230.15	483.52	1249.10	897.16	199.55
PFPR	62.41	65.41	65.41	62.41	62.41	61.65	59.40	55.64	42.86	43.61	34.59	39.85	34.59	33.83	40.60	38.10	30.16	27.59	22.41	20.69	22.41	24.14	26.72
N	133	133	133	133	133	133	133	133	133	133	133	133	133	133	133	126	126	116	116	116	116	116	116

Notes: SD – standard deviation; PFPR - percentage of firms with positive returns; N – number of observations.

Table VI. ANOVA results for House-full collections, Short-run and Long-run						
Source of variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Panel A: House full Collections (TD 1 to TD 7)						
Between groups	1602.537	6	267.0895	0.101	0.996	2.118
Within groups	2442995	924	2643.934			
Total	2444598	930				
Panel B: Short-run (Per1 to Per 8)						
Between groups	120811.6	7	17258.81	4.788	2.565E	2.018
Within groups	3806320	1056	3604.47			
Total	3927132	1063				
Panel C: Long-run (Per 9 to Per 16)						
Between groups	141188.4	7	20169.78	2.194	0.0326	2.019
Within groups	8640227	940	9191.731			
Total	8781415	947				
Notes: 5% significant level, i.e. 0.05.						

Table VII. Segment-wise results

	House full collections							Short-run								Long-run							
	TD 1	*TD 2*	*TD 3*	*TD 4*	*TD 5*	*TD 6*	*TD 7*	*Per 1*	*Per 2*	*Per 3*	*Per 4*	*Per 5*	*Per 6*	*Per 7*	*Per 8*	*Per 9*	*Per 10*	*Per 11*	*Per 12*	*Per 13*	*Per 14*	*Per 15*	*Per 16*
Banking, Finance & Telecom Segment (BFT)																							
Mean	46.86	50.39	45.93	45.84	45.20	43.72	40.56	41.83	47.96	29.61	-4.79	2.54	-12.84	-10.92	-9.44	29.99	-12.80	4.30	-28.42	-25.43	-24.90	-28.67	-18.59
PFPR	93.33	86.67	86.67	86.67	86.67	80.00	80.00	66.67	66.67	53.33	33.33	53.33	33.33	33.33	46.67	40.00	26.67	40.00	20.00	20.00	20.00	20.00	26.67
N	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
Core Sector																							
Mean	7.85	6.35	8.51	3.27	2.18	4.70	0.43	-1.61	-3.71	-1.77	-8.67	-9.41	-7.80	-7.63	-2.09	-4.06	-7.76	-29.27	-30.51	-28.95	-22.51	-13.14	-15.94
PFPR	52.17	54.35	58.70	50.00	52.17	52.17	47.83	43.48	36.96	34.78	26.09	34.78	30.43	28.26	34.78	32.56	27.91	15.79	15.79	18.42	21.05	23.68	23.68
N	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	43	43	38	38	38	38	38	38
FMCG, Household, Hotels, Travels, Entertainment & Misc.																							
Mean	17.50	15.58	18.24	16.73	16.56	20.65	20.94	11.05	8.04	18.10	-6.65	-9.03	-6.50	-5.46	1.68	14.88	-12.39	15.37	-12.19	-12.69	-5.32	-3.30	-11.30
PFPR	50.00	62.50	56.25	56.25	56.25	56.25	50.00	62.50	37.50	43.75	43.75	43.75	37.50	43.75	50.00	30.77	30.77	33.33	25.00	25.00	25.00	33.33	50.00
N	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	13	13	12	12	12	12	12	12
Industrial Equipment & Machinery Segment (IEM)																							
Mean	39.72	46.41	48.65	48.59	48.47	46.77	46.77	47.67	28.48	16.28	1.20	-11.02	-19.17	-22.24	-18.24	13.70	-23.40	-0.72	-40.73	-45.61	-44.17	-38.16	-29.92
PFPR	75.00	75.00	75.00	75.00	75.00	66.67	66.67	58.33	41.67	41.67	41.67	33.33	16.67	16.67	25.00	25.00	16.67	18.18	9.09	9.09	9.09	9.09	18.18
N	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	11	11	11	11	11	11
Information Technology (IT&ITES)																							
Mean	57.60	58.85	56.81	55.55	59.37	61.19	60.51	62.37	67.83	88.57	4.71	8.23	11.14	12.94	32.73	93.70	15.67	74.57	0.34	26.93	90.29	58.93	-8.30
PFPR	100.00	100.00	100.00	100.00	92.86	92.86	92.86	92.86	64.29	71.43	50.00	57.14	50.00	50.00	50.00	71.43	42.86	46.15	38.46	23.08	23.08	30.77	23.08
N	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	13	13	13	13	13	13
Manufacturing & Associated to Production and Distribution																							
Mean	10.95	16.34	12.57	12.37	8.19	9.75	10.63	3.73	-4.86	6.38	-7.54	-16.31	-7.12	-6.74	-0.58	5.18	-9.23	-12.72	-23.11	-25.19	-19.94	-16.28	-22.05
PFPR	50.00	53.33	50.00	50.00	50.00	53.33	53.33	46.67	36.67	40.00	33.33	33.33	40.00	36.67	43.33	41.38	34.48	29.63	29.63	25.93	29.63	25.93	25.93
N	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	29	27	27	27	27	27	27

Notes: PFPR - percentage of firms with positive returns; N – number of observations.

Table VIII. Year-wise descriptive results

	House full collections							Short-run								Long-run							
	TD 1	*TD 2*	*TD 3*	*TD 4*	*TD 5*	*TD 6*	*TD 7*	*Per 1*	*Per 2*	*Per 3*	*Per 4*	*Per 5*	*Per 6*	*Per 7*	*Per 8*	*Per 9*	*Per 10*	*Per 11*	*Per 12*	*Per 13*	*Per 14*	*Per 15*	*Per 16*
Year : 2007																							
Mean	30.70	33.26	33.42	31.74	30.24	32.05	29.29	29.69	26.55	35.39	-3.43	-4.64	0.35	-0.66	2.97	34.43	1.30	7.11	-20.27	-20.94	-17.77	-19.78	-25.65
PFPR	65.06	69.88	68.67	66.27	63.86	65.06	63.86	59.04	48.19	46.99	37.35	44.58	37.35	37.35	45.78	43.37	32.53	31.33	22.89	21.69	24.10	21.69	21.69
N	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83
Year : 2008																							
Mean	6.24	6.92	6.49	3.72	3.77	4.20	4.20	-7.20	-18.70	-26.66	-11.16	-21.71	-31.15	-30.97	-20.86	-37.70	-41.65	-40.31	-40.89	-40.12	-30.95	-11.72	-4.47
PFPR	50.00	50.00	53.33	50.00	60.00	53.33	46.67	43.33	26.67	16.67	26.67	20.00	13.33	10.00	20.00	13.33	13.33	13.33	16.67	13.33	13.33	26.67	36.67
N	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Year : 2009																							
Mean	11.00	9.98	8.00	4.60	3.94	6.35	6.66	1.95	9.02	7.07	-5.18	-0.46	-1.87	4.71	19.54	28.34	9.65	124.65	36.62	158.76	420.09	310.42	70.22
PFPR	70.00	70.00	70.00	65.00	60.00	60.00	60.00	60.00	45.00	70.00	35.00	50.00	50.00	55.00	50.00	61.54	53.85	66.67	66.67	66.67	66.67	66.67	66.67
N	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	13	13	3	3	3	3	3	3

Notes: PFPR - percentage of firms with positive returns; N – number of observations.

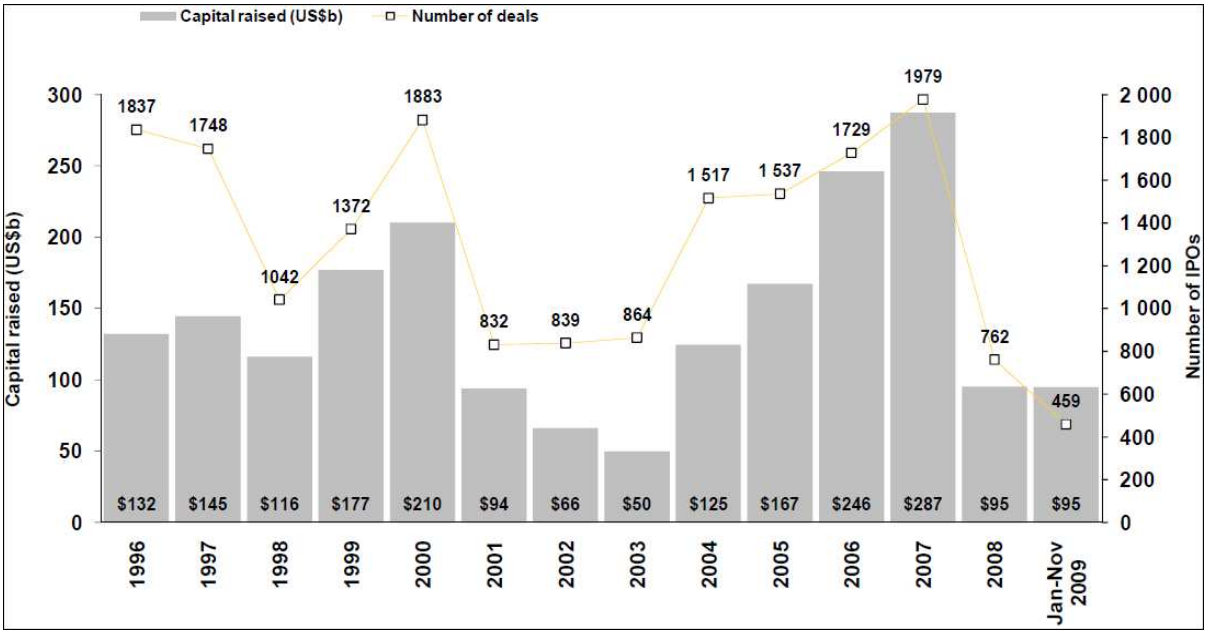

Figure 1. Global IPOs activity: number of deals and capital raised by year
(Source: Adapted from Ernst & Young (2009a))

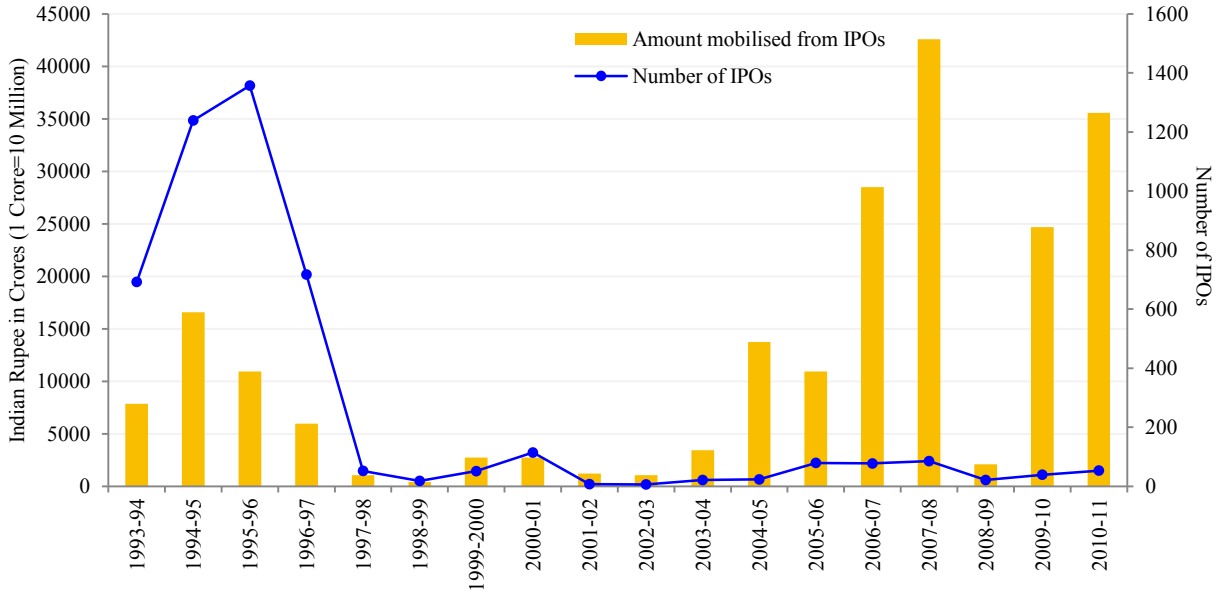

Figure 2. Indian IPOs market, 1993-94 through 2010-11
(Source: Author of this paper has designed based on the data reported in SEBI (2011)).

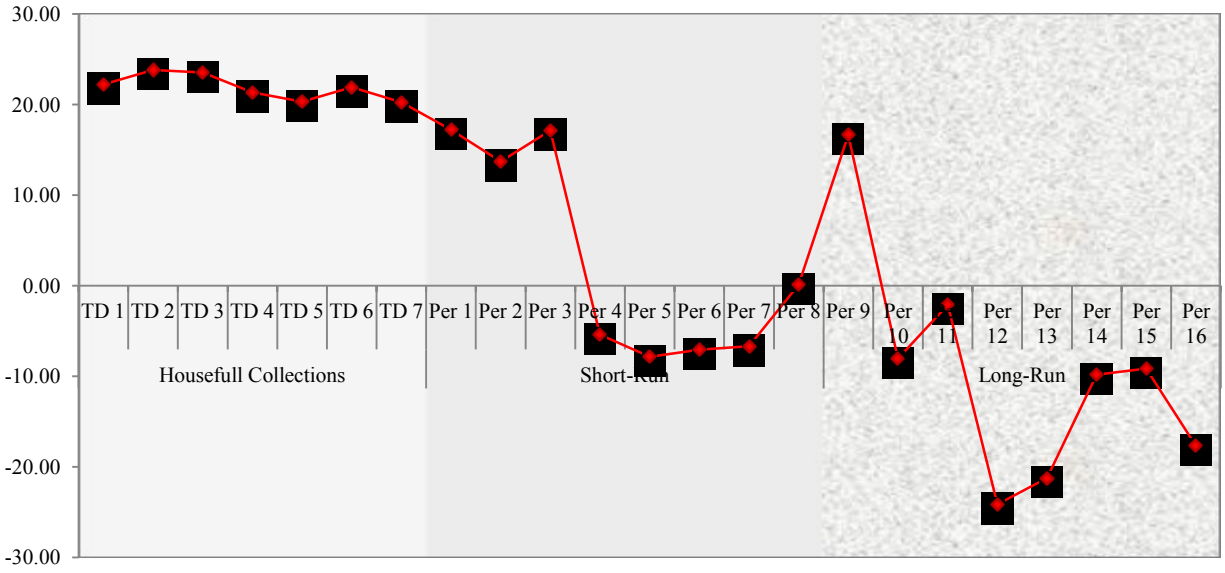

Figure 3. Overall IPOs returns: Insights from India

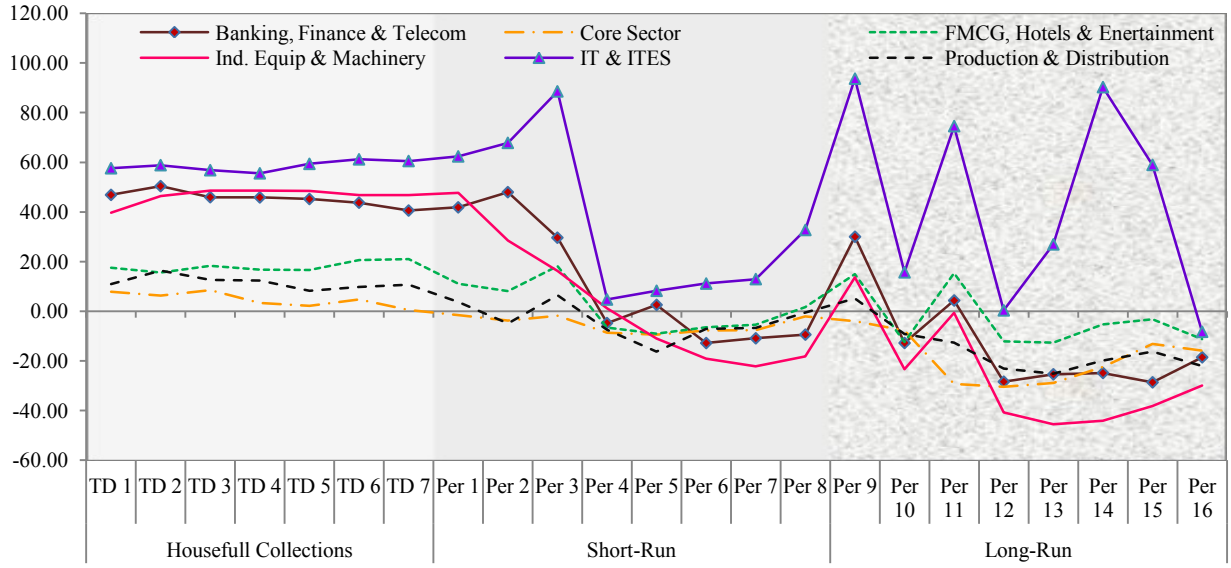

Figure 4. Segment-wise returns

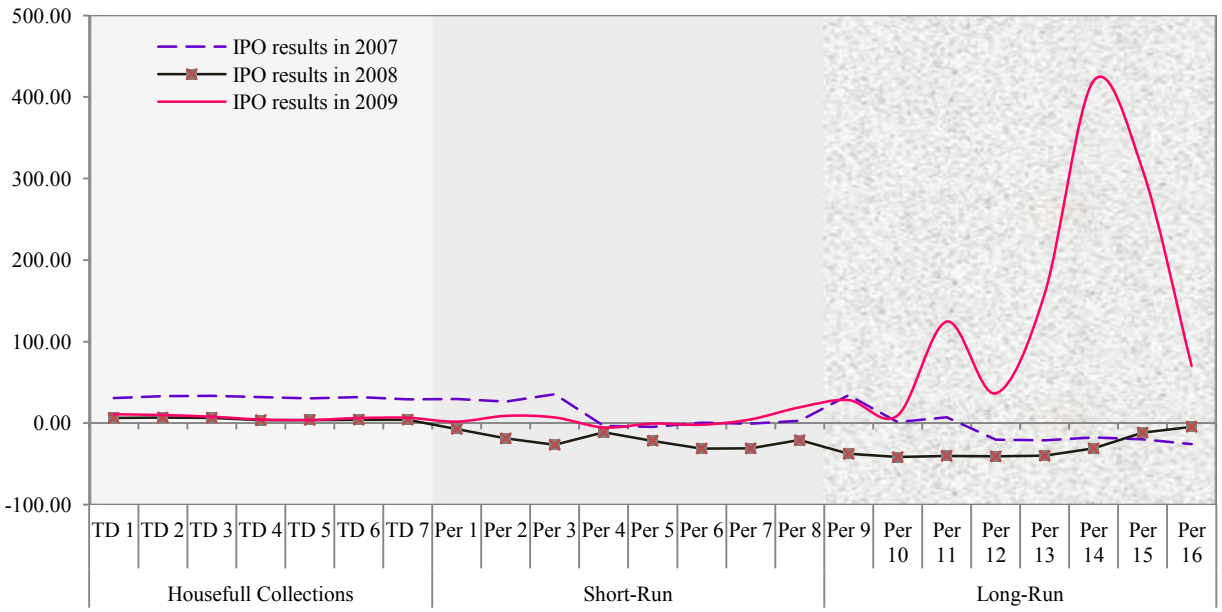

Figure 5. Year-wise returns