"PRICING MECHANISM AND EXPLAINING UNDERPRICING OF IPOS": EVIDENCE FROM BOMBAY STOCK EXCHANGE, INDIA

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ABSTRACT

Introduction: *In 1999, investment banks were allowed to use a version of book building as a mechanism for bringing IPOs to the Indian capital market. Book building refers to the process of generating, capturing, and recording investor demand for shares during an IPO in order to support efficient price discovery. A second method, in which the company itself fixes the price, is known as the fixed-price method. The literature on IPO underpricing is extensive. However, few studies examine the effect of book building on underpricing. Comparing book built with fixed price IPOs, they found that underpricing is more in book built issues in all countries. Recent researches on IPOs have focused on difference in pricing mechanism across countries.*

Objectives: *The paper attempts to analyze that whatever there is any significant difference in the magnitude of level of underpricing of ipos that priced through book build with those that are priced through the fixed price option.*

Research Methodology: *A total of 619 IPOs were listed in Indian capital market from 2000-2011. At Bombay stock exchange a total of 550 IPOs were listed from 2000-2011. The sample for the study consists of these 550 IPOs, IPOs were priced through book built & Fixed price option. Out of 550 IPOs 405 (73.13%) through Book build and 145 (26.87) were issued through fixed price option. In the study offer price and 1st day closing price is used to calculate underpricing. And Mean is used to magnitude the level of underpricing.*

Findings: *As far as magnitude of underpricing is concerned, the book-build and fixed price option gave different results. We found significant difference in level of magnitude of underpricing in IPOs that priced through book build with those that are priced through the fixed price option.*

Key words: *IPO Underpricing, Overpricing, Book Build Process, Fixed Price Option.*

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1 INTRODUCTION

The decision to go public, or make an initial public offering (IPO) of equity, represents an important landmark in a firm's life cycle. There are several reasons for a company to go public. **First**, the business is able to raise capital at a lower cost. The money raised can be use to finance investments for future growth of the company or acquiring additional business. **Second,** reason for a company to go public is that selling shares on the stock market offers more liquidity to the existing shareholders. The shareholders of a private firm often have a large share of their wealth invested in the company. By turning to the stock market, the entrepreneur and existing shareholders have the opportunity to turn their investment into cash and diversify their investments. **Third** reason is that an IPO brings the firm into the spotlight of other companies and increases the chance of potential mergers and acquisitions.

A well-functioning IPO market provides exit options for stakeholders in young firms, access to low cost capital for growing firms, and greater access to capital for future expansion of large firms. Flow of capital to firms can stimulate growth in an economy. Thus, regulators are interested in mechanisms that facilitate better functioning IPO markets. India has a relatively mature capital market, with a long history of uninterrupted operations even across the World Wars. Historically, the only alternative of pricing mechanism available for a firm contemplating a public issue was to make a fixed price offering. The firm going public would set a price and open the issue for subscription. Allocations were made on a strictly proportionate basis.

The process of IPO deregulation took a major step forward in 1999 when pricing flexibility was coupled with discretion in allocation. After 1999, issuers could still opt for conventional fixed price offerings in which investment banks allocated shares on a prorata basis. Alternatively, they could choose a version of book building, in which a quota of shares, usually 50% of an offering, was set aside for discretionary allocation to QIBs, i.e., qualified institutional buyers.

We have collected a sample of IPOs brought to the Indian market after book building was permitted from the Capitaline database. Book building was permitting from 2000. Our sample is comprehensive, as it includes virtually every IPO brought to the market between 2000 and 2011. We have also supplemented these data with information provided by the "Prowess" database maintained by the Center for Monitoring the Indian Economy. The research is based on an empirical study. A total of 619 IPOs were listed in Indian capital market from 2000-2011. At

Bombay stock exchange a total of 550 IPOs were listed from 2000-2011. The sample for the study consists of all the IPOs that were listed on BSE since 2000-2011 that is 550 IPOs. Out of 550 IPOs 405IPOs were priced through book built and 145 IPOs were priced through fixed price. To estimate underpricing, we took information on the stock prices of issues of their opening day of trading. These price data are obtained from the Capitaline database. In this study offer price and 1st day closing price is used to calculate underpricing & overpricing.

The rest of the paper is organized as follows. Section 2 describes the set up and dynamics of book build process in India. Section 3 overviews the related IPO literature. Section 4 related with hypothesis Section 5 describes the data. Sections 6 and 7 discuss the empirical results. Section 8 concludes.

2: BOOK BUILDING IN INDIA

2.1: The institutional setup

Until the early 1990s the Indian primary issue market was regulated by the Controller of Capital Issues (CCI), a government regulator, who also determined the price at which IPO firms offered their shares to the market. In 1992 the Capital Issues (Control) Act was abolished bringing an end to the control on pricing of new issues and the Securities and Exchange Board of India (SEBI) took over as the new market regulator. Even though SEBI introduced book building guidelines for primary markets as early as 1995, almost no book building activity was seen in the Indian IPO markets till the year 1999-2000. It is for this reason that Ljungqvist et al. (2003) excluded the Indian capital markets when conducting a cross country analysis of IPO book building activity.

2.2: The dynamics of the book building process in India

According to the Indian regulatory setup, investors are divided into three categories and the allocation tranches of these categories are pre-defined. Institutional investors (known as Qualified Institutional Buyers or QIBs) are to be allocated no more than 50% of the offered shares. Non-institutional investors (NIIs), defined as individuals investing more than INR 100,000 in the issue are allocated 15% of the offered shares and retail investors, who invest upto a maximum of INR 100,000 have to be allocated no less than 35% of the offered shares.

The paper attempts to analyze that whether there is any significant difference in the level of in underpricing & overpricing of ipos that priced through book build with those that are priced through the fixed price option.

3: RELATED LITERATURE

Literature on IPO underpricing is extensive. However, few studies examine the, effect of book building on underpricing. Our study focuses on India, on domestic issues within this marketplace. Our study is also centered on a period when book building was introduced into the marketplace, and is therefore relatively free of the weight of un-observed fixed effects due to institutional history. One advantage of our analysis is that the fixed price and book building mechanisms in India have a sharply identified difference that of discretion in Pricing under book building.

1) **B, Einar., et.al., (2010)**. Analyze the effect of public information on (i) the incentives of rational investors to reveal private information to the underwriter during the book-building process, and (ii) their demand for allocations in the IPO. Their model generates several new predictions. First, investors require more underpricing to reveal positive private information in down markets than in up markets (the incentive effect). Second, the demand for shares and the proportion underpriced IPOs are increasing in market returns (the demand effect). Combined, these two counteracting effects can explain why IPO underpricing is positively related to pre-issue market returns, consistent with extant evidence. Using a sample of 5,000 U.S. IPOs from 1981-2008, they show that the empirical inferences of the model are borne out in the data. Their results are relevant for IPOs in Europe, where book building is the dominant sales process.

2) Chahine, S[17]., (2007). Investigates the relationship between underpricing and investor interest level prior to and after the IPO date. Empirical results show that, except for some book-built issues with a high level of underpricing, the book-building procedure is a better selling mechanism than the auction-like mechanism. Despite a high initial underpricing for some book-built issues, the book-building procedure allows for more effective pricing and a lower divergence of opinion among investors in the aftermarket than the auction-like procedure.

3) I, Aminul, A, Zamri[32]., (2010). IPO underpricing, IPO long run underperformances; This study analyzes the levels of underpricing in initial public offerings (IPOs) and its determinants of Dhaka Stock Exchange (DSE). Key trends in the levels of underpricing and overpricing are highlighted out on a year to year and industry to industry basis. Out of the 117 companies that were listed in the years 1995 to 2005, 102 (87.18%) IPOs were found to be underpriced, 13 (11.11%) overpriced while only 2 were accurately priced. The overall level of overpricing was 15.37% with a standard deviation of 18.89.

4) **Kumar, A.,[N34] et. al., (2008).** Implied that the purpose of this paper is to investigate empirically the difference in long run post issue performance of initial public offerings (IPOs) that tapped the Indian primary market through a fixed price offer and book-building offer. The results suggested that there is no difference in the direction of performance of the issues post listing in the short run, however in the long run the issues that tapped the market through the book building route seemed to perform far better than the ones that raised money through a fixed price offer.

5) **S, Richard. & M, P, Luiz[50]. (2006).** Examine the underpricing of twenty-seven Brazilian IPOs from January 1999 to March 2006. The average underpricing is 6.0% while the accumulated adjusted one-year return is -17.2%. The underpricing is negatively correlated to the company's assets and positively related to issue size, while the accumulated adjusted one-year return is positively related to the company's assets, venture-backed and voting common share issuance. However, when they examine the period starting in 2004, the underpricing is 10.4% while accumulated adjusted one-year return is 12.7%.

4: OBJECTIVES OF THE STUDY

To determine the magnitude of ipos underpricing and overpricing of ipos that price through book – building and fixed price option.

5: HYPOTHESIS TESTING:

H1: There is no significant difference in the level of magnitude in underpricing & overpricing that is priced through book-build with those that are priced through fixed price option.

6: DATA COLLECTION

We collected data on share prices of IPOs quoted in Bombay stock exchange (Sensex). A total of 619 IPOs were listed in Indian capital market from 2000-2011. At Bombay stock exchange a total of 550 IPOs were listed from 2000-2011. The sample for the study consists of these 550.

IPOs out of the 550 IPOs, 405IPOs were priced through book built and 145 IPOs were priced through fixed price.(Table no-1).

Further, secondary data used for this study. Necessary data collected mainly from Stock exchange sites, Capitaline Database, Annual reports, websites of the companies' and various published reports.

Sample of Initial public offer at Bombay stock exchange from 2000-2011

Year	Total	Bse issue	BB	FPO	BB-Under	BB-Over	Fpo-Under	Fpo-over
2000	118	67	11	56	6	5	30	26
2001	16	10	2	8	0	2	2	6
2002	5	5	1	4	0	1	4	0
2003	14	11	4	7	3	1	5	2
2004	28	25	17	8	9	8	6	2
2005	70	67	48	19	26	21	14	5
2006	90	89	68	21	36	32	14	7
2007	106	105	91	14	58	32	7	7
2008	38	38	33	5	16	17	2	3
2009	21	21	21	0	14	7	0	0
2010	73	73	71	2	47	24	2	0
2011	40	39	38	1	19	19	0	1
Total	**619**	**550**	**405**	**145**	**234**	**169**	**86**	**59**

Table no 1: Ipos at Bombay stock exchange (2000-2011), source: www.bseindia.com

6:1. Data analysis

The methodology consists of the following step: To measure and analyze:

a. Underpricing – as difference between 'offer price and 'listing day closing price'.

$$\textbf{Underpricing} = P1-P0/P0*100$$

Or

$$\textbf{Underpricing} = \ln(P1/P0)$$

b. To determine magnitude –. We calculated mean or average percentage of underpricing and overpricing of IPOs that were priced through was book build and fixed price option. We also found mean, STD dev, median, min and max to determine the magnitude of pricing mechanism. (see table no-3)

1. The collected data analyzed using different statistical tools i.e. mean, median, standard deviation with the help of SPSS 18.0, Minitab 15.0 & Origin 6.0. (see table no-2).

Descriptes Statistics: Offer price, first day, list price, high price and low price

S.no	Variable	N	Mean	SE Mean	StDev	Min	Max	Median	Mode
1	offer price	550	160.99	7.87	184.68	10	1310	100	
2	first day	550	165.8	9.23	216.4	1.61	1709.4	93.7	
3	Size	550	413.9	57.4	1346.6	0.7	15475.1	81.1	25*6
4	list price	550	188.78	9.55	223.91	7	1655	109.5	75*9
5	high	550	186.29	9.99	234.23	1.61	1806.6	105.63	225*6
6	low	550	146.65	8.37	196.22	1.61	1651.1	79.4	30*5
7	first day	550	165.8	9.23	216.4	1.61	1709.4	93.7	26.65*3

Table no 2: Descriptes Statistics: Offer price, first day, list price, high price and low price

Magnitude of price mechanism for level of underpricing and overpricing

Year	Bse issue	BB	FPO	BB-Under	BB-Over	Fpo-Under	Fpo-over	% bbu	%BBO	%fpou	%fpoo
2000	67	11	56	6	5	30	26	21.96	**-46.87**	191.32	-32.3
2001	10	2	8	0	2	2	6	0.00	-62.00	47.50	-52.0
2002	5	1	4	0	1	4	0	0.00	-50.93	16.07	0.0
2003	11	4	7	3	1	5	2	90.16	-87.41	97.86	-85.3
2004	25	17	8	9	8	6	2	54.43	-45.45	74.10	-56.0
2005	67	48	19	26	21	14	5	31.47	-51.75	60.37	-63.8
2006	89	68	21	36	32	14	7	36.75	-46.33	38.91	-25.0
2007	105	91	14	58	32	7	7	51.54	-21.42	113.67	-3.3
2008	38	33	5	16	17	2	3	36.45	-26.36	18.06	-32.3
2009	21	21	0	14	7	0	0	19.09	-14.52	0.00	0.0
2010	73	71	2	47	24	2	0	22.35	-12.85	60.77	0.0
2011	39	38	1	19	19	0	1	47.36	-33.32	0.00	-70.4
Total	550	405	145	234	169	86	59	**34.29**	**-41.6**	**59.88**	**-35**

Table no-3 Magnitude for book build & fixed price option

7: RESULTS & DISCUSSION

As far as proportion of underpricing and overpricing is concerned, the book-build and fixed price option gave similar results**.** We found there were no significant differences in the level of proportion of underpricing & overpricing of IPOs that priced through book build with those that are priced through the fixed price option. This result is not in agreement with the earlier researchers such as,

Chahine, S[17]., (2007). Investigates the relationship between underpricing and investor interest level prior to IPO date. Empirical results show that, book-built issues with a high level of underpricing, the book-building procedure is a better selling mechanism than the auction-like mechanism. Despite a high initial underpricing for some book-built issues, the book-building procedure allows for more effective pricing.

Kumar, A.,[N34] et. al., (2008). Implied that the purpose of this paper is to investigate empirically the difference in long run post issue performance of initial public offerings (IPOs) that tapped the Indian primary market through a fixed price offer and book-building offer. The results suggested that there is no difference in the direction of underpricing in IPOs that were issued through the book building and fixed price option. Book building route seemed to perform far better than the ones that raised money through a fixed price offer. We found significant difference in level of magnitude of underpricing and overpricing that are price through book build and fixed option. The average of magnitude of underpricing of IPOs that were priced through book building is 34.29% of offer price and those IPO that were priced through fixed price option is to the tune of 60% (approx). This reveals that the level of underpricing in terms of magnitude is higher if we use fixed price option mechanism (Table no-3).

8: CONCLUSIONS & FUTURE IMPLICATION

This study attempts to fulfill the great need for the Indian evidence on pricing mechanism of IPOs. We have found significant difference between magnitude of level of underpricing and overpricing that are price through book build and fixed option that have not been documented before. The study provides useful insights into which market and firm specific variables are important in determining the extent of underpricing of IPOs. The study has more important implications for investors who subscribe to different IPOs for listing day gain as this study would help them in understanding which types of firms are more likely to underpriced.

REFERENCES:

1) Aggarwal, R., Prabhala, N R., and Puri, M., (2002). "Institutional Allocation in Initial Public Offerings: Empirical Evidence," Journal of Finance, 57, pp. 1421–1442.
2) Aggarwal, R.K., Krigman, L., Womack, K.L., (2002). "Strategic IPO underpricing, information momentum and lockup expiration selling", Journal of Financial Economics 66, pp. 105 – 137.
3) Anand, A., (2005). "Is the Dutch Auction IPO a Good Idea"?. Expresso Preprint Series, Paper, pp. 672-683.
4) Antón, M, J, Antonio., Rodríguez, S, Gema., (2011). "IPO methods: A survey among Spanish investors", African Journal of Business Management Vol. 5(9), pp. 3745-3748, 4 May, 2011.
5) Antón, M, J, Antonio., Rodríguez, S, Gema., (2011), "Are IPOs (Initial Public Offering) still outperforming the market.? Evidence from Spain in the period 2000 to 2010". African Journal of Business Management Vol. 5(14), pp. 5775-5783, 18 July, 2011.
6) Bradley, D. J., and B, D. Jordan., (2001). "Partial Adjustment to Public Information and IPO Underpricing." Journal of Financial and Quantitative Analysis 17, pp. 595–616.
7) Butler, A. W., G. Grullon and J. P. Weston, (2006). "Stock Market Liquidity and the Cost of Issuing Equity." Journal of Financial and Quantitative Analysis,24,pp. 1062-1074.
8) Brav, A., and P, A. Gompers., (2003). "The Role of Lockups in Initial Public Offerings." Review of Financial Studies 16, pp. 1–29.
9) B, Einar., E, Tore., K, Leite., S, Thorburn., (2010). "Information revelation and public information in IPOs". International Journal of finance and management 12, pp. 12-27.
10) Bansal, R., and A. Yaron., (2004), "Risks for the Long Run: A Potential Resolution of Asset Pricing Puzzles, Journal of Finance, 59, pp. 1481-1509.
11) Butler, A. W., G, Grullon., and J, P. Weston., (2005). "Stock Market Liquidity and the Cost of Issuing Equity." Journal of Financial and Quantitative Analysis, pp. 21-35.
12) Baker, M., and J. Wurgler., (2006). "Investor Sentiment and the Cross-Section of Stock Returns", Journal of Finance, 61, pp. 1645-1680.

13) Baker, M., and J. Wurgler., (2007). “Investor Sentiment in the Stock Market”, Journal of Economic Perspectives, 21, pp. 129-151.

14) Bubna, A., and Prabhala, N R., (2007). "When Bookbuilding Meets IPOs". AFA 2008 New Orleans Meetings Paper Available at SSRN: http://ssrncom/abstract , 972757.

15) Burhop C., D. Chambers and B. Cheffins (2011). “Is Regulation Essential to Stock Market Development? Going Public in London and Berlin, 1900-1913 Cambridge Judge Business School working paper.

16) Chahine, S., (2003). “Ex-ante uncertainty and gross spreads for small and medium sized IPOs” .Euro journal of finance, 32, pp. 231-240.

17) Chahine, S., (2007). “Investor interest, trading volume, and the choice of IPO mechanism in France”, International Review of Financial Analysis Sciecne direct, 11b, pp. 1121-1132.

18) Corwin, S. A., J, H. Harris., and M, L. Lipson., (2004). “The Development of Secondary Market Liquidity for NYSE-Listed IPOs.” Journal of Finance 59, pp. 2339–2373.

19) C, David., (2011) .“IPOs on the London Stock Exchange since 1900”.Journal of Review, 11.

20) Demers, E., and K, Lewellen., (2003). “The Marketing Role of IPOs: Evidence from Internet Stocks.” Journal of Financial Economics 68, pp. 413–437.

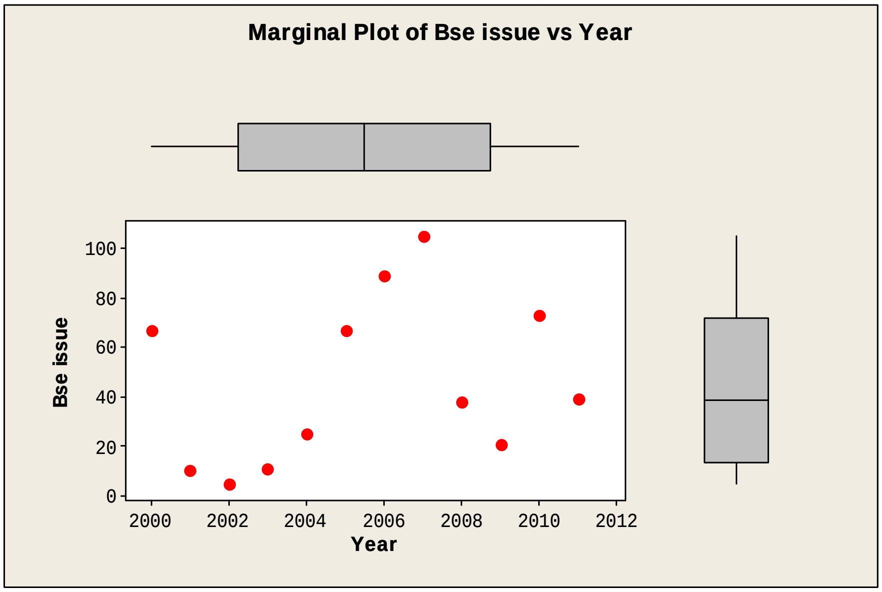
21) Derrien, F., & Womack, K. L., (2003). “Auctions vs. book-building and the control of underpricing”. Review of Financial Studies, 16, pp. 31–61.

22) Dechow, P., R, Sloan., and M, Soliman., (2004). “Implied Equity Duration: A New Measure of Equity Risk”. Review of Accounting Studies, 9, pp.197–228.

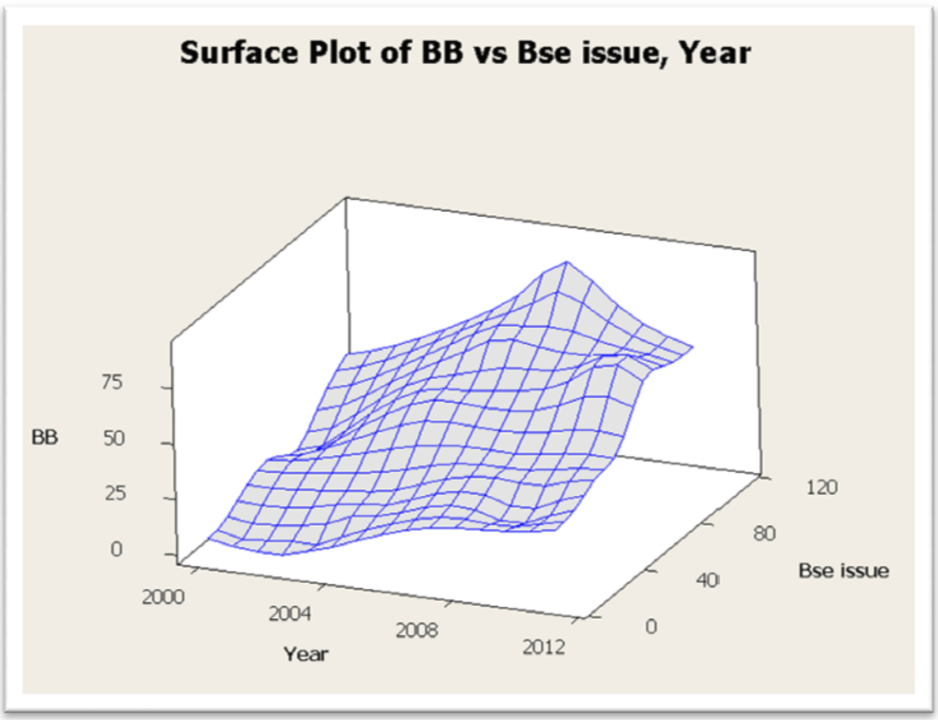
23) Degeorge, F., Derrien, F., woamck, K., (2004). "Quid Pro Quo in IPOs: Why Book-Building is Dominating Auctions?". Euro journal of finance edition 6, pp. 23-45.

24) Degeorge, F., Derrien, F., & Womack, K., (2007). “Analyst Hype in IPOs: Explaining the Popularity of Bookbuilding”. Review of Financial Studies (20), pp.1021-1058.

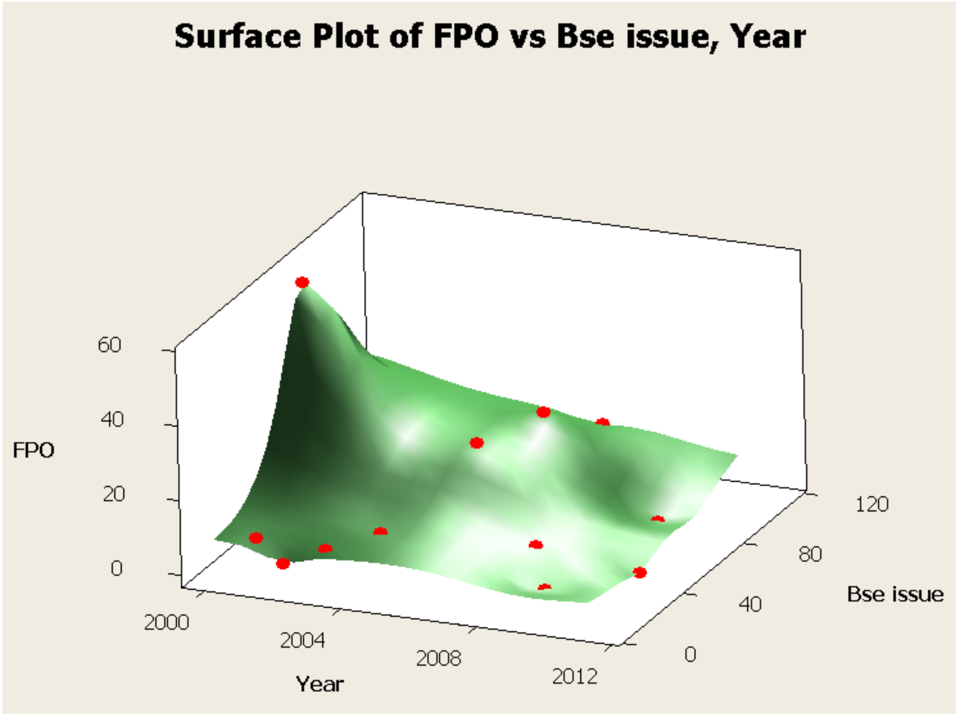
25) Derrien, F., Womack, K, L., (2003). “Auction vs book-building and the control of under-pricing in hot IPO markets.” Review of Financial Studies, 16, pp. 31–61.



Graph no 1: Plot of Bse issue and year



Graph no 2: Plot of Book build vs Bse issue and year



Graph no 3: Plot of Fixed price option vs Bse issue and year