An Empirical Investigation of Going Public Decision of Indian Companies

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An Empirical Investigation of Determinants of Going Public Decision of Indian Companies

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Abstract

This paper examines the determinants of the going public decision of the Indian companies. A probit regression model is used to analyze the influence of fundamental financial data of Indian companies on their going public decision. The size, profitability, age and leverage emerged as the significant determinants of going public decision of Indian companies. The statistically insignificant relationship between the financing needs and likelihood of an IPO found in our study is similar to the Pagano et al, 1998, and contrary to the findings of several other studies done on same issue.

Key Words: Initial Public Offerings, Going public decision, emerging markets, India

1. Introduction

The last decade had witnessed significant progress in the Indian capital market. During this period, it graduated into a mature market, to be at par with or even better than the developed capital markets on certain parameters. At the end of 2003, Standard and Poor's (S&P) ranked India as number one in terms of investors and the number of listed companies.

Primary market is that segment of capital market which actually provides platform to the companies to raise fresh capital. Indian primary market has emerged as a major source of finance for the Indian companies. A growing number of companies have been accessing the primary market for equity capital instead of depending on other modes of funding.

The annual trend in number of Initial Public Offerings (IPOs) and capital raised through them from the Indian primary market is shown in Table 1. The capital mobilized via IPOs increased sharply from Rs.1704 crore in 1990-91 to Rs. 13,443 crore in 1993-94. However the trend declined drastically in the subsequent years till 2003-04 when Indian companies raised only Rs. 5,732 crores through their IPOs. The condition improved in 2004-05 when Indian companies raised Rs. 25526 crore as compared to Rs. 22145 crore in preceding year through their IPOs. Number of companies going for IPOs followed the similar unsteady trend. Whereas a total of 1428 companies went public during 1995-96, only 62 companies went public in 1997-98. The irregular trend continued in later years also, when 102 companies went public in 2005-06 as compared to only 14 IPOs in 2002-03.

A steady level of activity in primary market is necessary for the overall functioning of the capital market. The volatility in the volume of new issues can affect the liquidity, size and depth of the capital market which can ultimately affect the investment opportunities for the investors. Hence it is very important for investors, policy makers, stock exchange authorities, and finance researchers to understand the determinants of going public decision. The present study is an attempt in the above direction and its findings are expected to facilitate a better understanding of the going public decision among the

various stakeholders and thereby, more number of companies may be motivated to go in for IPOs.

A traditional view in corporate finance is that companies access the public equity market via IPOs to raise equity capital to finance their growth. However, recent empirical evidences have lead researchers to question whether raising equity capital is the only purpose to do IPO.

There is a growing literature that shows that raising capital through equity market is not the only reason behind going public[2]. However, actual motivations illustrated by these studies differ from each other. In a widely cited study, Pagano et al. (1998) found rebalancing of capital structure to be a major motive behind going public. Greenwood (2005) observed that companies do IPO to take the advantage of the period when the companies in same industry are overvalued. Brau and Fawcett (2006) concluded acquisition to be a major motivation behind going public. Brau et al. (2005) revealed that companies do IPO to enhance their reputation in the market. A detailed review of relevant literature is presented in the next two sections.

The research question of this study is: What are the determinants of going public decision of the Indian companies? To address the above research question, the fundamental financial data of selected publicly listed and privately held Indian companies is analyzed using a probit regression model. This study has certain important departures from the existing studies. Firstly, the study analyzes the temporal variation in fundamental financial variables that can potentially affect the going public decision of companies. None of the existing studies have analyzed the impact of temporal variation in the fundamental financial variables on the going public decision of companies. Secondly, data analyzed has comparatively longer time frame compared to existing studies. Thirdly, the study focuses on the Indian companies which make it distinct from the other study on emerging markets. Fourthly, study gazes the impact of macro-economic variables viz., interest rates, stock market return, stock market indices, liquidity, market to book ratio on

[2] We take the meaning of IPO and going public as same.

the going public decision of companies. Existing studies have included only few of them. Finally, none of the studies have analyzed the combined impact of firm specific fundamental financial variables and macro-economic variables on IPO decision of firms.

The remaining part of the paper is organized as follows. Section 2 presents the theoretical framework of the study. Section 3 summarizes the prior literature on the issue. The details about the data, model and methodology is presented in section 4. Section 5 analyses the reasons for temporal variation in number of IPOs and rupee amount raised through IPOs by Indian companies. Finally the discussion on results and conclusion is provided in section 6 and section 7.

2. Theoretical framework

Starting with the seminal paper of Pagano et al. (1998), numerous studies on IPOs have analyzed the determinants of firms' going public decision (Helwege and Packer, 2003; Boehmer and Ljungqvist, 2004; Chemmanur et al., 2005; Kim and Sung, 2005; Rosen et al., 2005; Albornoz and Pope, 2004; Brau and Fawcett, 2006 etc.). These studies have stated several interesting theoretical underpinnings behind firms' going public decision. The theoretical framework for present study is given below and is adapted from the above studies.

Most researchers explain the firms' IPO decision in terms of associated benefits and costs of going public, as are summarized in Table 2. First, theories that interpret firms' IPO decision in terms of associated benefits of going public are explained. Next, theories that interpret firms' IPO decision in terms of associated costs of going public are explained.

Benefits Related Theories

Raising Capital: Most of the theoretical models view companies' going public decision as an additional source for raising capital (other than banks and venture capitalists) to finance their growth and expansion. The opportunity to tap public markets for equity capital is appealing for high growth firms with large current and future investments that

may have limited access to other financing alternatives due to high leverage and high growth (Pagano et al., 1998 and Huyghebaert and Hulle, 2005).

Risk-Sharing and Diversification: Some studies have explained the companies' going public decision as risk sharing and diversification vehicle for owners. Huyghebaert and Hulle (2005) asserted that companies with major investments on current projects for the future growth tend to be risky. The owners of such high growth companies, therefore, dislike investing more of their own personal wealth into their companies. Hence they rely on external finance for funding of their major investments. The time lag between investments and cash generation makes debt financing unsuitable. The high premium charged by venture capitalists discourages such risky companies from raising money through them. Hence IPO offers the most suitable form of financing.

Pagano (1993), Zingales (1995), Stoughton and Zechner (1998), and Chemmanur and Fulghieri (1999) cites the owner's desire to divest or diversify their wealth as an important motive for their decision to go public. Albornoz and Pope (2004) explained that the owners of a closely-held company tend to have a large investment in their company and hence are overexposed to the risk. Therefore to minimize the risk associated with this situation they diversify their risk by doing IPO for their company. Therefore, the propensity to do IPO should increases with the size of promoter's stake in the pre-IPO company.

Lower cost of capital: The tax shields advantage of debt helps in reducing the overall cost of capital. But a company cannot continuously minimize its overall cost of capital by employing debt. A point or range is reached beyond which debt becomes more expensive because of increased risk of excessive debt to creditors as well to shareholders. When the degree of leverage increases, the risk of creditors increases, and they demand a higher interest rate and do not grant loan to the company at all, once its debt has reached a particular level. Further, the excessive amount of debt makes the shareholder's position very risky. This has the effect on increasing cost of capital. Thus, up to a point the overall cost of capital decreases with debt, but beyond that point the cost of capital would start

increasing. According to Scott (1976) and Modigliani and Miller (1963) companies conduct a public offering when external equity minimize their cost of capital. Diamond (1991) and Holmstrom and Tirole (1993) added that raising public equity offers the opportunity to obtain low cost direct financing without the intervention of financial intermediaries such as banks or venture capitalists.

Trading on major stock exchanges increases the visibility of the companies. Also a sufficiently large number of quoted shares help in attracting more number of investors (e.g. institutional investors). The visibility and popularity amongst the large number of investors also helps in reducing the cost of capital (Booth and Chua, 1996 and Maug, 1998).

Liquidity: If an owner has raised money through IPO from dispersed investors then he gains a lot when these investors start exchanging the company's shares on stock exchanges where the company gets listed. Listing on major stock exchange provides liquidity in the stock and makes share trading cheaper (Booth and Chua, 1996 and Bolton and Von Thadden, 1998). For a private company, trading involves considerable costs. Its shares can only be traded by an informal search for a counterpart (Pagano et al., 1998). Therefore, companies may go public to facilitate the trading of their shares via listing them on formal stock exchanges aftermath to their IPOs.

Monitoring: In a private company, addition of more shareholders on existing one can be very costly because each new shareholder in turn expends time and effort to check that the company is a sound investment. Pagano and Roell (1998) emphasized that private companies owned by large shareholders experience excessive monitoring. A large shareholder, such as a venture capitalist, would be monitoring the company more closely than a large group of small investors. Therefore companies would be willing to limit the stake of large shareholders and dispersing it to small shareholders. But with the addition of sufficiently many small investors, the cost of process becomes sometimes so large that the company decides to go public. In a public company expanding the shareholders base is comparatively inexpensive.

Windows of opportunity: Myers and Majluf (1984) asserted that managers approve a public offering only when they perceive their firm to be overvalued. Their argument was based on the following assumptions: (a) managers act solely for the welfare of existing shareholders; and (b) managers have superior insider information. Dharan and Ikenberry (1995) asserted that managers are opportunistic in seeking a new listing domain.

Viewed in the above background, companies apply for listing in a prestigious exchange at a time when their performance is at the peak, and hence firms have a greater chance of making a successful listing. Further, companies match their IPO timings with the period when the companies in same industry are overvalued. More the overvaluation more is the possibility that a company will go public (Ritter, 1991).

Signaling hypothesis. Asymmetric information leads to a situation where the managers of the issuing firm are supposed to be better informed than other investors. They signal positive information through the undervaluation of the stock in the IPO (Allen and Faulhaber, 1989; Grinblatt and Hwang, 1989; Welch, 1989). Greater underpricing enables them to raise more capital in the future at more favorable rates. Signaling is costly because it results in a wealth transfer from initial owners to new investors. The signaling cost is compensated for by the fact that the subsequent capital issue will be made at a higher share price. The companies could issue an IPO by proposing to investors a smaller fraction of their capital initially, with a subsequent issue completely satisfying their total capital needs. In this context lesser quality firms will not be able to compete with higher quality firms. The former firms, given that there would be the risk that their lower quality would be revealed before the capital issue, would prefer to issue the stock initially at their true price for the exact amount of capital desired.

Publicity: The high visibility of severely discounted IPOs serves as a marketing vehicle for issuers. Recent theoretical works on IPOs emphasize the benefits of publicity to both customers and issuers. When companies go in for IPOs, they get publicity that helps them to reduce the information asymmetry between insiders and outsiders. Their performance

is visible in their stock price and hence it acts as an instrument for the customers which can help them in accessing the value of firm (Subramanyam and Titman (1999)

Stoughton, Wong, and Zechner (2001) argue that the decision of a company to go public may serve as a signal of its high quality to the product market. They proposed a model where high-quality firms distinguish themselves, and thereby build product market share, by incurring the indirect cost of underpricing and subjecting themselves to the scrutiny of secondary market investors engaged in costly information production. In their model, consumers relate the quality of a company's products to the market prices of its listed stocks. Consumers perceive a company's products to be better if its stock prices are high and hence, are ready to pay more for its products. Therefore a good company can charge higher product prices in high market conditions. They showed that firms with higher first-day returns should gain larger market share in the product market. Helwege and Packer (2001) argued that these benefits should be higher for companies with a large customer base. Therefore, there should be a higher propensity to go public in companies belonging to retail trade sectors.

Cashing out by initial owners: Zingales (1995) and Mello and Parsons (1998) argued that an IPO creates a public market for the company's shares so that its initial shareholders can convert shares into cash at any point of time. Black and Gilson (1998) added that the IPOs provide venture capitalists an attractive opportunity to harvest their investments into the risky businesses.

Currency for Mergers and Acquisitions (M&As): Some researchers have highlighted the role of IPOs in facilitating corporate M&A activities. Zingales (1995) argued that an IPO can serve as a first step in acquiring a company at an attractive price. Brau, Francis, and Kohers (2003) supported Zingales (1995) that IPOs can create public shares for a company which may be used as a "currency" in either acquiring other companies or in being acquired in a stock deal.

Costs Related Theories

Information Asymmetry and Adverse Selection Costs: The economics of information is based on the premise that different parties of a transaction often have different levels of information about the transaction. Information asymmetry refers to a situation in which sellers often have superior information than buyers about some aspect of product quality. Akerlof (1970) pointed that information asymmetry prevails in all markets. He identified the fact that if the good quality sellers have no means to signal high quality, all products in the markets are sold at a single price reflecting the average quality level of the market. This leads to a situation where the high quality sellers have no other choice than to withdraw from the market because high quality sellers in an information asymmetrical market have to sell products at lower prices than actual worth of their products. Ultimately only "lemons" (bad quality products) are sold on the market, which is how buyers' also view the products being sold in the market place. This leads to a market failure situation referred to as "adverse selection". Leland and Pyle (1977) noted that the information asymmetry is particularly high in the primary markets. In IPO situations, investors are generally less informed than the issuers about the true value and quality of the company doing an IPO. Thus prevailing information asymmetries about the quality of issuers in IPO market results in adverse selection and should be a factor influencing the firms' going public decision (Pagano et al., 1998 and Albornoz and Pope, 2004). They insisted that information asymmetry adversely affects the average quality of the companies seeking a new listing and thus affects the price at which their shares can be sold.

Chemmanur and Fulgheri (1999) predicted that information asymmetry could result in an IPO price lower than could be raised by selling private equity to a small group of venture capitalists. They, therefore, argued that adverse selection can work as an obstacle for the young and small companies which have little track record and low visibility. Rock (1986) and Welch (1989) ascribed observed under-pricing in the IPOs to the presence of adverse selection cost.

Diamond (1991) asserted that the adverse selection problems can be avoided if a company has visible profitability. A visible profitability can send positive signals to the investors about the company's quality, and hence a young company can also think of accessing public capital market through IPO.

*Loss of confidentiality***:** In most countries, the securities market regulator(s) have more stringent disclosure requirements for the public companies than the private companies. Some of the mandatory disclosures to be made by public companies may be internally sensitive and whose secrecy may be crucial for their competitive advantage[3]. This may deter the companies from going public (Campbell, 1979; Yosha, 1995; and Maksimovic and Pichler, 2001).

Increased possibility of litigations: Possibility of getting entangled into litigations increases significantly for the public companies. Because litigations are costly, companies have incentives to avoid them. Hence companies may decide against going public to minimise the possibility of legal suits (Tinic, 1988).

Higher taxes: Pagano et al. (1998) argued that tax outgo of companies as a fraction of their operating income should experience a permanent increase in the post IPO period. They attributed this increase to the close scrutiny of public companies from tax authorities, reducing their scope for tax elusion and evasion relative to private companies. Hence profitable companies or companies who are likely to pay more taxes may not like to go public.

*Initial and subsequent expenses***:** The initial and subsequent expenses associated with IPO can discourage companies from going public (Bhattacharya and Ritter, 1983 and Ritter, 1987). Some of the major initial costs include: the lead underwriter's commission; out of pocket expenses for legal services; accounting services; printing costs; personal marketing "road show" by managers; ongoing legal, accounting, filing and mailing

[3] Public companies are required to release all operating and financial details to the public, at the time of filing and on the annual basis after IPO. These details include sensitive information about their: markets, profit margins, Research & Development (R&D) projects, present and future strategy.

expenses; and other unforeseen expenses. Ritter (1987) observed that approximately 18% of total proceeds are paid as initial expenses by US companies.

All public companies also have to keep incurring several recurring expenses on an ongoing basis. Such expenses may include: listing fee to be paid to stock exchange(s), relatively high annual auditing fees compared to being a private company, high printing charges of annual reports, high costs of arranging share holders meetings and maintaining investors' relations etc.

3. Literature Review

Finance literature documents two major approaches to find out the determinants of going public decision. The first approach is to examine managerial perceptions of determinants of going public decision by conducting surveys of companies' managers. The second approach is to statistically analyse the: fundamental financial data of companies; and macro-economic variables to know the determinants of their going public decision. The results of survey based studies are discussed in first section followed by the discussion on the results of statistical models.

3.1 Survey-Based Studies

Brau and Fawcett (2006) conducted a managerial survey of 336 CFOs of US firms which hitherto either (a) had successfully completed their IPO; or (b) had initiated their IPO process but later on chose to call off their IPO; or (c) were eligible to do an IPO but decided to remain private. Their survey sample of 336 CFOs was a result of a response rate of 18.1%. The survey revealed that: the acquisition purpose was a major factor that motivated US companies to do IPO, issuers timed their IPOs to take advantage of prevailing market conditions and preservation of decision-making control and ownership were the main reasons for remaining private. The major strength of their study was their large survey sample of 336 CFOs. However, the sample was derived from within a narrow time span of only two years i.e., from 2000 to 2002. Due to the narrow time span

used for deriving the sample, their study did not allow for variations in managerial perceptions resulting from changes in market conditions and mechanisms over a larger time frame.

Burton, Helliar and Power (2006) conducted a survey on managers and intermediaries associated with going public decision of UK firms. They conducted their study in three steps. First, personal interview through a semi-structured questionnaire was undertaken with various parties involved in the IPO process. The interviews were conducted with ten organizations that had been involved in IPOs. Second, postal questionnaires were sent to UK companies that had an IPO in last two years. Out of a total of 450 companies, 102 companies responded back, representing a response rate of 23%. Third, information about the amount that each company had raised and their market capitalization was obtained through secondary sources. The survey revealed that: the benefit in terms of increased visibility and reputation associated with IPO had major influence on going public decision; the need for growth was the most important determinant of timing of the issues and the biggest difficulty encountered by the managers was to manage both, the IPO process and the company operations together.

Brau, Ryan and DeGraw (2005) carried out a survey of CFOs of 438 US firms (with response rate of 44.5%). The sample was divided into pre-Internet bubble (1996-1998) and post-Internet bubble (2000-2002) IPOs. Due to the anomalous nature of the IPO market during Internet bubble, the study did not survey firms that went public during the height of the Internet bubble between 1998 and 2000. They found that : financing of growth and increase in liquity was two major motivation behind going public decision, CFOs' sentiment remained same in bull and bear periods and underwriting fees and indirect costs related to going public were major concerns for CFOs in IPO.

Marchisio and Ravasi (2001) conducted a survey on family-owned companies of Italy. The result of the study was based on the responses of 54 family-owned firms (with 73% response rate) who went public during 1996-2001. The research question of the study was, "why do family owned firms do IPO?" Specifically, authors investigated strategic

motives behind going public decision. The survey revealed that beside the usual financial motives, family-owned firms go public to increase the visibility and to expand and strengthen the network of relationships that can sustain entrepreneurial activity.

Stanley B. Block (2005) carried out a survey on US firms that went private between January 2001 and July 2003. Out of a total of 236 firms that went private, 110 firms participated in the survey (response rate 46.65%). The study investigated the reasons behind 'going private' decision of the firms and found that the following factors can motivate a company to become private again: (a) the costs associated with being a public company in terms of pressure and time constraint on top management, (b) absence of liquidity and (c) threat of delisting by the stock exchange.

Park (1990) carried out a survey on Korean companies. The study showed that the most important benefit of going public is easy access to a source of funding. The second most important motivation is gaining market credibility. The survey revealed that fear of loss of control is considered as one of the critical obstacles for Korean companies.

Eije, Witte and Zwaan (2000) and Gregory K. Ericksen (2000) studied other aspects of going public decision. In a survey of 27 Dutch public companies, Eije, Witte and Zwaan (2000) found that IPO caused a tremendous change in organizational variables like effectiveness, planning and control, capital budgeting, internal communication etc. Gregory K. Ericksen (2000) added that the IPO is not a short time process. It's a long process where the companies who prepare themselves in well advance from the date of IPO actually perform better.

3.2 Studies Based on Fundamental Financial Data of Companies & Macro-economic Variables

A number of studies have searched for empirical relationship between the companies' characteristics and going public decision. Numerous regression models incorporating a wide variety of explanatory variables have been specified to reveal the determinants of going public decision. The theoretical costs and benefits associated with going public

have formed the basis for the models specified. While most of these studies have arrived at some common determinants for companies' going public decision, yet there are some contradictory findings. Further the proxies used to capture the same theoretical costs/benefits, at times, have varied across different research studies.

Pagano, Panetta and Zingales (1998) investigated the determinants of going public decisions of Italian companies through a probit model. They compared 69 Italian public companies, which completed their IPOs between 1982 and 1992, with 12391 Italian private companies, which were eligible do their IPOs but preferred to remain as private during the above period. The study analyzed both, the ex-ante characteristics of the companies and ex-post consequences of IPO on the companies that had an IPO. They found that the: probability of going public increased with the increase in stock market valuation of other firms within the same industry and company's size; financing of subsequent investment and growth were not amongst the major motivations behind going public; IPOs helped companies in borrowing cheaply from the banks; and incumbent's wealth increased in the post-IPO period.

Chun, Lynch and Smith (2002) adopted the approach of Pagano et al. (1998) and investigated the factors influencing going public decision for Korean firms. Their sample consisted of (a) 304 Korean firms which completed their IPOs between 1986 and 1995; and (b) 1722 Korean firms which remained private during the above period. They also carried out analysis on sub-samples of: (a) Chaebol or large conglomerate subsidiaries vs. Independent firms; and (b) financially healthy firms and marginal firms. They found that the: IPOs are timed to take the advantage of windows of opportunity; financially marginal firms are more likely to go public to take advantage of windows of opportunity; a high (low) industry market-to-book value (MTB) increases (decreases) IPO probability; firms do not go public to fund investment in fixed assets; returns on assets decreased in the post-IPO period; Chaebol subsidiaries use IPOs to fund takeovers or other equity investments; Chaebol subsidiaries experienced a fall in interest rates after the IPO which was consistent with IPO motive of lowering the cost of capital to fund takeovers.

Breinlinger and Glogova (2002) examined the influence of macro economic factors on going public decision. Their sample consisted of firms from six European countries (Austria, Belgium, Denmark, Finland, France and the Netherlands) that went public between 1980 and 1997. They explored the determinants of IPO volumes through a panel data analysis of following macroeconomic factors: stock index returns, changes in savings deposits, GDP growth, interest rates and exchange rates. The authors found that the overall IPO volume was dependent on stock market returns but the dependence was not significant for all the stock price levels. Also, except Finland and Austria the relationship was not significant for other countries. Other factors like changes in savings, GDP growth, interest rates and exchange rates exhibited non significant influence on IPO volumes.

Boehmer & Ljungqvist (2004) examined 330 German firms that went public between 1984 and 1995. The result of the study was based on a hazard analysis of factors influencing the timing of IPOs. Authors argued that the probit and logit models, used by most of the studies, do not analyze the time factor associated with the variables, which according to them can be incorporated using a hazard model. The firms were observed from the date of IPO announcement to the date of their IPO. Following factors were found to be positively affecting the likelihood of IPO: sales, profit margins (relative to other firms in its industry) and stock market returns of the firms in the same industry and uncertainty about the future profitability. To preserve the private benefits of control was found to be a major motivation behind staying private.

Albornoz and Pope (2004) analyzed 830 public firms that were listed on London Stock Exchange. The research design of the study was similar to Pagano et.al (1998). They found that going public decision of companies is related: (a) positively to their size, stock market valuation of other companies within the same industry; and (b) negatively to their leverage levels and profitability. Based on the analysis of post-IPO evidences, the study suggested that ‘financing needs’ and ‘reduction of leverage’ were not the major factors influencing IPO decisions in the UK.

Rosen, Smart and Zutter (2005) conducted a sector specific study wherein they investigated 240 US banks which completed their IPOs between 1981 and 2002. The advantage of doing a study on banking sector was the easy accessibility of required data even of the private banks. Unlike the other sectors, both public as well as private banks are required to disclose their annual financial data to the regulators. Authors found that: the riskier banks were more likely to go public; the chance of getting acquired increased the probability of going public; the chance of becoming acquirer also increased the probability of going public and the banks went public to take the advantage of prevailing market condition.

Chemmanur, Shan He and Nandy (2005) investigated the relationship between product market characteristics and probability of going public for a large sample of US firms. The investigation was based on two types of firms: (a) all those firms that had an IPO between 1972 and 2000 and (b) all those firms that stayed private during the period. A probit model was used to examine the relationship between the product market characteristics of firms immediately before going public and its likelihood of going public. The following characteristics were found to be positively affecting the likelihood of going public: firms with larger size, sales growth, total factor productivity (TFP), market share, and capital intensity; firms operating in less competitive and more capital intensive industries; firms in industries characterized by riskier cash flows; firms with projects that are cheaper for outsiders to evaluate; firms operating in industries characterized by less information asymmetry; and firms with greater average liquidity of already listed equity.

Kim and Sung (2005) carried out their study on group-affiliated Korean firms. Their sample size consisted of: 35 group affiliated firms that had an IPO between 1997 and 2002 and private firms that were eligible for IPO but remained private during the period. The study hypothesized that following factors increases the probability of going public: direct share ownership by group-controlling shareholder, (ii) each firm.s contribution to group control, and (iii) internal capital market. A probit model and a multivariate regression model were used to analyze the pre IPO firms' characteristics and

consequences of IPO on the performance of firms respectively. The analysis showed that the probability of going public increases for the firms: (a) where group-controlling shareholder holds high direct share ownership in the firm; (b) where if its contribution to group control is low; and (c) if it can not benefit from the internal capital market.

Using a large sample of 16,958 IPOs from 38 countries, Kim and Weisbach (2005) explored the underlying motivations behind going public decision. Their sample consisted of three types of offerings: (a) IPOs where new primary shares are issued, (b) IPOs where exclusively secondary shares held by insiders are issued and (c) IPOs with combination of above two. Authors concluded that capital raising was an important motive for going public. Their result was based on their following observations. First, authors observed that maximum proportion of IPOs around the world involved issuance of primary shares. Second, they observed that IPOs with primary share offerings were associated with a higher demand for capitals than IPOs with secondary share offerings.

Pin and Wei (2006) studied 383 IPOs of Taiwan, for the sample period of 1989 to 2000. The probit model used to analyze the determinants of IPOs in the study concluded that: Taiwan IPOs were not motivated by financing needs or constraints and larger and profitable firms were more likely to go public.

4. Sample selection, Data and Methodology

The sample for this study was derived from the CMIE Prowess database, which contains details of 393 IPOs and 3726 private companies[4]. The sample for probit analysis is categorized into two groups: (a) IPOs sample; and (b) Private sample. IPOs sample included all IPOs completed between 1999 and 2005, and sample for private companies included all those companies that were eligible to do an IPO but remained private during experiment years.

[4] CMIE Prowess database contains the information of 3726 unlisted companies. The sample for private companies is generated from those unlisted companies who were eligible to do an IPO but were not listed in any stock exchanges.

The following criteria were used for constructing the sample for probit analysis, keeping in view the methodology of this paper. First, the data on IPOs that took place before 1999 was not included. It is to be noted from figure (3-a) that the period of study contains two bearish and two bullish phase, therefore to include one complete cycle of both the phases the data on IPOs before 1999 was not taken. Second, merged companies were eliminated. Third, the probit model used in the study required company level data on certain financial variables for three years before and after the IPO date. Therefore, such companies were also excluded where prowess did not provide the required data on the financial variables. Fourth, the focus of the study was on the determinants of going public decision. Hence secondary issues[5] were not considered in the analysis. The final sample for this study constituted 150 IPOs and 2000 private companies. The sample selection process described above eliminated 243 IPOs and 1726 private companies.

Apart from the probit analysis, a trend analysis is also carried out. Trend analysis is carried out to understand the impact of macro factors on distribution of IPOs. Therefore the study period for the analysis is stretched out. The data for this purpose are taken from various issues of annual reports of RBI, and website of BSE and NSE. The sample period of the analysis is from the year 1989 onwards. The choice of study period is constrained by data availability on IPO distribution from 1989 onwards only.

Model Specification

The determinants of going public are analyzed through a probit model. Probit model helps in explaining the occurrence or the non-occurrence of an event which can affect each of n individuals in a given sample. The binary or boolean variable $y_i \in \{0,1\}$ serves to indicate whether or not the event has affected the *i*th individual.

If we were to record, for each individual, the value of k variables which influence the probability of the event, then we could express this probability in the ith instance by,

[5] With IPO we meant that stage, after which a company becomes public or it does not remain private anymore. However secondary issue is done by companies who are already in public domain. Therefore to have a clear difference between a private and a public company we have excluded secondary issues.

$$P(y_i = 1) = \pi(x_{in}, \beta), \quad \ldots\ldots\ldots\ldots \quad (1)$$

Where $x_i = [x_{i1}, \ldots\ldots\ldots x_{ik}]$ are the variables and β is a vector of parameters.

It is helpful to consider π as the composition of two mappings:

$$\pi = \pi\{h(x)\} \quad \ldots\ldots\ldots\ldots \quad (2)$$

The function $h = h(x)$ is often a linear function of the observations which takes the form of $h_i = x_i \beta$. The function $\pi = \pi$ (h) is a distribution function which fulfils the condition

$$0 \le \pi(h) \le 1 \quad \text{with} \quad \pi(-\infty) = 0 \quad \text{and} \quad \pi(\infty) = 1$$

There are three common choices for π (h):

(i) The uniform distribution

$$\pi(h) = \begin{cases} 0, \text{if } h \le 0; \\ h, \text{if } 0 \le h \le 1; \\ 1, \text{if } 1 \le h. \end{cases} \quad \ldots\ldots\ldots\ldots \quad (3)$$

(ii) The logistic distribution

$$\pi(h) = \frac{e^h}{1 + e^h} \quad \ldots\ldots\ldots\ldots \quad (4)$$

(iii) The normal distribution

$$\pi(h) = \int_{-\infty}^{h} \frac{1}{\sqrt{2\pi}} e^{-u^2/2} du \quad \ldots\ldots\ldots\ldots \quad (5)$$

Equations (3), (4) & (5), respectively, depict the linear probability model, the logistic probability or logit model, and the probit model. The advantage of the probit model over other models is that it is based on a distribution- the normal distribution- for which there is often a clear statistical interpretation.

Following the theory on factors affecting the probability of going public, size is considered to be one of the major determinants, for the *i*th company, δ_i is size of the company; and it is assumed that, in the population of these companies, the value $\xi = \log(\delta)$ are distributed normally with a mean of μ and a variance of σ^2 . If a company is selected at random and is having *size* d_i, then the probability that it will go public is $P(\xi < x_i)$, where is $x_i = \log d_i$. This is given by

$$\pi\ (x_i) = \int_{-\infty}^{x_i} N(\xi;\mu,\sigma)d\xi. \qquad \ldots\ldots\ldots\ldots \qquad (6)$$

The integration may be expressed in terms of standard normal density function N (u:0,1),

$$P(\xi_i < x_i) \text{ with } \xi_i \sim N(\mu, \sigma^2)$$

Is equal to

$$P(\frac{\xi_i - \mu}{\sigma} = \xi_i < h_i = \frac{x_i - \mu}{\sigma}) \text{ with } u_i \sim N(0,1)$$

Moreover the variable h, which is corresponds to the *size* of *i*th company, can be written as

$$h_i = \frac{x_i - \mu}{\sigma} = \beta_0 + \beta_1 x_i, \qquad \ldots\ldots\ldots\ldots \qquad (7)$$

$$\text{where} \qquad \beta_0 = \frac{-\mu}{\sigma} \text{ and } \beta_1 = \frac{1}{\sigma}$$

The function π (x) with x = log (d) also indicates the fraction of a sample of companies which could be expected to go public if all companies have same *size* d.

Let $y_i = 1$ if the *i*th companies goes public and $y_i = 0$ if it is private. Then the situation of the company is summarized by writing

$$Yi = \begin{cases} 0, \text{if } x_i \le \xi_i \text{ or, equivalently, } d_i \le \delta_i; \\ 1, \text{if } \xi_i < x_i \text{ or, equivalently, } \delta_i < d_i. \end{cases} \qquad \ldots\ldots\ldots\ldots \qquad (8)$$

For simplicity we show the estimation of the model with individual data,

If we have a sample of companies (yi, xi) ; i = 1, ……,n where yi ∈ {0,1} for all i. Then, assuming that the events affecting the individuals are statistically independent and taking π i = π (xi, β) to represent the probability that the event will affect the ith company, we can represent the likelihood function for the sample as

$$L(\beta) = \prod_{i=1}^{n} \pi_i^{y_i} (1-\pi_i)^{1-y_i} = \prod_{i=1}^{n} (\frac{\pi_i}{1-\pi_i})^{y_i} (1-\pi_i) \ldots\ldots\ldots\ldots \qquad (9)$$

This is the product of n point binomials. The log of the likelihood function is given by

$$\log L = \sum_{i=1}^{n} y_i \log(\frac{\pi_i}{1-\pi_i}) + \sum_{i=1}^{n} \log(1-\pi_i) \qquad \ldots\ldots\ldots\ldots \qquad (10)$$

Differentiating log L with respect to βj, which is the *j*th element of the parameter vector β, yields

$$\frac{\partial \log L}{\partial \beta_j} = \sum_{i=1}^{n} \frac{y_i}{\pi_i(1-\pi_i)} \frac{\partial \pi_i}{\partial \beta_j} - \sum_{i=1}^{n} \frac{1}{1-\pi_i} \frac{\partial \pi_i}{\partial \beta_j}$$

$$= \sum_{i=1}^{n} \frac{y_i - \pi_i}{\pi_i(1-\pi_i)} \frac{\partial \pi_i}{\partial \beta}.$$

or, $$\frac{\partial \log L}{\partial \beta_j} = \sum \{\frac{y_i}{\pi_i} - \frac{1-y_i}{1-\pi_i}\} \frac{\partial \pi_i}{\partial \beta_j} \qquad \ldots\ldots\ldots\ldots \qquad (11)$$

On differentiating again,

$$\frac{\partial^2 \log L}{\partial \beta_j \beta_k} = \sum_i \{\frac{y_i}{\pi_i} - \frac{1-y_i}{1-\pi_i}\} \frac{\partial^2 \pi_i}{\partial \beta_j \beta_k} - \sum_i \{\frac{y_i}{\pi_1^2} + \frac{1-y_i}{(1-\pi_i)^2}\} \frac{\partial \pi_i}{\partial \beta_j} \frac{\partial \pi_i}{\partial \beta_k}. \qquad \ldots\ldots\ldots\ldots \qquad (12)$$

The expected value of the expression above is found by taking E (y_i) = π_i. On taking expectation, the first term of the RHS vanishes and the second term is simplified, with the result that

$$E(\frac{\partial^2 \log L}{\partial \beta_j \beta_k}) = \sum_i \frac{1}{\pi_i(1-\pi_i)} \frac{\partial \pi_i}{\partial \beta_j} \frac{\partial \pi_i}{\partial \beta_k} \qquad \ldots\ldots\ldots\ldots \qquad (13)$$

The maximum likelihood estimates are the values which satisfy the conditions

$$\frac{\partial \log L(\beta)}{\partial \beta} = 0 \qquad \ldots\ldots\ldots\ldots \qquad (14)$$

To solve this equation requires an iterative procedure. The Newton-Raphson procedure could be used to solve this equation.

Determinants of Going Public

Based on the relevant theoretical framework and empirical literature, a probit model is specified below.

$$\pi (IPO_{it}) = \pi (\beta_1 Size_{i,t-1} + \beta_2 Age_{i,t-1} + \beta_3 Prft_{i,t-1} + \beta_4 Discl_{i,t-1} + \beta_5 Levr_{i,t-1} + \beta_6 Risk_{i,t-1} + \beta_7 Sgrwth_{i,t-1} + \beta_8 Capexp_{i,t-1} + \beta_9 Ccrdt_{i,t-1} + \beta_{10} Indst) \quad \ldots\ldots\ldots\ldots \quad (15)$$

The nomenclature of dependent variable is 'IPO', a dummy variable, which equals 1 if the company is publicly held and 0 if the company is a private in a particular year. The explanatory variables are: the size, age, profitability, industry, level of disclosures, leverage, risk, sales growth, capital expenditure and cost of credit for the included companies. Detailed definitions of all variables and expected relationships of explanatory variables with the dependent variable are presented in Table 5a.

Individual companies are indexed i: for each year t, in the sample. At any time t, the sample includes all companies which are private at that point in time, and the companies which go public (had an IPO) in that year. After a company goes public, that company is dropped from the sample

The analysis is carried out for both – (a) each individual year, in order to find out the temporal variations; and (b) for pooled sample, in order to find out the overall impact. The pooled sample is formed by combining the data of each individual year.

4. Trends and features of IPOs in India

The annual trend in the number of IPOs and capital raised by Indian companies through IPOs are shown in Figure 4 (a-b). The figures show that between 1996 and 2000, number of IPOs and amount raised through these IPOs declined drastically. IPOs activity shot up again in 2000-01. The time period of 2001-03 witnessed a steep decline in the IPOs activity. The IPOs activities accelerated again after 2003.

Figure 3 (a-b) shows the behaviour of Indian stock index (BSE SENSEX) between 1989 and 2006. It is evident from the Figures 3(a-b) and Figures 4(a-b) that Indian companies time their IPOs to take advantage of bullishness in the stock prices and returns. The observation supports the view of Loughran et al. (1994), Ljungqvist, (1995), Rees (1997) and Rydqvist and Hogholm (1995) that the issuers time their IPOs with the prevailing market condition.

Surge in the number of IPOs can be seen as a consequence of the high interest rate also. The changes in interest rate have a bearing on the welfare of investors. As the interest rate goes up, the market price of existing competitive (fixed income) securities falls, and vice versa. Fig (3.c) reports the year-by-year fluctuations in the interest rates from 1993 onwards. Annual (Gross) Redemption Yield on long term Government of India Securities is taken as a proxy for the interest rates. The figure reveals that the surge in IPO follows the hike in the interest rate and vice versa. For the sample, the interest rate is highest in 1993-94 following which we have maximum number of IPOs in 1994-96. The trend declines sharply during 1997-2000 resulting in a steep decline in the number of IPOs. Similar pattern is observed for the period 2000-05.

Another stock market indicator that strongly affects the distribution of IPOs is annual average 'market to book ratio'. It can be seen from the figure (3.d) that the trend in IPOs strongly follows the movement in the 'market to book ratio'. The pattern is consistent with windows of opportunity hypothesis. A detailed discussion on this hypothesis is already given in literature review section.

The graphical relationship between 'liquidity' calculated as turnover ratio and distribution of IPOs is consistent with the existing theories (see figure 3.e). The increased liquidity in stock market should have a favourable impact on the going public decisions of companies. It can decrease the transaction cost of the capital market. Actually the relationship between stock market and primary market activities is a two-way relationship. The liquidity in the stock market also depends on the number of issues in primary market. The more the number of issues and instruments in primary market, more

are the instruments available in secondary market. It is apparent from the figure that the liquidity in the stock market has gone up during 1995-96. It rose sharply during 2000-03. The figure shows that for the initial years of sample the IPO distribution is influenced by the liquidity. However, the period 2000-02 presents a very indistinct relationship. Again in final years of the sample period the trend for number of IPOs shows a coherent relationship with liquidity.

5. Results

The discussion on results is divided into two sections. First, the descriptive statistics of the variables are described. Second, the results obtained through probit analysis are described.

Summary Statistics

Industry wise distribution of IPO sample are shown in figures 1 & 2, indicates that the majority of IPO companies belongs to manufacturing industry (46%), followed by services industry (42 %). The initial impression is that companies belonging to financial services industry are more reluctant to go public. In past recent years, there is a growth in IPOs from banking sector. The descriptive statistics of variables are reported in Tables 3 and 4. Table 3 provides a chronological comparison of publicly held companies and private companies included in the sample. Table 4 depicts the summary of the pooled sample.

The summary statistics shows that the average size of company in IPO sample is bigger than private sample. The mean size for IPO sample has increased considerably from 1999 to 2005, whereas for private sample, the increase in not much. In 2002 the mean size of IPO sample is more than three times bigger than private sample.

Statistics shows that the average age at which companies do IPO is 14 years (Table 4). The mean age for IPO sample has increased from 10 years in 1999 to 22 years in 2005. The overall mean age for IPO sample is lower than private sample.

The overall mean score of profitability measured as return on net worth for IPO sample is eight times greater than private sample. The difference between the profitability of both the sample is noticeable. In 1999 the average profitability of IPO sample is 31 times greater than the private sample, and in 2004 it is nearly 11 times greater than private sample.

The ratio 'corporate tax to sales' is used as a measure for the 'company's level of disclosures'. The summary statistics for level of disclosures shows that the average ratio for private sample is three times greater than IPO sample. The differences between the scores across the time periods are not distinct. The initial impression is that companies with high ratio of disclosure are reluctant to go public.

On an average the Private companies are more leveraged than IPO companies. In 2000, the private companies are six times more leveraged than IPO companies, and in 2002 and 2003 it is three times more. The mean score for both the sample is markedly different for all the time periods.

The initial impression is that Indian IPOs are not strongly motivated by financing needs, as the average growth in sales for Private sample is more than that of IPO sample. There is not much difference in the level of capital expenditure for both the sample. Sales growth for private sample is almost double than the IPO companies. The table reports that the overall average score of Cost of credit for IPO sample is five times greater than private sample. The difference is apparent for all the time periods. Statistics of risk shows that overall IPO companies are ten times riskier than private companies. The mean score for the risk is always higher for IPO sample. It indicates that risky companies are more likely to go public. Summary statistics of variables like 'Return on net worth' and 'Cost of credit' show a great fluctuation across the time period.

Probit analysis

The results of Maximum likelihood estimate of probit model are presented in Table 5b. Estimates of pooled sample[6] are listed in first column, and chronological estimates of model are listed in second column. The analysis is done for each year (1999 to 2005). However due to less number of IPOs, the model could not be estimated for 2002. The estimated value of log likelihood, pseudo R^2, dummy variable for 'Industry' is also reported in the table.

The results in Table 5b indicate that Size and probability of going public is positively related. A standard deviation increase in size increases the probability of going public by more than 2 times of sample average probability of going public. The relationship does remain positive for all the years; however it is not significant for 2001. In general, the relationship is statistically significant. This result is consistent with the findings of several earlier empirical studies (Pagano et. al., 1998; Helwege and Packer, 2003; Chemmanur et al., 2005; Kim and Sung, 2005; Rosen et al., 2005, Albornoz and Pope, 2004).

The age of companies is found to be negatively related to their probability of going public. A standard deviation increase in age reduces the probability of going public by 30 percent of sample average probability. This result is similar to the findings of Boehmer and Ljungqvist (2004), who used age of companies to be proxy for the uncertainty in their future profitability[7]. They argued that the younger companies would be more uncertain about their future profitability and hence would be more interested in going public. However, above result is in contrast to the findings of Chemmanur and Fulghieri (1995); Rock (1986); and Welch (1989).

Another proxy for risk calculated as the ratio of intangible assets to total assets is also analyzed. The assumption is that higher the ratio more risky a company is. In accordance

[6] The pooled sample consists of combination of all cross-sectional and time series data used in the study.
[7] See Pastor and Veronesi (2003)

with a priori expectation, the relationship obtained is positive and significant for the pooled sample. On time scale the relationship is significant in 2000 and 2005.

As shown in Table 5b, probability of going public is positively related to 'Profitability' measured in terms of 'Return on net worth'. The relationship is positive and significant for all the time periods. An increase of one standard deviation in profitability corresponds to 13 percent increase in sample average probability. The result has been supported by a major chunk of studies. The lower of adverse selection cost could be one possible reason behind this finding.

Leverage and probability of going public is found to be negatively related. Table 5b shows that the relationship is negative across all the columns. Except 2003 and 2005 the relationship is statistically significant for other time periods. The result support the views expressed by Pagano et. al. (1998), Helwege and Packer (2003) and Kim and Sung (2005). The negative relationship shows that highly leveraged companies prefer to remain as private.

The study use ratio of 'corporate tax (paid) to total sales' to be the proxy for the company's level of disclosures. The relationship was found to be negative. The overall idea is that companies would like to pay less amount of corporate tax. Going public requires companies to disclose more financial information which result into higher payment of taxes by them.

In contrast to earlier studies, the estimate shows that the relationship between growth in sales and probability is not significant for any time period. Another variable taken as a proxy for growth is capital expenditure. The relationship found is positive but except 1999 it is not significant in any of the columns.

The study used 'cost of credit' as a proxy to show the effect of going public on bargaining power of a company with the banks. It is calculated as a ratio of interest payment to total bank borrowings. On a priori basis, the relationship was expected to be

positive i.e. higher the ratio higher is the propensity to bargain for lower interest rate. As expected, the relationship emerges as positive for all the time periods. However the relationship is not significant. The positive relationship shows that companies with higher ratio are more likely to go public. Variable 'Industry' is taken as a dummy variable. It is apparent from the table that coefficient for 'Manufacturing' and 'Services' industries are significant, which indicate that companies from manufacturing and services industries are more likely to go public.

6. Conclusion

The study provides an analysis of the determinants of going public decision of Indian companies. The company level determinants are addressed through a probit model. In addition the effect of macro level determinants viz., interest rates, stock market return, stock market indices, liquidity and market to book ratio, on the distribution IPO were also examined. The summary statistics of variables shows that some of the determinants are year specific. Hence to find out the effect of year specific determinants, the analysis is carried out for individual years also.

Based on the probit model, size, profitability, age and leverage emerge as the significant determinants of going public decision. The magnitude of the effect of size on probability of going public indicates relatively strong relationship between the two.

The statistically insignificant relationship between the financing needs and likelihood of an IPO is contrary to the findings of most of the existing studies. The study finds strong evidence that Indian IPOs are not motivated by financing needs or constraints.

The most other results of this study are consistent with the existing IPO theories. The negative and statistically significant relationship between age and probability of IPO suggests that companies go in for IPO at much younger stage. Younger companies are more risky and less certain about their future profitability. Another variable used in the analysis is 'ratio of intangible assets to total assets' which also proxy risks. The positive

and statistically significant relationship of this ratio with likelihood of going public clearly shows that risk aversion is one of the major motivations behind Indian IPOs.

The study finds that the larger and profitable companies are more likely to go public. The negative relationship between leverage and dependent variable shows that the companies are not motivated by reduction of leverage. Study also provide support for, though not conclusively, cost of credit, cost of disclosure, owners' diversification desire, listing costs, liquidity and market timings as factors influencing IPO decision. Industry captured through a dummy variable shows that companies from manufacturing and services sectors are more likely to go public.

The graphical study of IPO distribution and macro level factors suggest that the IPO distribution is correlated with Sensex movement, in terms of return and price, price to book ratio of sensex and liquidity in BSE. The analysis also shows that there is a lag difference between the movements in interest rate and annual number of IPOs.

The results for Indian market are expected to be useful to other emerging countries also due to resemblances in socio-economic conditions of all the emerging countries. However the findings of this study are subjected to several limitations. The findings of study could be further refined in the following ways. In this study, the usage of 'sales growth and capital expenditure' as proxies for 'the need of financing and growth' is debatable. In future the analysis can be done using better proxies also. The study included the information for pre IPO factors only. The scope of study could be increased by adding those factors which are post IPO and can motivate a company to do IPO like increase in performance, merger and acquisition activities, cash out of venture capitalists etc.

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Tables

Table 1

Number of IPOs and Amount raised by Indian Companies from 1989 to 2006

Following table shows the annual trend in number of public issues between 1989 and 2006. The trend in rupee amounts mobilized through public issues is also presented in the table. The table is constructed on the basis of data provided by *Prime Database*.

Year	No. of Issues	Amount (Rs.crore)
1989-90	187	2,793
1990-91	141	1,704
1991-92	196	1,898
1992-93	528	6,252
1993-94	770	13,443
1994-95	1,343	13,312
1995-96	1,428	11,822
1996-97	753	11,687
1997-98	62	3,061
1998-99	32	7,911
1999-00	65	7,673
2000-01	124	6,618
2001-02	19	6,423
2002-03	14	5,732
2003-04	35	22,145
2004-05	34	25,526
2005-06	102	23,676

Table2

A Summary of Theoretical Framework for Going Public Decisions

Following table summarizes the discussion of theoretical works presented in theoretical framework of present study. Benefit related theories are listed first, followed by cost related theories. Research studies proposing relevant theories in their paper are also listed in the table.

A. Benefit Related Theories	
Theories	***Research Studies***
1.Raising capital	Loughran et al., 1994; Pagano et al., 1998; Subrahmanyam and Titman, 1999 and Huyghebaert and Hulle, 2005.
2. Risk sharing and diversification	Pagano, 1993; Zingales, 1995, Stoughton and Zechner, 1998, and Chemmanur and Fulghieri, 1999.
3. Lowering of cost of capital	Scott, 1976; Modigliani and Miller, 1963, Diamond, 1991; Holmstrom and Tirole, 1993; Booth and Chua, 1996 and Maug, 1998.
4. Liquidity	Booth and Chua, 1996; Bolton and Von; Pagano et al., 1998 and Thadden, 1998.
5. Monitoring	Pagano and Roell,1998
6. Windows of opportunity	Myers and Majluf, 1984; Dharan and Ikenberry, 1995 and Ritter,1991
7. Signaling	Allen and Faulhaber, 1989; Grinblatt and Hwang, 1989 and Welch, 1989.
8. Getting publicity	Subramanyam and Titman, 1999 and Stoughton et. al., 2001.
9. Cashing-out of insiders	Zingales, 1995 and Mello and Parsons, 1998 and Black and Gilson, 1998.
10. Optimal way to transfer control	Zingales (1995)
B. Costs related theories	
1. Information Asymmetry and Adverse Selection Costs	Akerlof, 1970; Leland and Pyle, 1977; Rock (1986); Welch (1989) and Chemmanur and Fulgheri (1999)
2. Loss of confidentiality (Increased Monitoring)	Campbell, 1979; Tinic, 1988; Yosha, 1995 and Maksimovic and Pichler, 2001
3. Initial and subsequent expenses	Bhattacharya and Ritter, 1983 and Ritter, 1987

Table 3
Summary statistics

This table summarizes the descriptive statistics of variables. IPO sample contains all those companies that went public during 1999-2005. Private sample consists of all those companies that were eligible for doing IPO but decided to not to do IPO in the experiment year. The table provides the temporal statistics of all the variables. Definition and calculation of variables are discussed in methodology section. The summary statistics describe the number of observation, mean, median and standard deviation of the variables.

	Private sample				IPO sample			
	N	Mean	Median	Standard deviation	N	Mean	Median	Standard deviation
Size								
1999	628	587.80	29.24	2380.92	10	337.51	28.09	894.42
2000	522	694.46	35.93	2724.07	31	134.34	16.68	283.63
2001	628	588.64	38.27	2733.62	4	46.56	32.90	48.93
2002	764	660.25	38.12	3149.47	4	20270.18	4263.58	34704.75
2003	1570	568.23	33.33	3641.76	10	9563.96	97.71	16208.14
2004	1844	553.00	34.25	3666.65	22	4270.58	118.35	13329.46
2005	2002	623.11	37.93	4004.54	65	8141.92	105.24	25741.47
Age								
1999	628	28.01	20	22.86	10	10.92	7	9.70
2000	522	29.52	22	22.65	31	8.90	7	4.74
2001	628	29.61	22.00	22.07	4	10	9	7.83
2002	764	28.94	21	22.02	4	25.51	8	39.55
2003	1570	23.98	17	20.40	10	20.40	10.50	23.47
2004	1844	23.72	17	19.98	22	18.82	16	16.67
2005	2002	24.11	17	19.83	65	22.71	15	24.65
Return on net worth								
1999	628	0.83	7.13	60.85	10	30.59	35.23	15.37
2000	522	-3.90	7.92	130.16	31	24.50	22.76	26.03
2001	628	0.49	7.23	118.78	4	36.11	44.69	18.26
2002	764	-2.99	7.97	107.92	4	17.08	13.91	22.13
2003	1570	5.98	6.61	223.07	10	32.07	33.84	8.87
2004	1844	3.83	5.57	61.06	22	39.75	21.14	88.78
2005	2002	4.46	6.25	63.30	65	20.16	22.31	38.47
Level of Disclosures								
1999	628	0.02	0.01	0.05	10	0.03	0.02	0.03
2000	522	0.02	0.01	0.05	31	0.01	0.01	0.03
2001	628	0.02	0.01	0.05	4	0.02	0.02	0.01
2002	764	0.01	0.01	0.05	4	0.08	0.03	0.12
2003	1570	0.02	0.01	0.06	10	0.01	0.01	0.01
2004	1844	0.03	0.01	0.23	22	0.02	0.01	0.02
2005	2002	0.05	0.01	0.69	65	0.01	0.01	0.01
Leverage								
1999	628	2.50	0.99	8.60	10	0.42	0.44	0.31
2000	522	5.98	1.02	69.18	31	0.97	0.57	1.21
2001	628	2.50	0.99	8.60	4	0.12	0.12	0.13

2002	**764**	**2.94**	**0.93**	**12.53**	**4**	**0.44**	**0.23**	**0.61**
2003	**1570**	**2.09**	**0.68**	**6.80**	**10**	**0.89**	**0.93**	**0.45**
2004	**1844**	**3.20**	**0.62**	**31.62**	**22**	**1.04**	**0.64**	**1.72**
2005	**2002**	**6.89**	**0.6**	**123.25**	**65**	**3.01**	**0.74**	**13.52**
Risk								
1999	**628**	**0.01**	**0**	**0.02**	**10**	**0.09**	**0.04**	**0.13**
2000	**522**	**0.01**	**0**	**0.01**	**31**	**0.02**	**0**	**0.07**
2001	**628**	**0.01**	**0**	**0.02**	**4**	**0.01**	**0.01**	**0.01**
2002	**764**	**0.01**	**0**	**0.03**	**4**	**0**	**0**	**0**
2003	**1570**	**0.008**	**0**	**0.05**	**10**	**0.02**	**0**	**0.08**
2004	**1844**	**0.009**	**0**	**0.05**	**22**	**0.01**	**0**	**0.03**
2005	**2002**	**0.009**	**0**	**0.05**	**65**	**0.01**	**0**	**0.07**
Sales Growth								
1999	**628**	**393.85**	**12.32**	**6495.15**	**10**	**134.61**	**81.39**	**160.8**
2000	**522**	**112.15**	**4.43**	**1385.61**	**31**	**218.51**	**59.43**	**468.81**
2001	**628**	**393.85**	**12.32**	**6495.15**	**4**	**194.91**	**85.89**	**243.17**
2002	**764**	**115.68**	**11.95**	**1350.79**	**4**	**14.55**	**12.49**	**75.53**
2003	**1570**	**108.80**	**9.05**	**1623.74**	**10**	**110.79**	**19.53**	**262.93**
2004	**1844**	**308.98**	**10.75**	**7216.77**	**22**	**98.16**	**25.27**	**238.11**
2005	**2002**	**268.99**	**13.30**	**6940.75**	**65**	**120.01**	**71.61**	**186.06**
Capital expenditure								
1999	**628**	**0.52**	**0.53**	**0.21**	**10**	**0.70**	**0.74**	**0.13**
2000	**522**	**0.54**	**0.55**	**0.22**	**31**	**0.63**	**0.66**	**0.23**
2001	**628**	**0.52**	**0.53**	**0.21**	**4**	**0.72**	**0.76**	**0.12**
2002	**764**	**0.53**	**0.55**	**0.21**	**4**	**0.69**	**0.87**	**0.42**
2003	**1570**	**0.58**	**0.60**	**0.24**	**10**	**0.45**	**0.53**	**0.29**
2004	**1844**	**0.59**	**060**	**0.24**	**22**	**0.60**	**0.60**	**0.22**
2005	**2002**	**0.59**	**0.59**	**0.24**	**65**	**0.54**	**0.55**	**0.22**
Cost of credit								
1999	**628**	**24.84**	**0.26**	**267.19**	**10**	**0.24**	**0.24**	**0.20**
2000	**522**	**6.60**	**0.31**	**61.52**	**31**	**1.87**	**0.21**	**5.86**
2001	**628**	**24.84**	**0.26**	**267.19**	**4**	**0.22**	**0.11**	**0.30**
2002	**764**	**12.19**	**0.25**	**152.08**	**4**	**0.45**	**0**	**0.91**
2003	**1570**	**12.81**	**0.22**	**190.95**	**10**	**1.8**	**0.38**	**4.8**
2004	**1844**	**27.64**	**0.18**	**809.55**	**22**	**1.50**	**0.14**	**3.53**
2005	**2002**	**28.67**	**0.16**	**503.97**	**65**	**10.60**	**0.14**	**76.27**

Table 4
Summary statistics

Table below provides the descriptive statistics of pooled sample. The sample has been formed by combining the cross-sectional and time series data. IPO sample contains total companies that went public during study period (1999-2005). Private sample consists of all those companies that remained private through out the study period.

	IPO sample				Private sample			
	N	Mean	Median	Standard deviation	n	Mean	Median	Standard deviation
Size	148	3362.33	44.770	11966.94	8000	598.73	35.42	3492.42
Age	148	14.76	9	16.80	8000	25.57	18	20.96
Return on net	148	25.17	23.3	46.81	8000	3.23	6.69	123.72
Level of Disclosures	148	0.01	0.006	0.03	8000	0.03	0.01	0.31
Leverage	148	1.84	0.63	9.06	8000	3.92	0.75	66.19
Risk	148	0.01	0	0.06	8000	0.007	0	0.04
Sales growth	148	117.23	51.04	266.6	8000	216.23	9.89	5273.16
Capital exp	148	0.58	0.59	0.24	8000	0.57	0.58	0.23
Cost of credit	148	107.98	0.15	1140.24	8000	22.59	0.21	518.4

Tables 5 (a-b)
Probit Model

Equation (15) shows the probit model used in our analysis. The effect of the variables on the likelihood of going public is estimated by a probit model. The estimation method is maximum likelihood. The dependent variable is 0 if the company is private and 1 on the year of IPO. The sample for private companies consists of only those companies that satisfy the IPO requirements. Definition of variables are discussed Table 5a. Results from probit analysis are given in Table 5b

Table 5a
Probit Model: Definition of Independent variables

Variables	Definition and calculation	Expected relationship
Size	Lagged value of natural logarithm of total asset	+
Age	Natural logarithm of age of companies at time 'i' from date of their incorporation	+/-
Profitability	Lagged value of Return on net worth (RONW) which is calculated as Net income divided by Net worth	+/-
Level of Disclosures	Lagged value of ratio of corporate tax and total sales of a company	-
Leverage	Lagged value of ratio of total debt over total assets	+/-
Risk	Lagged value of ratio of intangible assets to total assets	+
Capital expenditure	Lagged value of capital employed over total assets	+
Sales growth	Average of growth in sales in last three years	+
Cost of credit	Ratio of annual interest payment and total borrowings from bank	+
Industry	Dummy variable for industry.	

Table 5b
Probit Model: Determinants of going public decision

The number represents the coefficient in the probit regression model shown in equation (15). Standard errors are reported in the parentheses. First column represents the result for the pooled sample, which has been formed by combining the cross-sectional and time-series information. The table also shows the temporal effect of variables on the probability to go public. Regression for 2002 Due to insufficient information available about the IPOs, the model could not perform analysis for the year 2002. Log likelihood and pseudo R^2 for the model is also reported in the table.

Time period/ variables	Total sample	1999	2000	2001	2003	2004	2005
Size	0.154***	0.339**	0.172**	0.094	0.237**	0.254***	0.184***
	(0.025)	(0.140)	(0.084)	(0.193)	(0.134)	(0.072)	(0.041)
Age	-0.142***	-0.673**	-0.785***	-0.884**	-0.651**	-0.093	0.029
	(0.055)	(0.296)	(0.282)	(0.533)	(0.339)	(0.152)	(0.083)
Profitability	0.001***	0.044***	0.003*	0.006*	0.012**	0.003**	0.002***
	(0.001)	(0.014)	(0.002)	(0.004)	(0.006)	(0.002)	(0.001)
Level of Disclosures	-0.364	-16.583	1.371	-1.132	-8.603	-4.457	-6.595**
	(1.060)	(13.292)	(1.801)	(5.751)	(12.231)	(4.887)	(3.865)
Leverage	-0.005	-1.432**	-0.192*	-3.045*	-0.217	-0.243**	0.001
	(0.006)	(0.633)	(0.139)	(1.929)	(0.246)	(0.135)	(0.002)
Risk	1.283**	8.986	10.317*	0.125	-206.807	0.114	1.305*
	(0.630)	(2.310)	(7.127)	(3.641)	(778.775)	(2.259)	(0.959)
Sales growth	-0.00001	-0.00016	-0.00005	-0.000004	0.000008	-0.00002	-0.000002
	(0.00003)	(0.0005)	(0.0002)	(0.0001)	(0.00006)	(0.0001)	(0.00003)
Capital expenditure	0.233	3.063***	0.445	2.412	0.992	-0.412	0.230
	(0.203)	(1.065)	(0.745)	(1.865)	(-0.756)	(0.567)	(0.335)
Cost of credit	0.00001	-0.424	-0.003	-0.372	0.0002*	-0.026	-0.0001
	(0.00003)	(0.360)	(0.016)	(0.775)	(0.0001)	(0.553)	(0.0003)
Ind_manufacturing	0.501**	-0.097	-0.445	-	0.158	-0.523	0.251
	(0.204)	(0.772)	(0.361)	-	(1.109)	(0.748)	(0.378)
Ind_services	-0.785**	-1.605***	-0.832*	-	-	-0.127	-0.124
	(0.384)	(0.488)	(0.606)	-	-	(0.268)	(0.367)
Ind_banking services	(0.032)	-	-	-	-	-	-
	(0.198)	-	-	-	-	-	-
Ind_financial services-		-	-	-	-	-	-
n	6185	454	491	631	1097	1269	1294
Log likelihood	-432.11	-25.233	-37.796	-11.2441	-20.367	-62.613	-188.813
Psuedo R2	0.1047	0.4748	0.2261	0.4094	0.3624	0.1362	0.0943

The sign ***, ** and * indicate significant at 1%, 5% and 10% respectively.

FIGURES

Figure 1
Industry wise distribution of IPOs

This figure depicts the industry wise distribution of IPOs on time scale. 'y axis' denotes number of IPOs and 'x axis' shows the time period. The companies are classified into four industries- manufacturing, services, financial services and banking services. All four industries are shown by four different textures. (Source: *CMIE* Prowess)

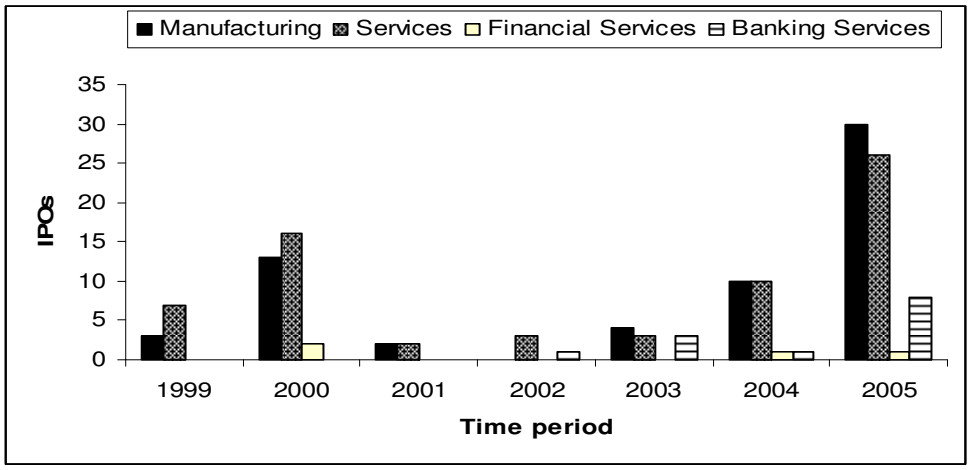
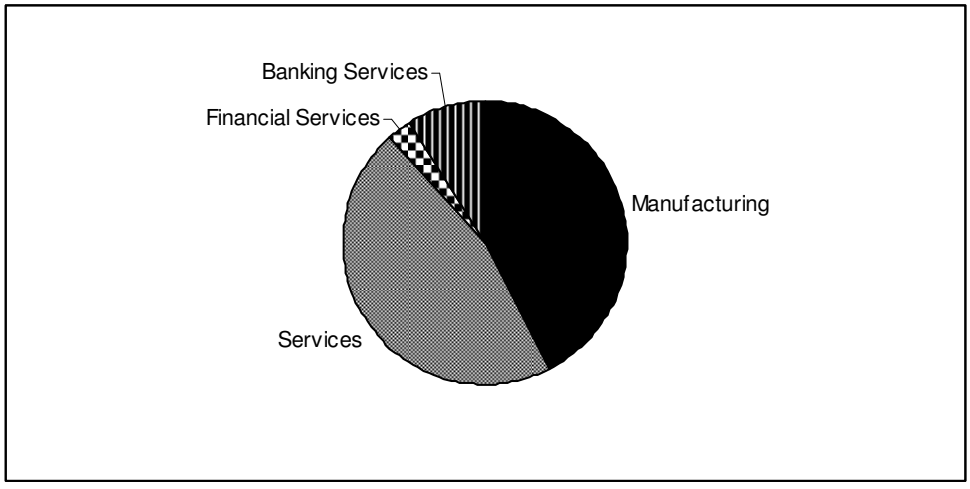


Figure 2

Figure below illustrates the industry wise distribution of total IPO sample. Manufacturing and services sector share a major portion of IPO sample whereas number of IPOs is least from the financial services companies. (Source: *CMIE* Prowess)



Figures 3 (a-e)

Figures 3 (a-e) illustrate the trends in the macro level factors between 1989 and 2006. Figure 3a shows the trend in BSE Sensex returns (in percentage), which is calculated as an yearly average of daily returns, Figure 3b is the plot of annual average of daily closing value of BSE Sensex from 1989 to 2006. Yearly average of price to book ratio of sensex is plotted in Figure 3c. Figure 3d reports the trend in interest rates measured as annual yield (minimum) on long term Government of India Securities (in percentage). The liquidity of Sensex, demonstrated by turnover ratio (in percentage) is plotted against time in Figure 3e. The turnover ratio is calculated as the volume of shares traded in a year as a percentage of total shares listed on an Exchange, outstanding for an individual issue or held in an institutional portfolio. The relevant data are plotted for the period of 1989-2006, except for liquidity wherein the graph is plotted for the period of 1992-2006. (Source: RBI annual reports, NSE, BSE)

Figure 3a

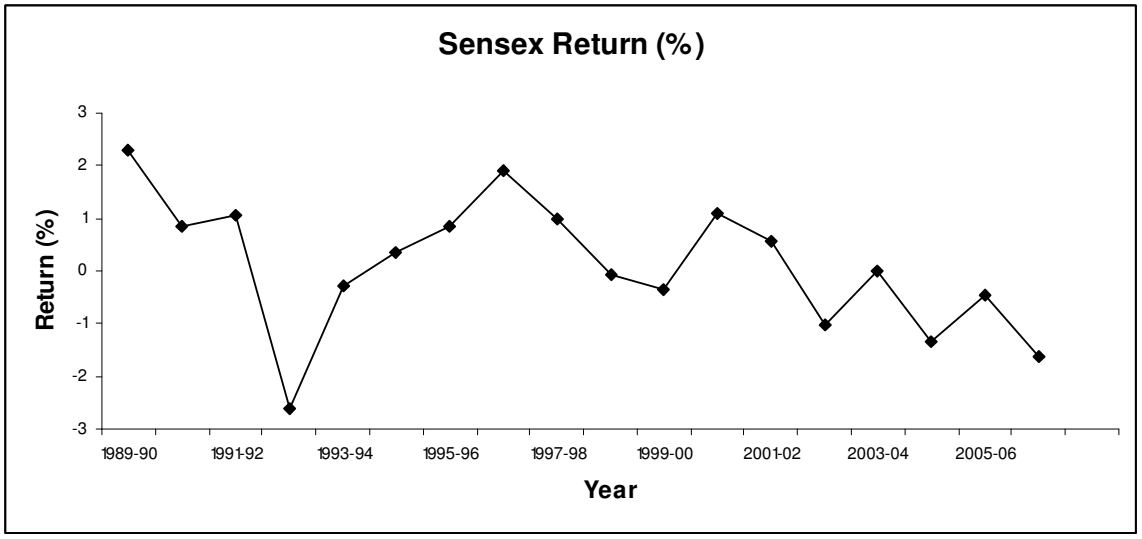


Figure 3b

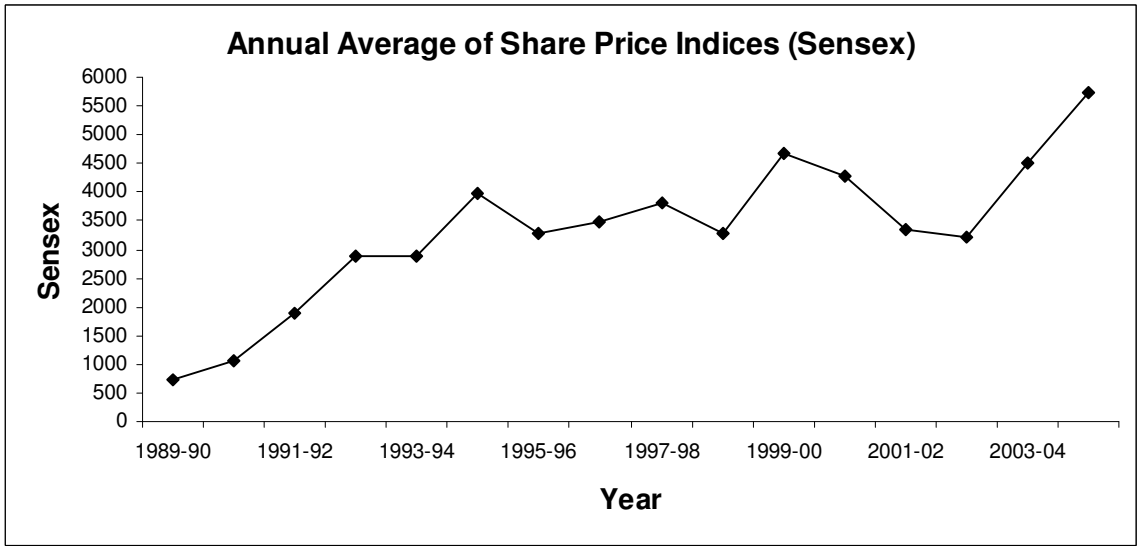


Figure 3c

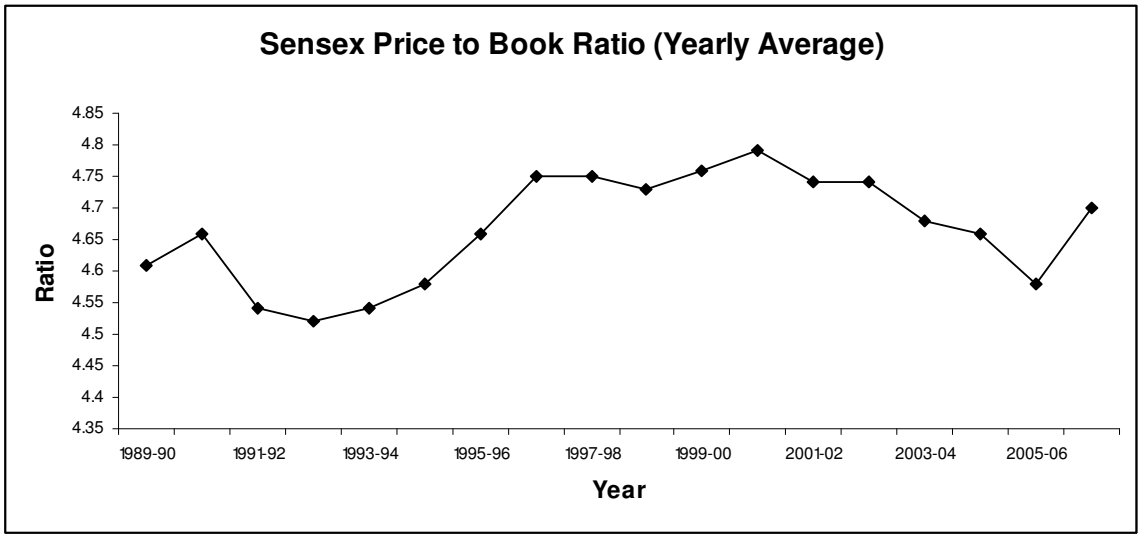


Figure 3d

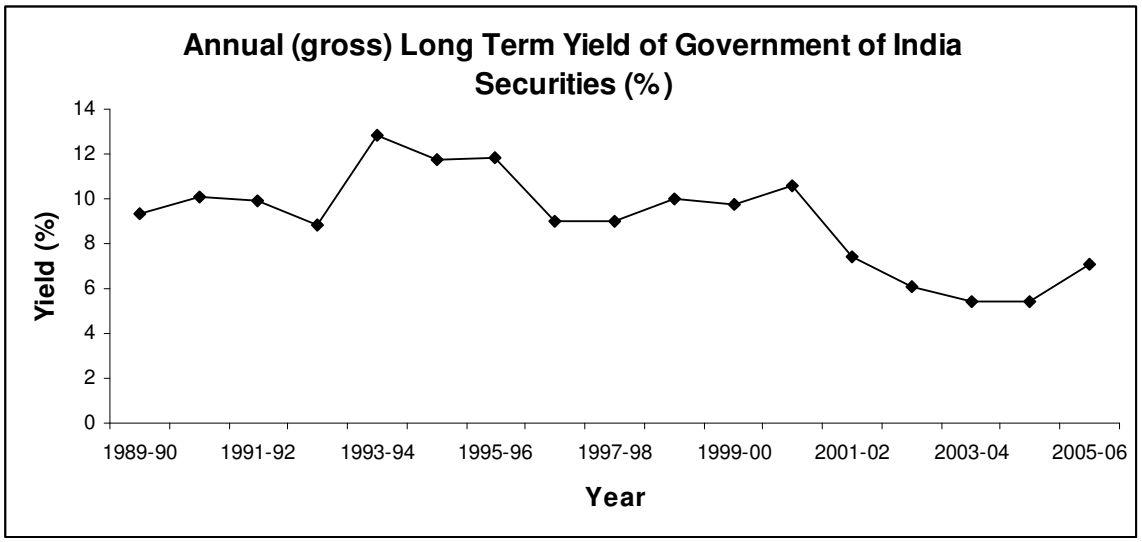


Figure 3e

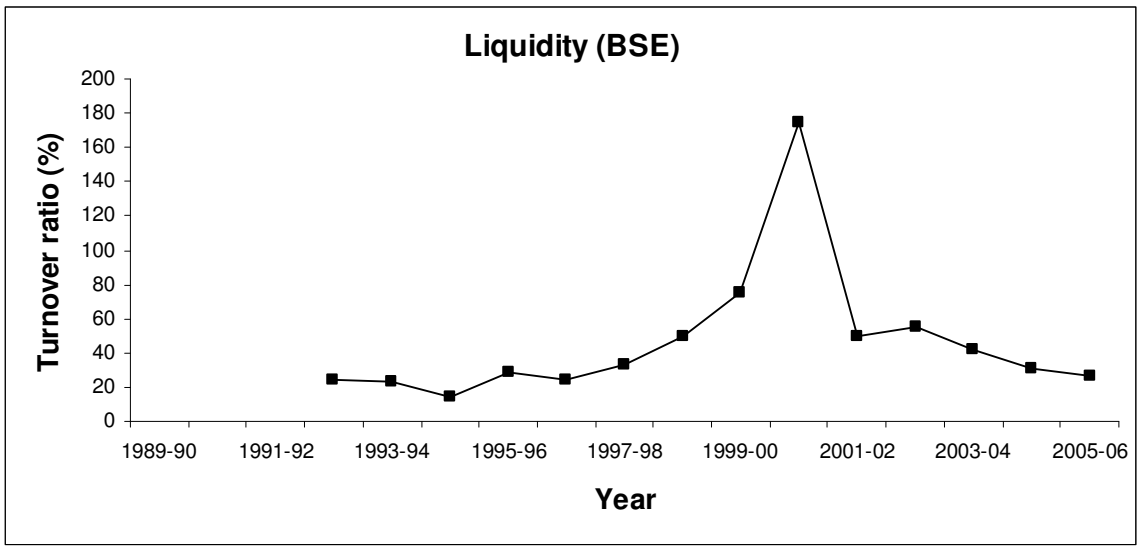


Figure 4 (a-b)
Number of IPOs and Amount raised by Indian Companies from 1989 to 2006

Figure 4a pictures the distribution of number of IPOs by Indian companies from 1989 to 2006. Axis 'y' denotes the annual figure of number of IPOs and axis 'x' denotes the time period. The annual trend in capital raised through the IPOs is plotted in figure 4b.

Figure 4 a

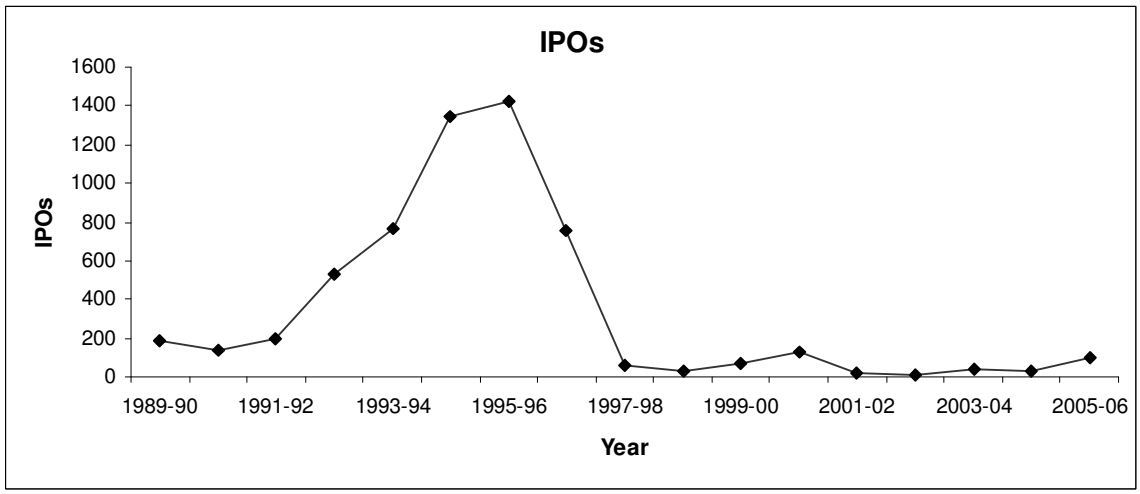
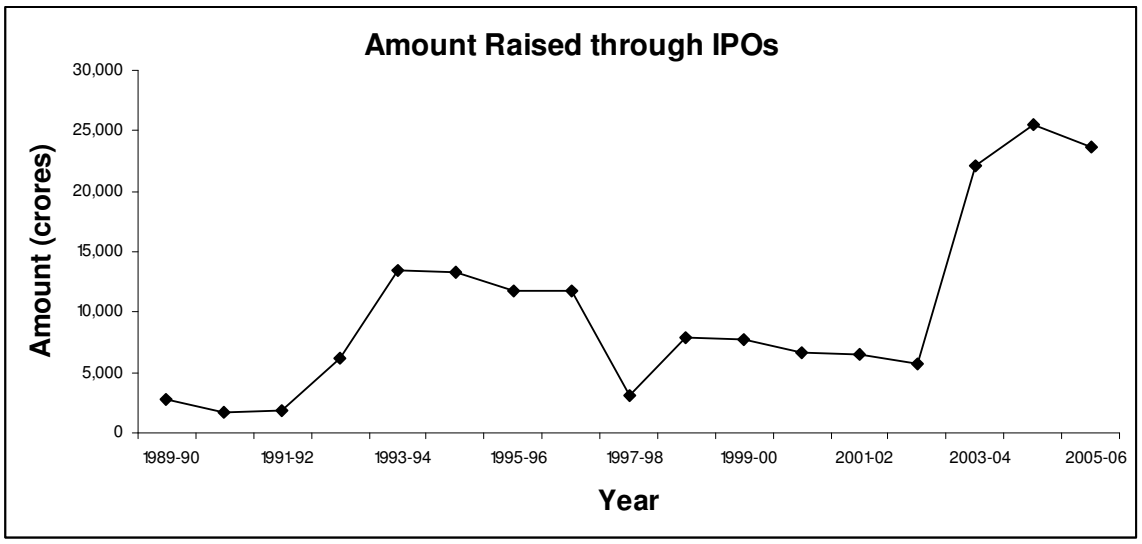


Figure 4 b


Amount Raised through IPOs
Amount (crores)
30,000
25,000
20,000
15,000
10,000
5,000
0
1989-90
1991-92
1993-94
1995-96
1997-98
1999-00
2001-02
2003-04
2005-06
Year