Chapter 4

Review of Literature
This chapter discusses the empirical findings of various research studies on different aspects relating to IPOs and FPOs. To begin with, we present findings of empirical studies on the going public decision of the companies. This is followed by the findings of empirical studies on issue method and listing decision, underpricing of IPOs, long run performance of IPOs, role of venture capitalists in IPOs, earnings management and/or operating performance and finally, on various issues relating to FPOs.

4.1 Going Public Decision of Companies

Johnson and Miller (1985) examine the new public equity offerings from the viewpoint of the issuer— the methods, characteristics, and options relating to public offerings are discussed. Based on conversations with investment bankers, a description of how businesses are matched with a specific offering type—underwritten or best effort—is presented for a sample of 969 US IPOs from 1979 to 1982. Of the two major types of IPOs, underwritten issues tend to be considerably larger than best efforts issues, and are the preferred offering arrangements for issuers. However, issuers usually have little choice as to the type of IPO the bank will handle for them. Underwritten issues tend to be handled by national houses, whereas best efforts offerings tend to be handled by regional houses. Marketability and size of the offering are the two main criteria applied by bankers which determine how an issue will be offered. Of the two criteria, marketability is by far the most important in determining whether an issue can be underwritten, or on what type of a best efforts basis—straight best efforts, min/maxi best efforts, and best efforts-all-or-none—it will be offered. Again, whether a business engages in an underwritten or best efforts offering is usually not a business choice, but the result of banker assessments of the company’s marketability.

Henning (1986) offers advice to lawyers whose clients are planning to go public. The study observes four major factors that the company needs to consider while going public: cost of the offering, post-offering compliance costs, management delays and diversions during and after the offering process, and the increased liability for the officers and directors. Just because the company is in a hot industry does not mean that the company has the ‘right stuff’. That generally is for the underwriters to decide. They are the ultimate decision makers in the initial stages of the public offering process. The real cost of the delay associated with public offering, in terms of management diversion and lost opportunity alone can be significant. Even after the offering is complete, the management will be required to spend inordinate amounts of time with the shareholder relations.
Proper management 'infrastructure' is another integral element in going public decision. In selecting to underwrite a company, the underwriter will look at the CEO, the CFO, the COO, and the board of directors. They expect their client company to have these executives with 'public image'. The company's financial position is also vital in deciding the timing of the offering apart from the market appetite. Healthy, profitable companies are easier candidates for public sale. Finally, study concludes that public offering process is a specialised field. It requires special skills and talents both on the part of the company going public and the underwriter.

Kanzler (1996) discusses various ways to make most of public relations in corporate communication. A successful public offering depends as much upon the preparation of the messages and communications as the financial statements themselves. These preparations should begin no later than one year prior to the public offering, but eighteen months prior is not too early. Because the Securities and Exchange Commission requires that a company only continue the level of communications that it has maintained for six months prior to the public offering, it is important to take stock of the level of press coverage fairly far in advance of a public offering. Once the official decision to go public has been made, the investment bankers will be instrumental in the communication decisions that the issuers make and the issuers will have to work with them to develop news releases and other announcements as they become necessary. Also it is time to prepare for the road show, of course, with the involvement of the investment banker. In this regard, preparing the presentation and talking to the financial community will be as important as the road show presentation itself. It will be particularly important during this critical time period to have an established working relationship with the business press and financial and market analysts. In the post-IPO period, promoters have to consider producing quarterly and annual reports, coordinating shareholders meeting and preparing shareholders reports to keep the stock prices up and the interest in the company active. Overall, the rules of thumb for managing the communications process for a successful IPO are:

- Get started early – eighteen months to two years before the probable IPO
- Raise communications effort to the level that is desired to maintain during the IPO 'quiet period'
- Keep the communication consistent
- Rely on the underwriter to engineer the financial structure of the IPO
Mello and Parsons (1998) observe that going public is a complex process with distinct markets for dispersed shares and controlling blocks. It is important to design the sale of new shares with the final ownership structure in mind. An optimal strategy for going public starts with the IPO, which is particularly suited for the sale of dispersed holdings to small and passive investors. The marketing of potentially controlling blocks to active investors should occur subsequently. Study develops a framework for evaluating alternative methods of sale and shows that discriminating in favour of active investors can raise the market value of the firm for all shareholders.

Pagano et al. (1998) analyse the determinants of IPOs by comparing the ex ante and ex post characteristics of IPOs with those of private firms using a sample of 69 Italian IPOs that went public between 1982 and 1992 and a database of private firms. Study finds that the likelihood of an IPO is increasing in the market-to-book ratio at which firms in the same industry trade. This positive relationship reflects the entrepreneurs’ attempt to tune the market when stock market valuation of firms in the same industry is high. This is consistent with Ritter (1984), Loughran et al. (1994), Ljungqvist (1995) who find clustering of IPOs. The second most important determinant is the size of the company: larger companies are more likely to go public. IPOs also tend to involve companies that, before the IPO, grew faster and were more profitable. However, size does not matter for the decision to list a subsidiary of a publicly traded company. While, independent companies appear to go public not to finance future investments and growth but to rebalance their accounts after high investments and growth, the main force behind carve-outs appears to be the desire to maximize the proceeds from selling shares in a subsidiary.

The post-IPO reduction in profitability found by the study is consistent with the findings of various U.S. researches like DeGeorge and Zeckhauser (1993), Jain and Kim (1994), and Mikkelson et al. (1995). Further evidence indicates that going public enables companies to borrow more cheaply, around the IPO date, the interest rate on their short-term credit falls and the number of banks willing to lend to them rises. This goes contrary to Planell (1995) who finds some evidence that newly listed Spanish companies face a comparatively high cost of credit before the IPO, but enjoy no significant decrease in interest rates after the IPO. Study finds little evidence that portfolio diversification is important in the decision to go public, initial owners divest only 6 percent of the amount they hold in the company at that date and 13 percent more in the three subsequent years, retaining much more than a majority stake. Finally, study finds that in the three years after an IPO, the turnover of the controlling group is larger than normal, which highlights...
the importance of looking at IPOs as a stage in the sale of a company, as suggested by Zingales (1995a)
Sherman (1999) develops a model in which he highlights the possible erosion of due diligence through shelf registration because of policy changes initiated by SEC in 1982. One effect of these changes was to increase the cost of the due diligence investigation, primarily because the time allowed for the investigation has been reduced. This effect is especially strong for shelf registration, in which the issuer can sell registered securities at any time during a two-year period, with no advance notice. Under the old system, underwriters were closely involved in the registration process and automatically had a reasonable amount of time for a due diligence investigation because the registration process was lengthy. With shelf registration, underwriters are not usually involved with registrations and are only contacted when the firm is ready to issue the securities. If one underwriter balks at handling an issue on short notice, the issuer can call another underwriter. The model developed by the study indicates that shelf registration causes both an increase in underwriter competition and a reduction in due diligence investigation. Such erosion in the due diligence investigation of underwriters is a significant drawback to shelf registration. Study is of the opinion that even if shelf registration leads to reduced due diligence, the market is not necessarily harmed by its availability, since the use of shelf registration is optional. Finally, the fact that there has been a disappearance of equity and convertible shelf registrations indicates that the disadvantages of reduced due diligence tends to outweigh the advantage of increased competition, at least for equity issues and this finding is consistent with the prediction of the model. Such a finding is also consistent with Denis (1991) who documents that between March 1982, when shelf registration was first introduced, and 1988, only 15% of all eligible equity offerings were shelf registered, of the eligible equity issues after 1983, only 3% were shelf registered. Denis also demonstrates that during the 1982-1988 period, a significant number of debt issuers chose not to use the shelf method, although shelf is far more popular for debt than for equity.
Chemmanur and Fulghieri (1999) develop a model of the going public decision of a firm and address the question – at what stage in its life should a firm go public rather than financing its projects through a private placement of equity or with a venture capitalist (VC). As per the model, a firm may raise external financing either by placing shares privately with a risk-averse VC or by selling shares in an IPO to numerous small investors. The entrepreneur has private information about his firm’s value, but outsiders
can reduce this informational disadvantage by evaluating the firm at a cost. Selling shares to a single large investor like the VC has the advantage that it minimizes information production cost, but has the disadvantage of VC, because of his bargaining power, demanding a significantly greater rate of return for a given level of uncertainty about future cash flows. Conversely, selling shares to a large number of investors via IPO has the advantage that individual investor will have almost no bargaining power relative to the entrepreneur, but the disadvantage is duplication in information production, and consequently, a larger aggregate information production cost borne by the firm. The equilibrium timing of the going-public decision is determined by the firm's trade-off between minimizing the duplication in information production by outsiders (unavoidable in the IPO market, but mitigated by a publicly observable share price) and avoiding the risk-premium demanded by venture capitalists. In addition, the model also shows that, other things remaining the same, firms which have larger capital requirements and firms in industries characterized by greater technological uncertainty choose the public equity market over private equity financing at an earlier stage in their lives.

Subrahmanyam and Titman (1999) explore the linkages between stock price efficiency, the choice between private and public financing, and the development of capital markets in emerging economies. Study indicates that information considerations can favour either public or private financing depending on how investors obtain information. Generally, the advantage of public financing is high if costly information is diverse and cheap to acquire, and if investors receive valuable information without cost. The value of public firms generally depends on public market size, which implies that there can be a positive externality associated with going public, so that an inferior equilibrium can exist where too few firms go public. The model is consistent with empirical observations on financial market development.

Chung (2000) examines the role of financial analysts as a marketing aid to brokerage firms using S&P's common stock rankings as empirical proxies for company quality over a 12-year period from 1985 to 1996. Study finds that, after controlling for the effects of firm size, share price, trading volume, and the volatility of stock returns, more financial analysts follow high-quality companies (companies that are ranked by S&P) than low-quality companies (companies that are not ranked by S&P). Stocks rated by S&P, even when below average, attract more analysts than stocks that are not rated. Among those stocks included in the S&P rating, more analysts follow high-ranked stocks than low-ranked stocks. Study finds a significant increase in analyst following when common
stock rankings are upgraded by S&P and a significant decrease when downgraded. Finally, study finds an increase in analyst following when a stock is added to the S&P rating. Overall, empirical evidence of the study supports the marketing hypothesis of analyst following. These findings of the study support Chung and Jo (1996) who interpret the findings of their study to indicate that high-quality companies attract more analysts, Carleton et al. (1998) who find evidence that analysts make recommendations that help their brokers receive underwriting contracts, D’Mello and Ferns (2000) who show that announcement (of new equity issue) period returns are significantly more negative for firms followed by fewer analysts.

Hoffmann-Burchardi (2001) provides an analysis of sequential going-public decisions and outlines conditions under which 'hot issue markets' arise, i.e., under which the likelihood of a second initial public offering increases after a first firm has gone public. Two effects can trigger the rise of hot issue markets in a setting with asymmetric and costly information about both firm quality and industry prospects. The risk-averse entrepreneur can be subject to risk-induced selling pressure because of uncertain industry prospects conveyed by a first IPO in the industry. Also, investors can free-ride on the industry news, and increase their valuation for a second firm by abstaining from further costly information production.

Lowry (2003) compares the extent to which the aggregate capital demands of private firms (capital demand hypothesis), the adverse-selection costs of issuing equity (information asymmetry hypothesis), and the level of investor optimism (investor sentiment hypothesis) can explain the fluctuations in IPO volume over time using a sample of 5,349 U.S. IPOs that went public between 1970 and 1996. Results of the study indicate that changes in firms' demands for capital and changes in the level of investor optimism explain a substantial portion of variation in IPO volume; i.e., they are important determinants of IPO volume, in both statistical and economic terms. Adverse selection costs are marginally significant and appear to be of secondary importance; i.e., they are also statistically significant, but their economic effect appears small. These findings especially indicate that temporary overvaluations contribute to the periods of high IPO volume which is consistent with Gompers and Lerner (2000) who find that periods of high inflows into venture capital funds are associated with temporary increases in the valuation of these funds, suggesting that investors did overpay for the securities during these times, but contradict the studies of Warther (1995) and Wermers (1999) on mutual funds and studies on developing country markets by Clark and Berko (1996) and Stulz.
(1999) who find no evidence of temporary misvaluations while analyzing reasons for the substantial variations in inflows into all of these investment vehicles over time. Further, examining IPO volume and post-IPO stock returns using buy-and-hold-returns for 36 months, study finds that IPO volume is significantly negatively related to both raw IPO post-issue returns and to post-issue market returns indicating that firms seem to successfully go public when a broad class of firms, often the entire market, is valued especially highly. This finding is consistent with Ritter (1991) who finds that IPO volume is negatively related to post-IPO stock returns. Further, consistent with Loughran and Ritter (1995), study finds that the new issues in the low-volume periods perform better than those in the high-volume periods.

Annema et al. (2002) discuss company carve-outs, which are defined as a financial instrument that increases a company's stock price without sacrificing control over a valuable business unit. A study of 200 major carve-outs in Europe and the U.S. over 12 years (1991-2002) shows that around the time of announcement only 10 percent of carve-outs had raised the parent's share price by more than 12 percent. During the 2 years after the transaction, most carve-outs actually destroyed shareholder value. However, carve-outs that followed a clear trajectory (route) to full independence (through a spin-off, for example) significantly outperformed typical S and P 500 companies. Few of the carve-outs discussed remain under the parent's control; i.e., only 8 percent of the carve-outs continue to exist as public companies clearly controlled by the parent after 5 years in which the parent holds more than 50 percent of the shares. Study notes that even a minority IPO in a high-growth business brings transaction currency for acquisitions, equity funding for internal growth, and responsibilities to the shareholders, all of which reduce the parent's control over time.

Shane and Stuart (2002) examine how initial resource endowments—the stocks of resources that entrepreneurs contribute to their new ventures at the time of founding—affect organizational life chances which is one of the significant interests in organizational ecology, evolutionary theory, and entrepreneurship research. Using data on the life histories of all 134 firms founded to exploit Massachusetts Institute of Technology (MIT) - assigned inventions during the 1980–1996 period, the study analyzes how resource endowments affect the likelihood of three critical outcomes that new ventures attract venture capital financing, experience IPOs, and fail. Study shows that two measures of founders' social capital—the presence of direct and indirect ties (through third parties) to venture investors prior to firm founding—sharply decrease the hazard of
mortality and increase the likelihood that start-ups obtain external funding. Comparing the effects of many different firm and industry characteristics, study finds that the presence of venture capital funding is the single largest contributor to the likelihood that a start-up undergoes an IPO. These results are interpreted to mean that social capital endowments, through their impact on the fund-raising process, have long-term, positive influences on the performance of new ventures.

Ritter and Welch (2002) review the theory and evidence on various IPO activities focusing on three areas: reasons for going public, the pricing and allocation of shares, and long-run performance, using a sample of 6,249 U.S. IPOs from 1980 to 2001. Study notes that 1980s saw modest IPO activity (about $8 billion in issuing activity per year). During 1990 to 1994, this quantum increased to $20 billion per year, from 1995 to 1998 to $35 billion per year, from 1999 to 2000 to $65 billion per year, before falling to $34 billion in 2001. Average first day returns show a similar pattern, 7.4%, 11.2%, 18.1%, 65.0%, and 14.0% for the same periods, respectively. Three-year market-adjusted buy-and-hold returns are found to be negative in every sub-period. Study argues that market conditions are the most important factor in the decision to go public and are responsible for the large variation in the number of IPOs over the years [consistent with Lucas and McDonald (1990), Lowry (2002), Baker and Wurgler (2000)], stage of the firm in its life cycle being the second important factor. Regarding underpricing, study argues that there is no single dominant theoretical cause for underpricing, while asymmetric information models [Benveniste and Spindt (1989), Sherman (2000), Sherman and Titman (2002), Loughran and Ritter (2002), Rock (1986), Baron (1982) to mention a few] have been popular among academicians, study feels that these models have been overemphasized.

Analyzing the reasons for long-run underperformance, study quotes the findings of Miller (1977), Schultz (2001), Heaton (2002), Teoh et al. (1998), Purananandam and Swammanathan (2001), Bernardo and Welch (2001), Daniel et al. (1998) and many other as the source for long-run underperformance.

Nelson (2003) examines the application of a conceptual framework to questions of how, why, and when founders participate in the firms that they establish and empirically tests for the persistent influence of the founder on the firm after start-up. A definition of the term ‘founder’ is proposed. Empirical tests compare firms with founder CEOs to those with non-founder CEOs to determine whether governance and ownership relationships are distinguishable at IPO. In addition, investor reaction to founder-led firms at IPO is tested. Results of the study suggest that founder influence does persist in governance and
ownership arrangements and that the stock market reaction to founder-led firms is higher than for the comparison group, relative to accounting value.

Ravasi and Marchisio (2003) investigate important implications of going public by combining evidence from a series of preliminary case studies taken from the results of a survey of 57 Italian IPOs. The research suggests that, besides providing an important inflow of capital, going public may actually improve the reputational and social capital of a company, by increasing its visibility, prestige and perceived trustworthiness. Therefore, going public may be an important way to support entrepreneurial activity, as it may expand and reinforce the network of relationships that offer access to external resources, complementary skills and investment opportunities. This is in conformity with the findings of past research on IPOs which suggests that the reputation of a company positively affects the success of the offering which is usually measured in financial terms.

Ritter (2003) conducts a survey which discusses developments in the European IPO market and the differences between European and the US markets are highlighted. The rise and fall of the Euro NM markets and the growth of book-building as a procedure for pricing and allocating IPOs are two important patterns. Loughran and Ritter (2002) report that the final offer price for the US IPOs is set within the original file price range about 50% of the time, with about 25% of IPOs priced below the range and 25% above the range. By contrast, in German IPOs the price range is typically set after book-building starts with the pricing typically occurring seven trading days later (Aussenegg et al., 2003). The price range is frequently more than €2, but once set, IPOs never price above the maximum (Ljungqvist et al., 2003) in Germany, and rarely in other countries. Gross spreads are lower and less clustered than in the US. It is higher for book-building offers than for auctions or fixed price offers (Törstil, 2001, 2003) and Ljungqvist et al. (2003). Ljungqvist et al. find that the gross spread is higher if there is a US tranche or if an American underwriter is the book runner. Unlike the US, some European IPOs, especially those in Germany, have when-issued trading prior to the final setting of the offer price (Aussenegg et al., 2003), Cornelli et al. (2003), and Loaffer et al. (2002).]

As regards the long-run performance, Schuster (2003) reports cumulative market-adjusted returns (CARs), over 36 months, for seven continental European countries for IPOs from January 1988 to January 1998. For all seven countries (France, Germany, Italy, the Netherlands, Spain, Sweden, and Switzerland), he reports negative 36-month CARs varying from -11.7% in Germany to -41.8% in Italy.
Roosenboom and van der Goot (2003) examine the relation between the use of takeover defences and the IPO firm value in the Netherlands. Using a sample of 111 IPOs on Euronext Amsterdam during the years 1984-99, study reports that management frequently uses takeover defences before taking the firm public and that IPO firms in the Netherlands deploy takeover defences at the same rate as other publicly traded firms. Controlling for differences in size, profitability, sales growth and management ownership, study reports that takeover defences are inversely related to IPO firm value. The use of takeover defences is primarily motivated by managerial entrenchment. Although managers internalise this cost of takeover defences to the degree they own pre-IPO stock, they are likely to gain through private control benefits. Non-management pre-IPO owners lose. Their shares are worth less, but different from managers, they do not get offsetting private control benefits. Study infers that managers use takeover defences to protect private control benefits at non-management pre-IPO owners’ expense. Finally, study also finds that IPO investors anticipate potential conflict of interests with management and reduce the price they pay for the IPO shares if takeover defences are adopted.

Alti (2005) develops a model of information spillovers in IPOs. The outcomes of pioneers’ IPOs reflect participating investors’ private information on common valuation factors. This makes the pricing of subsequent issues relatively easier and attracts more firms to the IPO market. Study shows that IPO market timing by the followers emerges as an equilibrium clustering pattern. High offer price realisations for pioneers’ IPOs better reflect investors’ private information and trigger a larger number of subsequent IPOs than low offer price realisations do. This asymmetry in the spillover effect is more pronounced early on in a hot market. The model provides an explanation for empirical findings that illustrate the high sensitivity of going public decision to IPO market conditions.

Benninja et al. (2005) study the dynamics of IPOs by examining the tradeoff between an entrepreneur’s private benefits, which are lost whenever the firm is publicly traded, and the gains from diversification. Study characterizes the timing dimension of the decision to go public and its impact on firm value and the evolution of firm risk over time. By endogenising the timing of the decision to go public, study explains the clustering of IPOs and buyouts in time, the industry concentration of IPO waves, the high incidents of reprivatisation of IPOs, and the long run underperformance of IPO stocks relative to the shares of longer-listed companies. The model developed by the study shows that entrepreneurs issue shares when the cash flows of their firms are relatively high, periods
that coincide with high stock prices since cash flows are cross-sectionally correlated, especially within industries. Conversely, model suggests that firms are taken private when the market valuation of the expected cash flows is low relative to the private benefits and such a finding is consistent with the evidence of Halpern et al. (1999) The model explains long-run underperformance of IPOs as arising from the existence of an option to reprivatize publicly traded companies when the firm’s cash flows have fallen to a level at which the gains from diversification no longer justify the costs of being public. On an average, the value of such option to reprivatize represents a larger proportion of total firm value for a company that has recently been listed than for a firm that has traded for a longer period of time. Accordingly, the risk of recently issued young firms for which this put option is relatively large fraction of firm value is smaller than the risk of older companies with a relatively low put option value. Hence, the returns on recently issued stock should be smaller than the returns on longer-listed shares. This is consistent with Eckbo and Norli (2000) who show that IPO firms are less risky and, accordingly, have lower (expected and realized) returns than non-IPO firms.

Brau and Fawcett (2006) survey 336 CFOs to compare practice to theory in the areas of IPO motivation, timing, underwriter selection, underpricing, signalling, and the decision to remain private. Study finds the primary motivation for going public is to facilitate acquisitions. CFOs, especially of VC-backed firms, base IPO timing on overall market conditions rather than IPO market conditions, are well informed regarding expected underpricing, and feel underpricing compensates investors for taking risk. The most important positive signal is past historical earnings, followed by underwriter certification. CFOs have divergent opinions about the IPO process depending on firm-specific characteristics. Finally, study finds the main reason for remaining private is to preserve decision-making control and ownership.

Chen and Lu (2006) find that the gross spreads of REIT IPOs decreased significantly in the 1990s. In particular, there is a bimodal clustering for gross spreads at 6.5 percent and 7.0 percent. Moreover, in the 1980s around 94% of REIT IPOs had integer offer prices, most of which were priced at either $10 or $20. However, the proportion of integer offer prices decreased to 64% in the 1990s. Higher gross spreads, overpricing, and high frequency of integer offer prices for REIT IPOs in the 1980s are consistent with the marketing hypothesis that in the 1980s REIT IPOs were mainly marketed to less-informed individual investors. The results explain the dynamic process employed by
underwriters in the setting of gross spreads and the pricing of REIT IPOs as a new financial product in response to various structural changes in REITs

Helwege et al (2007) examine the evolution of insider ownership of IPO firms from 1970 to 2001 to understand how US firms become widely held using a sample of 5,281 firms. Study first uses a probit model to identify the determinants of significant decrease, of at least 5 percent, in insider ownership and then a hazard model to estimate the probability that a firm will become widely held in the following year. Study finds that insider ownership (combined holdings of the officers and directors of the firm) falls steadily following an IPO and more than half of the sample firms have insider ownership below 20 percent 10 years after the IPO. Stock market performance and liquidity play an extremely important role in ownership dynamics. Firms with stocks that are highly valued, are liquid, and have performed well experience large decreases in insider ownership and become widely held. This is consistent with Bolton, and von Thadden (1998) model which predicts that greater liquidity for a firm’s stock makes it possible for the firms to realize a more dispersed ownership structure. Hazard model shows that again, highly valued firms and high turnover firms are more likely to become widely held. Further, firms with high capital expenditures and low cash flow (i.e., firms with financing deficits are more likely to become widely held.

Wiggenhorn et al (2007) study the unique characteristics of newly public firms that may motivate acquisitions and cause a unique market perception and performance following these acquisitions. For a sample of more than 400 acquisitions that were made within a year of the IPO, study finds that newly public firms experience favourable valuation effects following announcements of their acquisitions. Firms are more likely to finance using stock and the valuation effects are less favorable during the Internet bubble and when venture capitalists are present. Finally, long-term performance following the acquisitions is not different than newly public firms that do not make acquisitions, suggesting that the expected benefits at the time of the announcement do not materialize.

Mayur and Kumar (2007) examine the determinants of going public decision of Indian companies using the probit regression model for a sample of 150 Indian IPOs that went public between 1999 and 2005, and 2,000 private companies that were eligible to make an IPO but remained private. Study reveals that factors such as size, profitability, age and leverage emerge as the significant determinants of going public decision of Indian companies. Larger companies are more likely to go public. This is in conformity with the findings of Pagano and Roell (1998) who argue that only the large sized companies are
able to bear the high administrative and other executive costs of IPOs, Ritter (1991) who document that the fixed and variable costs related to IPO in the US market are high. He observes that executing IPO carries huge costs which are difficult to be borne by a small size company. Further, study finds that profitable companies and younger companies are more likely to go public. This finding is consistent with the work of Diamond (1991), Pagano and Roell (1998), Chemmanur et al. (2005), Fisher (2000), and Rosen et al. (2005) who argue that even younger companies could overcome the adverse selection problem through their visible profitability. Consistent with the views expressed by Pagano et al. (1998), Helwege and Packer (2003), and Kim and Sung (2005), study finds statistically significant negative relationship between leverage and probability of going public indicating that highly leveraged companies prefer to remain private. Finally, study finds that companies from manufacturing and service sectors are more likely to go public and that financing needs and likelihood of an IPO are not related.

Kim and Weisbach (2008) examine the motivations for public equity offers, using a sample of 17,226 IPOs and 13,142 SEOs from 38 countries between 1990 and 2003. Study estimates the uses of funds raised in both initial and seasoned offerings. Firms appear to spend incremental dollars on both R and D and capital expenditures, consistent with the investment financing explanation of equity issues. However, consistent with the mispricing explanation, high market to book firms tend to save more cash and offer a higher fraction of secondary shares in SEOs than low market to book firms.

Luo (2008) examines the role of marketing in the context of IPOs using a sample of 1,981 US IPOs from January 1996 to December 2005, a neglected issue in the extant literature. The results from a large-scale, cross-industry study indicate that firms' pre-IPO marketing spendings help reduce IPO underpricing and boost IPO trading in the stock market. The econometric models also suggest that these effects are heterogeneous, that is, they are more salient for firms with higher cost reduction efficiency and in markets with a smaller number of historical IPOs. With regard to theory, this research ushers in a greenfield of IPOs, helping build more powerful theories of market-based assets and customer equity. With regard to practice, it builds the case for not cutting marketing before an IPO. Prudent investors may be better able to pick "star" IPOs if they can track pre-IPO marketing spendings and model firm cost reduction efficiency simultaneously.

Practically, the study builds the case for top executives not to cut marketing before an IPO. Without a serious commitment in marketing instruments before IPOs, the chance is high for investors to downgrade the financial potential of the firm. In contrast, firms
building market-based assets with a track record of pre-IPO marketing instruments may attract the eye of investors and cultivate more successful IPOs. Overall, the study offers fresh implications for the marketing–finance interface, uncovering brand-new IPO-based reasons that marketing can help create shareholder value.

Poulsen and Stegemoller (2008) study two alternative means to move assets from private to public ownership through the acquisition of private companies by firms that are public (sellouts) or though IPOs. Study considers the firm-specific characteristics for 1,074 IPOs and 735 sellout firms, in the U.S. between 1995 and 2004, to identify differences in growth, capital constraints, and asymmetric information between the two types of transactions. Using Logistic Regression Analysis, study finds that firm characteristics contribute significantly to the decision of whether a firm accesses public equity markets through an IPO or instead is sold to a public company. Firms move to public ownership through an IPO when they have greater growth opportunities [consistent with Lowry (2003) who finds that aggregate IPO volume is correlated with measures of overall growth in the economy] and face more capital constraints. Furthermore, IPO firms have fewer intangible assets, are less likely to be in the development stage, and are more likely to be backed by VC investors [consistent with Megginson and Weiss (1991), and Denis (2003) who find that firms with VC backing—a source of information about the quality of the firm—are more likely to go public via an IPO, Lerner (1994) who reports that VCs are more likely to take firms public at market peaks]. However, study finds mixed results regarding the degree to which IPO firms have characteristically lower asymmetric information costs.

Examining the acquisition activity of IPO firms, Celikyurt et al. (2010) find that acquisition play a central role in the growth of private firms. The Merger and Acquisition (M and A) activity of these firms increases substantially from their pre-IPO levels and even outpaces the acquisition volume of mature firms. IPOs appear to facilitate M and A both by providing an infusion of capital and by providing ongoing access to capital markets. IPO firms acquire other firms early on after the IPO by using the primary capital raised at the IPO. The initial capital raised as well as the ongoing access to public equity and debt markets are found to be significant factors underlying M and A activity of IPO firms supporting the view that an IPO creates an acquisition currency that facilitates the subsequent M and A activity. Study also finds that IPO firms with overvalued stock conducts more stock-financed acquisitions and that IPOs improve the ability of firms to conduct M and A by resolving some of the ex ante valuation uncertainty facing privately.
Overall results of the study suggest that the desire to make acquisitions is an important factor behind the IPO decision and acquisitions play a substantial role in the growth of new public firms. Also, subsequent equity and debt issuance is closely linked to post-IPO acquisition activity. Thus, IPO decision, subsequent equity and debt offerings, and acquisition activity are all closely linked.

This section discusses the going public decisions of the companies, factors affecting the going public decisions of companies, the kind of preliminary works required on the part of the issuing company, its underwriters, attorneys, and the changes that take place post-IPO affecting the company. Pagano et al. (1998) note that the probability of a firm going public is more when the market-to-book ratio of other firms in the industry is high meaning that the securities are overvalued and the firm wants to take advantage of such overvaluation. Also, probability of going public is positively associated with firm size. However, finding of the study that initial owners divest only 6 percent of the amount they hold in the company at the time of going public and 13 percent more in the three subsequent years, retaining much more than a majority stake contradicts the findings of Helwege et al. (2007) who find that insider ownership falls steadily following an IPO and more than 50 percent of sample firms are having insider ownership below 20 percent 10 years after the IPO. Among other studies, Chemmanur and Fulghieri (1999) note that going public decision of companies is determined by trade-off between minimizing duplication in information production by outsiders and avoiding the risk-premium demanded by venture capitalists. Lowry (2003) notes that changes in firms’ demand for capital and changes in investor optimism explain substantial portion of variation in IPO volume. Ritter and Welch (2002) note that market condition is the most important factor in the decision to go public and are responsible for large variation in number of IPOs over the years. Stage of the firm in life cycle being the second most important factor, Mayur and Kumar (2007) find that size, profitability, age, and leverage are significant determinants of going public decisions for Indian companies. Poulsen and Stegemoller (2008) note that growth opportunity is a major determinant of going public decision which is consistent with Lowry’s (2003) Capital Demand Hypothesis. Finally, Luo (2008) notes that firm’s pre-IPO marketing spending helps reduce IPO underpricing and boosts IPO trading in the aftermarket.
4.2 Issue Method/Listing Decision

Kandel et al (1999) examine demand schedules for securities in 27 Israeli IPOs conducted during December 1993-December 1996 as non-discriminatory (uniform price) auctions with a minimum price, but no maximum price. Study finds relatively flat (elastic) demand schedule around the auction-clearing price and a small but significant average abnormal return on the first trading day of the IPOs. Study interprets such underpricing in uniform-price auctioned IPOs with thousands of investors because of the fact that investors possess more information than auction price alone can reveal and when investors' private non-price information becomes public, investors reassess their positions and the prices of the securities are revised according to the revealed information. Further, study finds a positive and significant correlation between the abnormal return on the first trading day and elasticity of demand. Study interprets such empirical relation between price change following the IPO and the elasticity of demand for the security as evidence that the lead underwriters reveal the elasticity of demand on the auction day. If this information leads investors to update their assessment of the value of the security, the uncertainty about the elasticity of demand may entail a risk premium.

Sherman (2000) illustrates the importance of long-term relationship using book-building method of IPO issue. The study is based on the work of Benveniste and Spindt (1989) that, in an infinite-period setting with endowed information, underwriter could use the promise of future participation to reduce the excess return of informed investors. Using a multi-period model with endogenous and costly information acquisition, the present study shows that IPOs are underpriced to compensate investors for the cost of evaluating issues. Because of the one-price rule, uninformed investors, who have no evaluation costs, receive excess returns. However, in a repeated setting, the underwriter reduces these excess returns by requiring uninformed investors to accept overpricing of cold issues in order to remain in the regular investor group that purchases future issues. The discretion given to underwriters in the book-building method allows them to form regular investor groups that participate in every offering. These long-term relationships allow the underwriter to lower average underpricing while still giving investors the incentive to gather and report the optimal level of information. The effect of such discretion of underwriters on underpricing is consistent with Chowdhry and Sherman (1996b) who point out that the higher level of underpricing with open offer may be partially offset by the practice of favoring small over large investors, which reduces the winner's curse problem. Such long-term relationship between the underwriter and investors is not
allowed by other issue methods such as auctions or fixed-price public offer. The important implication of the present model is that the role of underwriter is substantially reduced in the auction and open offer systems, where the underwriter cannot give preference to a group of regular investors. This is true even for hybrid offerings, where book-building is used to gather information from institutional investors but open offer is used for retail investors. Finally, the model implies that hybrid issues will lead to more underpricing than straight book-building.

Using a sample of 438 U.S. IPOs - 337 listed on the NYSE and 101 listed on Nasdaq - from 1991 to 1996, Corwin and Harris (2001) analyse the initial listing decisions of IPOs that qualify for NYSE listing. The significant number of NYSE listings suggests that change in listing rules and the NYSE's increased marketing efforts have had an important effect on the listing decisions of IPO firms. Probit results show that smaller and riskier firms are more likely to list on Nasdaq than on the NYSE which is consistent with the avoidance of expected delisting costs and the tradeoff between market quality and listing fees modeled in Foucault and Parlour (1999) in which two exchanges compete for listing on the basis of listing fees and trading costs. Study finds limited support for the model of Aggarwal and Angel (1999) in which they predict that small, relatively unknown firms list on high-cost dealer market to obtain the benefits of market-maker sponsorship. Even though, study finds that small firms list on Nasdaq to capture the benefits of market-maker sponsorship, no evidence is found that younger firms, which would also benefit from sponsorship, are more likely to list on Nasdaq than on the NYSE. The preference of small and riskier firms to list on Nasdaq instead of NYSE to avoid expected delisting costs is also consistent with Sanger and Peterson (1990) who report average abnormal returns of -8.5% at NYSE and Amex delisting announcements and also McConnell et al. (1996) who point out that delisting signals the exchange's weakened confidence in the firm's ability to meet requirements of continued listing. Further, study finds that peer-firm and related firm listings appear to be important factors in the choice of listing venue. Firms tend to list on the exchange where their industry peers are listed, and reverse LBOs and carveouts are more likely to list on the NYSE if the firm or parent firm was listed on the NYSE prior to the LBO or carveout, respectively. Follow-on offering strategies, listing fees, and issue costs do not appear to be important considerations in the initial listing decision. Although, direct issue costs are higher on the NYSE than on Nasdaq, total issue costs do not differ across exchanges and are unlikely to affect the listing decision.
Biais et al. (2002) analyse the optimal IPO mechanism in a multidimensional adverse selection setting. The IPO mechanism is designed to maximise the proceeds from sale where investment bankers have private information about the retail investors' demand (because they collect retail orders through their network and from their customers), institutional investors have private information about their valuation of the asset, and investment bankers and institutional investors collude. The main characteristics of the optimal mechanism are:

- The mechanism is a simple schedule, specifying the IPO price as a function of the quantity allocated to each uninformed retail investor, the smaller the amount of shares left for the retail investor, the higher the price.
- When the market valuation of the stock is low and the intermediary allocates a large quantity to the uninformed, the price is also set at relatively low level.
- There is underpricing, reflecting the informational rents earned by the informed agents (as suggested by Benveniste and Wilhelm (1990) and Benveniste and Spindt (1989)), but not driven by Rock (1986) winner's curse effect.
- The mechanisms could allow for discriminatory pricing, whereby the price at which the intermediary buys the shares from the firm, would be different from the price at which the intermediary sells to the retail investors, however, such discriminatory pricing is not optimal.

The mechanism characterized by the study exhibits similarities with the auction-like IPO procedures used in the UK and in France. Finally, using data generated by 88 French IPOs between 1983 and 1996, the study tests the hypothesis that the data generated by the French IPO mechanism conforms to the restrictions imposed by the optimality of the mechanism and of the strategy of the informed agent. Using Hansen's (1982) Generalised Method of Moments (GMM), the theoretical restrictions are not rejected by the data.

Comelli and Goldreich (2003) investigate whether investment bankers are able to extract information from investors through the book-building process analyzing the books of a major European investment bank for 63 international equity issues (37 IPOs, 26 SEOs from 24 different countries) between 1995 and 1999. Study finds that information in bids which include a limit price, especially those of large and frequent bidders, affects the issue price. Oversubscription has a smaller but significant effect for IPOs. Public information affects the issue price to the extent that it is reflected in the bids. Oversubscription and...
demand elasticity are positively correlated with the first-day aftermarket return, and demand elasticity is negatively correlated with aftermarket volatility. The results support the view that book-building is designed to extract pricing information from investors. Overall, the findings of the study support the findings of Benveniste and Spindt (1989) and Spatt and Srivastava (1991) who argue that book-building is a mechanism that allows the investment banker to extract information from investors which will be helpful in pricing the issue accurately, thus reducing adverse selection among investors.

Ljungqvist et al. (2003) examine the costs and benefits of the global integration of IPO markets associated with the diffusion of U.S. underwriting methods in the 1990s. Book-building is becoming increasingly popular outside the U.S. and typically costs twice as much as a fixed-price offer. However, on its own, book-building only leads to lower underpricing when conducted by U.S. banks and/or targeted at U.S. investors. For most issuers, the gains associated with lower underpricing outweigh the additional costs associated with hiring U.S. banks or marketing in the U.S. This suggests a quality/pricing trade-off contrasting with the findings of Chen and Ritter (2000), particularly since non-U.S. issuers raising US$20 million-US$80 million also typically pay a 7 percent spread when U.S. banks and investors are involved.

Wu (2004) examines the impact of information asymmetry and monitoring of managers on the choice between public offerings and private placements using a sample of 360 private placements and 728 public offerings all by high-technology post-IPO firms during 1986-1997. Three key findings emerge. First, private placement firms have higher information asymmetry than public offering firms, they are more likely to have gone public at an earlier life cycle stage, they are less likely to have been backed by VCs in IPOs, they have fewer institutional investors, wider bid-ask spreads, smaller trading volumes and are covered by fewer equity analysts. This is consistent with Chemmanur and Fulghieri (1999) who argue that firms with high information asymmetry are expected to be more likely to choose private placements than public offerings. Second, private placement investors do not engage in more monitoring than public offering investors, pension funds and venture capital funds decrease their ownership whereas other blockholders increase their ownership in private placements and Admati and Pfleiderer (1994), Sahlman (1990), and Karpoff (1999) argue that pension and VC funds are the strongest monitors among institutional blockholders. Finally, discounts for private placements sold to managers are higher than discounts for private placements in which managers do not participate. Using their bargaining power, managers have strong
incentive to purchase private placements at large discounts to expropriate wealth from existing shareholders when their initial ownership stakes are small. These findings and arguments provide further support that private placements are motivated by managerial self-dealing instead of monitoring.

Sherman (2005) models book-building, discriminatory auctions, and uniform price auctions in an environment in which the number of investors and the accuracy of investors’ information are endogenous. According to the model, book-building lets underwriters manage investor access to shares, allowing them to reduce risk for both issuers and investors and to control spending on information acquisition, thereby limiting either underpricing or aftermarket volatility. Because more control and less risk are beneficial to all issuers, the advantages of book-building’s allocational flexibility could explain why global pattern of issuer choice are surprisingly consistent. The model also predicts that offerings with higher expected underpricing have lower expected aftermarket volatility, that an auction open to large number of potential bidders is vulnerable to inaccurate pricing and to fluctuations in the number of bidders, and that both book-building and auctioned IPOs will exhibit partial adjustment to both private and public information. The model does not support the popular belief that auctions should always lead to lower expected underpricing, in fact it predicts that issuers will prefer book-building to auctions regardless of the direction of change in underpricing levels.

Study offers these outcomes of the model as the justification for the US book-building method becoming increasingly popular for IPOs worldwide, whereas sealed bid auctions have been abandoned in nearly all of the many countries in which they have been tried.

Cheng et al (2006) examine the effect of introducing more stringent listing rules by Hong Kong Exchanges and Clearing Ltd in 1994 imposing a three-year prelisting earning requirement on new issues, on IPO performance using a sample of 386 IPOs registered on the Hong Kong stock market between 1986 and 1998. Study finds that there is no significant difference in performance, either short-term (underpricing calculated as percentage return from offer price to first trading-day closing price) or long-term (using holding periods of one, two and three years and two investment strategies – buy-and-hold and subscribe-and-hold), between IPOs registered before and after the regulatory change. However, all IPOs, on an average, significantly underperform market indexes. Nevertheless, the phenomenon of IPO long-term underperformance vanishes when matched sample (by industry, market capitalization or book-to-market value) is used as a performance benchmark implying that IPO long-term performance is similar to that for a
matched seasoned firm. This is also consistent with Ritter and Welch (2002) who point out that IPO long-run performance is sensitive to the selection of performance benchmark. Study further divides the sample of IPOs registered before the regulatory change into two sub-samples — those that did and those that did not fulfill the earnings requirement. The results again show that there is no significant difference in stock price performance between the two IPO sub-samples. This implies that the existence of pre-listing earnings does not guarantee good long-term IPO performance and the pre-listing earnings of new issues is not an effective screen for 'bad' IPO performers. In fact, pre-listing earnings are incorporated in IPO pricing itself. Overall results of the study do not support for the certification role of the exchanges in enhancing the shareholders' wealth as Sanger and McConnell (1986) and Ying et al (1977) did, who observe an increase in shareholder wealth after the listing, and conclude that this increase is due to increased liquidity or managerial signaling.

Anderson and Dyl (2008) examine the possible reasons for IPO firms in the US to select Nasdaq over NYSE using a sample of 640 firms (416 NYSE listed and 224 Nasdaq listed) that went public between 1993 and 2000 and qualify to be listed on NYSE at the time of their public offering. Study focuses on whether some firms choose to list on Nasdaq, rather than on NYSE, to obtain more advantageous regulatory treatment under SEC Rule 144, which governs post-IPO sales of restricted stock (shares held by early-stage investors like company founders, other employees, venture capitalists which are not issued in an IPO), investors who own the stock before the IPO can reduce the effect of Rule 144's restrictions by choosing to have their stock traded on Nasdaq rather than on the NYSE. Consistent with its predictions, study finds that Nasdaq firms sell more restricted stock following the IPO than do the NYSE firms. Logistic regression models show that both the presence of venture capitalists and the number of restricted shares sold are strongly related to the listing decision in a manner consistent with firms choosing Nasdaq over the NYSE to mitigate the effect of the Rule 144's limits on open market sales of restricted shares. Tobit models show that restricted stock sales during two years following the IPO are positively related to the stock's volatility and to the presence of venture capitalists as pre-IPO investors. Overall, firms appear to list on Nasdaq to obtain advantageous regulatory treatment under SEC Rule 144. The finding that of 640 firms that qualify to be listed on NYSE, 224 are Nasdaq listed, is consistent with the findings of Cowan et al (1992) who report that many Nasdaq firms that qualify to list on the NYSE remain on Nasdaq and Corwin and Harms (2001) who show that from 1991 to 1996 more
than 20% of the companies that qualified for listing on the NYSE at the time of their IPO, decided to trade on Nasdaq instead.

This section highlights two main issues – first, the IPO issue method and second, the listing decision. Sherman (2000) highlights the importance of long-term relationship between underwriters and investors which the book-building method offers by allowing underwriters discretion in share allocation. Such long-term relationship allows underwriters to lower average underpricing which is not possible in the case of auction price or fixed-price public offer. Similar views are offered by Cornelli and Goldreich (2003) who find that information in bids under book-building process, which includes a limit price especially of large and frequent bidders, affects the issue price. These findings are consistent with Benveniste and Spindt (1989) and Spatt and Srinavastava (1991) who argue that book-building is a mechanism that allows the investment bankers to extract information from investors which will be helpful in pricing the issue accurately, thus reducing adverse selection among investors. Finally, Sherman (2005) highlights the advantages of book-building over auction pricing in an environment in which the number of investors and accuracy of investors’ information are endogenous. He offers the outcomes of his model as the reason for the U.S. book-building method becoming increasing popular worldwide. Overall, various studies note that among the three main IPO issue methods, book-building, in which underwriter can extract information from investors and use discretion in share allocation, is preferred to fixed-price public offer, where the underwriter can extract information from the investors but has no discretion over allocation, and fixed-price public offer to auction method where the underwriter has control over neither, making auctions a distant third among IPO issue methods.

With regard to the listing decision, Corwin and Harns (2001) note that smaller and riskier firms are more likely to list of exchanges where the expected delisting costs are low or where the rules and regulations are less stringent. This is supported by the findings of Anderson and Dyl (2008) who report that even when the companies in the U.S. are eligible for NYSE listing (where the expected cost of delisting is high), many of them prefer Nasdaq listing (where the expected cost of delisting is low). Further, peer-firm and related firm listings appear to be important factor in the choice of listing venue, while follow on offering strategies, listing fees, and issue costs do not appear to be important considerations in the initial listing decisions. However, Cheng et al. (2006) do not find support for the certification role of exchanges in enhancing shareholders’ wealth.
4.3 Initial Performance/Underpricing of IPOs

McDonald and Fisher (1972) investigate the price behaviour of 142 U.S. unseasoned new common stock issues brought to the market in the first quarter of 1969. Measuring returns over five time periods — offering to first week after offering, first week to one year from offering, offering to one month after offering, end of the first month to one year from offering, and offering to one year from offering — findings of the study indicate significantly large returns for the initial subscribers, adjusted for market effects, in the first week following the offering. The evidence supports the efficient-market notion of rapid adjustment of prices to available information, so that subsequent returns from the first week to end of first year are not different for issues with large initial price increases as compared with returns on new issues as a whole. Of relevance to the majority of investors who are unable to purchase new issues at the offering, the findings support the contention that the initial ‘success’ of the offering, has no predictive value in selecting stocks for subsequent performance — a finding in accord with expected price behaviour in an efficient capital market.

Logue (1973) examines factors that influence investment bankers in their pricing decisions using a sample of 250 U.S. new issues from March 1965 through February 1969 and dividing the sample into sub-samples of issues handled by prestigious and non-prestigious underwriters. Using the multiple regressions study finds underwriter prestige variable as not significant in explaining short-run performance of new issues relative to a broad-based market index. However, further analysis finds that prestigious underwriters are more selective than non-prestigious underwriters in the issues they underwrite, they may even specify a minimum size. There is greater competition among prestigious underwriters for large issues. Non-prestigious underwriters are more concerned with competition from within than from prestigious underwriters. Overall results reported concerning the explanation of performance and the factors that influence the behavior of underwriters are not completely satisfactory. A nagging question remains as to why underwriters give up potential monopoly profits by underpricing when, they might widen their cash spread and capture these profits.

Explaining why IPOs are underpriced, Baron (1982) presents a theory of the demand for investment banking advising and distribution services in an environment where the investment banker is better informed about the capital market than is the issuer himself, and the issuer cannot observe the distribution effort put in by the banker. If both the issuer and the banker are equally informed about the capital market, the issuer would
have a demand only for the distribution services of the banker (distribution contract). However, if the banker is better informed than is the issuer, the issuer will still have demand for banker's distribution services, but will be unable to observe the distribution effort of the banker. The issuer may be able to improve on a pure distribution contract by employing the advising services of the banker under a delegation contract. Under such a contract, the offer price decision is delegated to the banker in order to deal with the adverse selection and moral hazard problems resulting from the information asymmetry and the investment banker sets the offer price based on his superior information about the capital market. The issuer must compensate the banker for the use of his information, and the banker shares in the gains from his superior information. The model developed in the study demonstrates that the offer price set by the banker under the delegation contract is less than what it would have been under the distribution contract indicating that the new issues would be underpriced when the investment banker is better informed than the issuer.

Ritter (1984) analyses the 'hot issue' market in the U.S. of 1980, the 15-month period starting in January 1980 and extending through March 1981. Taking a sample of 1,075 IPOs during the period 1977-1982, study finds that for the rest of the 1977-1982 period, the average initial return was 16.3% as against 48.4% during the hot-issue period. In an attempt to explain this phenomenon, study develops an implication of Rock's (1982) model of the IPO underpricing according to which high-risk IPOs are underpriced more than low-risk IPOs. If high-risk offerings are an unusually large fraction of IPOs in some periods, these periods should also have unusually high average initial returns. Study examines the risk composition of firms going public and finds that changing risk composition cannot explain the unusually high average initial returns during the 15-month hot issue period. Instead, the high average initial returns is attributed almost entirely to just one industry - natural resource issues. Though study finds a positive relation between risk and average initial returns for natural resource issues, study has not been able to find any evidence that would indicate such shifts in average initial returns are equilibrium phenomenon. Instead, they seem to be consistent with underwriters exploiting start-up natural resource firms during the oil and gas boom during the 1980s implying the existence of a segmented market, where small natural resource issues, were at the mercy of exploitive underwriters and other issuers were not. However, such a situation did not last.
Beatty and Ritter (1986) examine the role of investment banking industry in underpricing of IPOs depending upon the ex ante uncertainty about its IPO. For a sample of 1,028 U.S. IPOs during 1977-1982, study uses two proxies for ex ante uncertainty associated with an IPO – the log of one plus the number of uses of the proceeds listed in the prospectus and the inverse of gross proceeds. Further, to test whether underwriters whose offerings have average initial returns that are not commensurate with their ex ante uncertainty lose subsequent market share, study defines an investment banker’s market share as the fraction of IPOs that the underwriter managed or co-managed. To test whether there is a positive relation between initial return and ex ante uncertainty, study regresses the initial return on the two proxies for ex ante uncertainty. To test whether mispricing results in decline in market share for underwriters, study computes difference between predicted initial return and actual initial return for underwriters of four or more IPOs in the first sub-period and uses ‘absolute standardised average residual’ to analyse the relation between market share changes and mispricing. Study demonstrates that there is a monotone equilibrium relation between the (expected) underpricing of an IPO and the uncertainty of investors regarding its value, the greater is the ex ante uncertainty, the greater is the (expected) underpricing. The mechanism by which underpricing equilibrium is enforced is via the investment bankers, who have reputation capital at stake. The issuing firm which goes public only once cannot make a credible commitment by itself that the offering price is below the expected market price once it starts trading. An investment banker is in a position to enforce the underpricing equilibrium because it will be involved in many IPOs over time. An investment banker who ‘cheats’ on this underpricing equilibrium will lose either potential investors (if it does not underprice enough) or issuers (if it underprices too much), and thus forfeit the value of its reputation capital. The finding that the degree of underpricing depends upon ex ante uncertainty is in line with Rock’s (1986) winner’s curse problem which states that IPOs are underpriced due to information asymmetry between informed and uninformed investors.

Rock (1986) presents a model for the underpricing of IPOs which depends upon the existence of a group of investors whose information is superior to that of the firm as well as that of all other investors. If the new shares are priced at their expected value, these privileged investors crowd out the others when good issues are offered and they withdraw from the market when bad issues are offered. The offering firm must, therefore, price the shares at a discount in order to guarantee that the uninformed investors purchase the issue. The discount is a natural consequence of the model, which incorporates...
asymmetric information and rationing. The analysis of the model shows that the equilibrium offer price includes a finite discount to attract uninformed investors.

Miller and Reilly (1987) examine the speed of the market adjustment to mispricing of IPOs, underpricing, and overpricing, using a sample of 510 U.S. IPOs that went public during 1982-1983. Apart from underpricing, measured from offer price to first day bid price, study computes aftermarket return for 5 days and 21 days after offering, all market-adjusted. Results of the study indicate that the market adjusts to any mispricing, both underpricing and overpricing, during the first day of public trading, and that excess returns are not available to investors in the aftermarket. Consistent with Beatty and Ritter (1986), level of underpricing is found to be correlated with both ex-ante uncertainty (inverse of gross proceeds from the issue) and ex-post uncertainty (SD). Level of trading is also found to be correlated with underpricing. Finally, study examines bid-ask spread for both underpriced and overpriced groups. Larger spread is found for market-makers in the case of underpriced group during the first day of trading which is due to adverse information risk wherein the market-makers are obliged to trade with investors who possess superior information, called informed investors. Such a finding is consistent with Glosten and Milgrom (1985).

Ritter (1987) presents evidence regarding two of the quantifiable components of the costs of going public – direct expenses and underpricing, taking a sample of 1,028 U.S. IPOs which consists of 664 firm commitment offers and 364 best efforts offers. While the total cash expenses for these two sub-groups are 14.03 percent and 17.74 percent respectively, underpricing (computed from offering price to closing price on listing day) are found to be 14.8 percent and 47.78 percent. Together, the average total costs for the two sub-groups are found to be 21.22 percent and 31.87 percent, respectively. Study documents the differences in the types of firms using firm commitment and best efforts contracts. The differences documented are striking, small and more speculative firms tend to raise small amounts of money using best efforts offers and larger, more established firms tend to raise large amounts of money using firm commitment contracts. Study offers explanation why, in spite of higher average costs, some firms use best efforts contracts while going public, if there is enough uncertainty about the value of the firm, an issuing firm is better off using a best efforts contract because the required underpricing, if it used a firm commitment contract, would be so severe.

Johnson and Miller (1988) develop and test three main hypotheses explaining why issues underwritten by prestigious investment bankers should exhibit lower initial returns and
why this result is not an anomaly. First, the results of five previous studies are replicated, and all find that prestigious bankers underprice less than non-prestigious bankers. The second hypothesis argues that the lower initial returns that are exhibited by prestigious underwriters are caused by differences in risk alone, and that banker prestige has no explanatory power in its own right. The third hypothesis posits that the low initial returns exhibited by prestigious bankers are caused by the tendency to associate with less risky issues more often than non-prestigious bankers. The market for IPOs is mean-variance efficient. There is a negative relationship between the level of banker prestige and the degree of IPO underpricing. But this relationship disappears once initial returns are adjusted for risk. Thus, investors have no reason to favour the non-prestigious investment banker-related IPOs, except for reasons of utility. On the issuer side, there is a negative relationship between the level of investment banker prestige and total underwriter costs. Once again, however, this relationship evaporates once underwriter costs are risk adjusted.

Allen and Faulhaber (1989) develop a model consistent with empirical evidence of 'hot issue' market for IPOs according to which in certain periods and in certain industries new issues are underpriced and rationing occurs. According to the model, the firm itself best knows its prospects than anybody else. In certain circumstances, firms with the most favourable prospects find it optimal to signal their type by underpricing their initial issue of shares, and investors know that only the best can recoup the cost of this signal from subsequent issues. The model also states that the owners of bad firms know their expected performance and subsequent market valuation. They know they cannot recoup the initial loss from underpricing, and so cannot afford to signal. The model, thus, provides an explanation for the underpricing of IPOs as an equilibrium signal of firm quality.

Benvente and Spindt (1989) investigate how investment bankers use indications of interest from their client investors to price and allocate new issues. Study models the process as an auction-constructed to induce asymmetrically informed investors to reveal what they know to the underwriter. Analysis of the model yields a number of implications including that, new issues will be underpriced and that distributional priority will be given to an underwriter’s regular investors. The IPO offer price must be set low to provide profit to compensate investors for revealing positive information. The amount of compensation required depends on how much investors may expect to profit by hiding the information. This, in turn, directly depends on the extent to which withholding
positive information results in a lower expected offer price. On the other hand, an investor has less incentive to bid low for an issue he/she values highly if doing so jeopardizes his/her allocation. This is especially true if the equilibrium aftermarket price is fully revealing. Finally, study also finds that, tension between an underwriter's propensity to presell an issue and an issuing firm's desire to obtain maximum proceeds affects the type of underwriting contract chosen.

Muscarella and Vetsuypens (1989) test Baron's (1982) model of IPO underpricing. The model relies on information asymmetries between issuers and underwriters and predicts that offer prices will be lower than would prevail in the absence of asymmetric information. The present study examines the initial public offerings of 38 investment banks that went public in the period 1970-1987 and participated in the distribution of their own securities. Study finds that contrary to the implication of Baron's model, such self-marketed offerings are characterised by statistically significant underpricing comparable to that of other IPOs.

Gnannblatt and Hwang (1989) develop a signaling model of firm quality, with two signals and two attributes, in which underpricing of IPOs is an equilibrium outcome. The model assumes information asymmetry about both the expected value and the variance of a project that is about to be capitalised. The issuer's fractional holding alone is not sufficient to signal the expected value of the project. The issuer is assumed to have better information about his firm's future cash flows than outside investors. To overcome the asymmetric information problem, the issuer signals the true value of the firm by offering shares at a discount and by retaining some of the shares of the new issues in his personal portfolio. The model is regarded as a generalisation of Leland and Pyle (1977) model in which the issuer's fractional holding of the firm's equity signals its expected future cash flows—a higher fractional holding signals larger cash flows. Further, the present model is consistent with the rationale for underpricing offered by many investment professionals. They typically state that the investor interest generated by a low priced new issue tends to subsequently result in higher priced shares than would have been possible without underpricing. It is also consistent with Ibbotson's (1975) conjecture that new issues may be underpriced in order to 'leave a good taste in investors' months.' Thus, the fraction of the new issue retained by the issuer and its offering price convey to investors the unobservable 'intrinsic' value of the firm and the variance of its cash flows.

Welch (1989) presents a signaling model in which high-quality firms underprice at the IPO in order to obtain a higher price at a seasoned offering. The model has three
distinctive features. First, there is information asymmetry and this information asymmetry is due to the firm owner knowing more about the firms' value than investors. This is different from other information asymmetry theories like Baron (1982) who assumes information asymmetry between issuing firm (less informed) and underwriter (better informed) and Rock (1986) between informed and uninformed investors. Second, it is the high-quality firms whose quality is not otherwise known by the market that underprice. Low-quality firms must invest in imitation expenses to appear to be high-quality firms, and that with some probability this imitation is discovered between offerings which induces low-quality firms to reveal their quality voluntarily. Third, the model implies that high-quality firms value underpricing as a signaling device and therefore such firms have no incentive to avoid underpricing. In this respect, again, the model is different from Rock's model which assumes that firms reluctantly underprice only to keep uninformed investors in the market. Finally, study provides some empirical support for one central implication of the model: many IPO firms in the U.S. from the 1977-1982 period indeed choose to issue a substantial amount seasoned equity which enables the study to conclude that the timing of SEOs is related to the IPOs, and that IPOs could have indeed been used to advertise for SEOs.

Carter and Manaster (1990) develop a model in which they hypothesise that prestigious underwriters are associated with IPOs of low dispersion of possible firm values and prestigious underwriters are associated with IPOs that experience less price run-up. Using a sample of 501 U.S. IPOs from January 1979 to August 1983, the findings of the study support the model by establishing a significant negative relation between underwriter prestige and the price run-up variance (dispersion) for the IPOs they market. As price run-up is injurious to the issuing firm, low dispersion firms will attempt to reveal their low risk characteristics to the market by selecting prestigious underwriters. Prestigious underwriters, to maintain their reputation, only market IPOs of low dispersion firms. As a result, a signal, in the form of underwriter reputation, is provided to the market. Study also finds a significant negative relation between underwriter prestige and the magnitude of the IPO price run-up. The model used in the study is consistent with the work of Rock (1986) who argued that IPO price run-up compensates uninformed investors for the risk of trading against superior information. The present study extends this theory to suggest that the greater the proportion of informed capital participating in an IPO, the greater the equilibrium price run-up. Because investors have scarce resources to invest in information acquisition, they will specialise in acquiring information for the most risky
investments. With a migration of informed capital to the IPOs with the largest dispersion in possible secondary market values, these will experience the greatest price run-up.

Peavy (1990) examines the initial and aftermarket performance of 41 closed-end fund IPOs in the U.S. from January 1986 to June 1987. Study finds that closed-end fund IPOs do not exhibit significant positive initial returns; instead, new fund shares, on an average, are overpriced. This is in contrast to the findings of Muscarella and Vetsuypen (1987) who, for 412 non-fund IPOs, report highly significant mean initial return. Findings of the study also contradict various works on non-fund IPOs, for e.g., Ibbotson (1975) and Ritter (1984) report average underpricing of 11.4 percent and 48.4 percent, respectively, whereas Smith (1986) in a review of research findings concludes that the average underpricing exceeds 15 percent. Further, finding of the present study is consistent with IPO models that predict no significant underpricing for new issues that have little asymmetry of information about their initial values. Rock (1986) argues that underpricing is caused by information asymmetry between different classes of investors. For a closed-end fund IPO, there is less asymmetry of information about the value of the shares being offered because the underlying asset is a portfolio of marketable securities and the composition of the initial portfolio and the NAV per share are reported in the prospectus.

Finally, studying the aftermarket performance, study first finds that CARs through day 20 do not offset the initial pricing premium, while CAR over days 21-100 is found to be significantly negative.

Mauer and Senbet (1992) provide a theoretical and empirical investigation of the role of the secondary market in pricing of IPOs in which they predict that apart from asymmetric information, observed underpricing of IPOs is also consistent with a phenomenon of incomplete spanning of primary issues in the secondary market. By incomplete spanning they mean, there does not exist a secondary market firm, or portfolio of firms, whose technology perfectly replicates the stochastic returns to the issuing firm's technology (Ross, 1978) or to say that there does not exist a perfect substitute for the IPO in the secondary market. Absence of a perfect substitute for a new issue in the secondary market should give rise to a positive initial return even if there is no asymmetry of information between the parties involved in new issues i.e., observed underpricing is a consequence of IPOs being traded in two separate markets. At the offering stage, IPOs trade in primary markets populated by firms that may have little or no operating history and relatively few comparable firms in the secondary market. Subsequent to the offering, IPOs trade in the larger, more centrally accessed secondary market. The secondary
market is where after-market clearing prices for IPOs are established. These markets are linked by incomplete spanning of primary market IPOs by secondary market assets. Thus, the difference between an IPO's secondary market value and initial offer value is attributable to a primary market risk premium that is a function of incomplete spanning of the initial issue by secondary market assets and the degree of investor access to the primary market. As IPOs enter the secondary market place, the degree of incomplete spanning diminishes for subsequent IPOs with related technologies. This industry or 'seasoning effect' results in lower underpricing for subsequent IPOs. Thus, the role that the secondary market plays in the pricing of primary issues is governed by three principal determinants -- access, substitution, and seasoning -- that collectively establish a price differential consistent with observed underpricing. Further, using a sample of 1,002 U.S. IPOs during the period 1977-1984, study finds support for the model's predictions. Finally, on investigating whether IPO initial returns decrease over time within industry categories, evidence indicates that IPOs in industries that are not likely to have close substitutes in the secondary market over the sample period experience statistically significant 'seasoning effects'.

Welch (1992) notes that when IPO shares are sold sequentially, later potential investors can learn from the purchasing decisions of earlier investors. This can lead rapidly to "cascades" in which subsequent investors optimally ignore their private information and imitate earlier investors. Although rationing in this situation gives rise to a winner's curse, it is irrelevant. Welch develops a model which predicts that (1) Offerings succeed or fail rapidly (2) Demand can be so elastic that even risk-neutral issuers underprice to completely avoid failure (3) Issuers with good inside information can price their shares so high that they sometimes fail (4) An underwriter may want to reduce the communication among investors by spreading the selling effort over a more segmented market.

Affleck-Graves et al (1993) examine the effects of the trading system on the pricing of IPOs in the U.S., role of initial and continued listing standards in certifying the quality of new issues, and underpricing in various stock markets. The sample consists of 95 NYSE-listed, 50 AMEX-listed, 158 Nasdaq/NMS-listed, and 824 Nasdaq/non-NMS-listed IPOs during the period 1983 to 1987. Study finds that the sample of NYSE IPOs is, on average, underpriced by 4.82% while sample of AMEX IPOs have an average underpricing of 2.16%. This contrasts with the 5.56% & 10.41%, respectively, for Nasdaq/NMS and Nasdaq/non-NMS IPOs, on an average, over the same time period.
These empirical results support the proposition with the NYSE, AMEX, and Nasdaq/NMS IPOs having significantly lower underpricing than non-NMS IPOs after controlling for several other proxies for ex ante uncertainty. However, while the average underpricing for NYSE and AMEX IPOs was less than that of Nasdaq/NMS IPOs, these differences in underpricing were not statistically significant once other sources of ex ante uncertainty were controlled.

Hanley (1993) documents that the relation of the final offer price to the range of anticipated offer prices disclosed in the preliminary prospectus is a good predictor of initial returns. Issues that have final offer prices which exceed the limits of the offer range have greater underpricing than all other IPOs, and are also more likely to increase the number of shares issued. These results are consistent with the pricing and allocation schedule proposed by Benveniste and Spindt (1989), in which shares in an offering are rationed and prices only partially adjust to new information.

Manley et al. (1993) examine price stabilisation in new equity issues. Stabilisation truncates the distribution of post-issue prices at a floor price, lowering the risk of adverse price moves and hence, in a competitive dealer market, reducing the bid-ask spread. Using 1,523 NASDAQ-traded firm-commitment IPOs issued between 1982 and 1987, study finds that spreads narrow when the market price is close to the offer price and stabilisation is most likely. Moreover, significant negative returns are documented after the hypothesized termination of stabilizing activities, suggesting that stabilization, and its cessation, affect market prices.

Chemmanur (1993) develops a model of IPO pricing in which firm insiders sell equity both in the new issue market and in the secondary market, having private information about their firm's prospects, and where outsiders may produce information at a cost about the firm. High-value firms, knowing they are going to pool with low-value firms, induce outsiders to engage in information production by underpricing, which compensates outsiders for the cost of producing information. Thus, according to the model, underpricing is generated by the desire of the firm insiders to induce information production about their firm. The information produced is reflected in the secondary market price of equity, giving a higher expected stock price for high-value firms. The model is different from much of the existing literature which has focused on dissipative signaling either by insiders (Ross (1977), Leland and Pyle (1977)) or information production/certification by financial intermediaries (Campbell and Kracaw (1980)) as ways of dealing with information asymmetry in that it demonstrates that costly...
information production by outside investors may be of equal importance in minimizing the impact of private information in IPOs. Finally, the model has several important implications. First, IPOs which are oversubscribed to a greater degree are associated with more underpricing, as documented by Beatty and Ritter (1986). Second, the extent of underpricing is greater for firms with projects that are costlier to evaluate, a prediction supported by Muscarella and Vetsuypens (1987) and Ritter (1991). Third, it is often in the issuers' interest to price equity in the IPO below the highest price at which they can sell since, this results in larger combined proceeds from the initial and second offerings which is consistent with the fact that issuers and investment bankers view underpriced, oversubscribed IPOs as successful. Also, supporting evidence is provided by Muscarella and Vetsuypens (1989), who document significant underpricing even in the IPOs of investment banks.

Drake and Vetsuypens (1993) investigate 'lawsuit avoidance' theory of IPO underpricing, which states that IPO underpricing relies on issuers' and underwriters' desire to avoid legal liabilities for overpricing the issues, using a sample of 93 U.S. IPOs over the period 1969 to 1990 which were sued for mis-statements in the IPO prospectus or registration statement under the Securities Act of 1933 and 1934. Study finds that these sample IPO firms are not overpriced, on an average, instead are underpriced as other IPOs of similar size. Litigation appears to be driven by large aftermarket price declines long after the IPO, not by whether the IPO was initially overpriced. Plaintiffs entitled to damages include investors who purchased stocks in the aftermarket for up to 14.7 months, on an average, after the IPO. Underpricing the IPO at the offer date is irrelevant to these aftermarket investors' incentive to sue and has little effect on the issuer's potential damage payments. These results show that underpricing the IPO is not a sufficient condition to avoid lawsuits, nor does it appear to be a very efficient way to do so. Results of the study complement those of Beatty (1992) who finds that IPO underpricing is insufficient to eliminate the litigation risk faced by the auditor in the IPO, Alexander (1991) who argues that lawsuits against IPOs are a function of the aftermarket decline in value of the issuer. Further, while Ibbotson and Ritter (1991) report that IPOs in countries other than the U.S. are significantly underpriced as well, Longstreth (1988) document that non-U.S. countries have investor protection laws less stringent than those of the U.S. However, findings of the study contradict Logue (1973), Ibbotson (1975) who suggest that underpricing may reduce legal liabilities, Timic (1988) who presents evidence consistent with the hypothesis. Finally, just as the lawsuit avoidance hypothesis...
cannot easily explain IPO underpricing in the U.S., as the present study has shown, the hypothesis also seems inconsistent with the pervasive underpricing of IPOs globally. Garfinkel (1993) examines the relation between IPO underpricing, measured from offer price to closing price on first trading day, and both subsequent equity issuance and open market insider sales using a sample of 494 U.S. IPOs that went public between 1980 and 1983. Study first runs OLS regression model with underpricing as dependent variable to examine the marginal effect of various control variables on underpricing. Next, study runs logit model relating the probability of reissue within seven years of IPO and probability of open market insider sale by director/owner in excess of 10,000 shares within two years. Study finds that underpricing has little incremental (signaling) effect on both the likelihood of reissue and the abnormal return to the announcement of a seasoned offering, after controlling for other variables that may affect both the probability of reissue and underpricing. Study also finds that underpricing has no significant impact on the probability that insiders will sell shares in the open market, after controlling for ex-ante uncertainty, the firm’s post-IPO stock price performance, and partial adjustment phenomenon. Also, finding is inconsistent with the notion of underpricing as a signal of quality since under the signaling theories firms with greater underpricing should exhibit greater insider selling. Overall, findings of the study are not consistent with the signaling theories of IPO underpricing of Allen and Faulhaber (1989), Welch (1989), and Grnblatt and Hwang (1989).

Michaely and Shaw (1994) test the implications of two sets of theoretical explanations of IPO underpricing – winner’s curse theory (Rock (1986), Beatty and Ritter (1986), Carter and Manaster (1990)) and signalling based models (Allen and Faulhaber (1989), Grnblatt and Hwang (1989), Welch (1989)) using a sample of 947 U.S. IPOs (including 58 master limited partnership or MLP IPOs where institutional investors are minor participants) from the years 1984-1988. Findings of the study support the adverse-selection models that attribute underpricing to the presence of information asymmetries between outside informed and uninformed investors. When investors are relatively homogeneous as in the case of MLP IPOs study does not find any underpricing. Even after controlling for size, the line of business, prestige of investment banker, and the fraction of equity held by insiders, study finds significantly less underpricing in the MLP IPO market, where uninformed investors do not face a winner’s curse problem. Study also demonstrates that underwriter quality lessens the need to underprice, however, for a given level of prestige, larger IPOs with more diverse shareholders require a greater underpricing. Study
establishes link between underwriter quality and IPO quality by demonstrating that IPOs issued by more prestigious underwriters perform better over two years after the IPO, also most prestigious underwriters generally avoid taking smaller IPOs to market. Study finds little support for the models suggesting that firms underprice to signal their quality or because they intend to return to the market with SEOs. Instead, study finds that firms that underprice more have weaker future earnings performance, fewer dividend initiations and smaller dividends, and less frequent trips to the market with secondary equity and debt issues. Overall, these results suggest few guidelines to financial managers and investors at large—first, there is no need for firms that go public to underprice because they may be considering subsequent security issues. Second, firms issued by more reputable investment banks are required to leave less money on the table than firms issued by less reputable investment banks.

Schultz and Zaman (1994) examine the aftermarket support for IPOs using a sample of 72 U.S. IPOs from March 31, 1992 through June 1, 1992. Study finds that underwriters spend a larger proportion of their time at the inside bid (highest price that any dealer will pay for the stock) for cold IPOs (IPOs that trade at or below their offer price) than for hot IPOs (IPOs that trade above their offer price). Other market makers spend a significantly smaller proportion of their time at the inside bid for cold IPOs than for hot IPOs. When inside quotes (the highest bid and lowest offer price for a security) are recalculated after omitting underwriter quotes, study finds that average inside bids are usually lower, particularly for cold IPOs, while inside ask quotes are generally the same with or without the inclusion of underwriter quotes. Examining the time-series behavior and the aggregate buying and selling of underpriced and fully-priced IPOs by the underwriters, study provides further evidence of aftermarket support. A greater proportion of aftermarket volume is found to be from sell orders for fully-priced IPOs than for underpriced IPOs. Underwriters appear to take the opposite side of most of these trades and, on average, repurchase over 20 percent of the shares issued in an IPO during the first three days of aftermarket trading. The large volume of aftermarket repurchases, along with the exercise of overallotment options for hot IPOs but not for cold IPOs, suggests that stocks are supported in the aftermarket by permanently reducing the supply of shares. Overall findings of the study support Smith (1986) who discusses aftermarket support in the broader context of the underwriter’s reputation, if an underwriter repurchases overpriced shares ex post at a supported price, his reputation for aftermarket support...
support assures that the IPOs that he underwrites in the future are perceived ex ante as less likely to be overpriced.

Reside et al. (1994) present a model of entrepreneurial wealth-maximisation for the pricing of IPOs. The model shows that personal tax rates on ordinary income and capital gains may, in part, determine IPO pricing. An increase in capital gains tax rate, ceteris paribus, should result in a lower degree of underpricing. Using a sample of 1,308 U.S. IPOs that went public between 1980 and 1989, study tests the tax-based underpricing model examining the effects of The Tax Reform Act of 1986, which raised the capital gain tax rate in the U.S. Findings of the study show that the average degree of underpricing did decrease about the implementation date of the Act as predicted by the model. Further, regression analysis controlling for other possible influences of IPO underpricing, confirms the predicted tax effect.

Cheung and Krinsky (1994) test Baron's (1982) model of information asymmetry in which investment bankers/underwriters to an IPO are better informed than issuing firm concerning the demand for securities and underpricing compensates the underwriter for advise related to setting the issue price and for distributing the offering. Study uses a sample of Canadian investment bankers that went public between 1982 and 1988 and compares the price behavior of this sample with that of comparable non-investment banker IPO sample. Returns over benchmark (abnormal returns) for each new issue are estimated for different investment horizons up to the first month after listing. Even though, IPOs of investment bankers display higher mean excess returns than those of their matching pairs, the difference between the two groups is not significantly different from zero for all investment horizons even after controlling for differences in their issue-size. Thus, results of the study simply fail to establish smaller degree of underpricing for the IPO sample of investment bankers as Baron's hypothesis would imply and therefore, is inconsistent with Baron's (1982) information asymmetry theory of IPO underpricing. Finding of the study is also consistent with Muscarella and Vetsuypens (1989) who examine IPOs of investment bankers in which issuer himself is the underwriter and find that self-underwritten IPOs are underpriced by a significantly larger amount than the offerings in which the issuing banker does not serve as the lead manager.

Narasimhan and Ramana (1995) focus on the determination of underpricing of Indian IPOs in two different time periods: phase I consisting of November 1993 to January 1994 when the market was bullish and phase II consisting of April-May 1994 when the market has been on the decline, using a sample of 64 and 39 IPOs, respectively. Underpricing is
computed using offer price and first day trading price. Consistent with international evidence of IPO underpricing, the study also finds underpricing of Indian IPOs to be quite high. The degree of market-adjusted underpricing is found to be homogeneous across time periods. Further, premium issues are underpriced to a greater extent than par issues. However, underpricing is not found to be related to the time interval between the offer day and the first trading day.

Chowdhry and Nanda (1996) develop a model to see how effectively the underwriting syndicate of investment banks engages itself in the buy back of shares at the offer price (price stabilisation). According to the model, price stabilisation by the underwriting syndicate in the after-market trading of an IPO is a mechanism by which the uninformed investors are compensated ex post for the adverse selection cost they face in bidding for IPOs. Model shows that price stabilisation dominates ex ante compensation by underpricing because with ex-post compensation, only the uninformed investors need to be compensated whereas with ex-ante compensation (underpricing), even the informed investors receive the benefit in the form of a lower offer price. Since compensation to investors is provided ex post through stabilisation, this commitment may be credible only when it is given by a reputable investment banking syndicate. However, since the syndicate abandons stabilization activity after suffering a given amount of losses, the issue may have to be underpriced as well to some extent. Finally, model also predicts that keeping other things fixed, large offering would tend to be associated with smaller offer prices (larger underpricing) and with syndicates that have a larger loss capacity. Hot issue periods of high demand for IPOs are predicted to be associated with smaller offer prices (large underpricing) and with syndicates that have a smaller loss capacity.

Saadouni et al. (1996) examine the degree of underpricing of Management Buyout IPOs (MBO-IPOs) and compare it with that of non-MBO-IPOs using a sample of 39 U.K. MBO-IPOs issued between 1980 and first half of 1993 and matched by a similar sample of non-MBO-IPOs. Study also tests the relationship between the degree of underpricing, ex ante uncertainty, and the signaling hypothesis suggested by Leland and Pyle (1977), using three proxies—risk measured by SD of daily returns for the first 30 days, inverse of net proceeds, and insiders ownership. Findings of the study indicate that IPOs are, on an average, underpriced and that non-MBO-IPOs provide higher mean excess returns than MBO-IPOs, although the differences are not statistically significant. Regression analysis shows positive relationship between the degree of underpricing and risk while negative but not significant relationship is found between underpricing on the one hand and...
inverse of offer size and insiders' ownership, on the other. This finding provides only partial support to the work of Leland and Pyle (1977), Downes and Henkel (1982), Ritter (1984), Krinsky and Rotenberg (1989), Kim, Krinsky, and Lee (1993), and Keasy and Short (1992) who find that degree of underpricing is significantly related to three variables—percentage of equity retained, net proceeds, and the presence of an earnings forecast. Further, since MBO-IPOs are former subsidiaries of publicly listed companies, there is supposed to be less uncertainty about their true market values. Therefore, overall findings of the study provide support for the information asymmetry (reduced uncertainty) hypothesis, but the support is partial because the difference in underpricing between the two samples is not significantly different from zero. These findings of the study are consistent with information asymmetry theories of IPO underpricing of Baron (1982) who assumes information asymmetry between issuer and underwriter and Rock (1986) who assumes information asymmetry between informed and uninformed investors.

Chishty et al. (1996) investigate impact of the degree of actual or potential competition between underwriters, measured based on number of investment banking firms in the same industry, on the IPO underpricing and the relationship between the size of the issue and total issue cost, using a sample of 599 US IPOs that went public between 1979 and 1984. Study uses OLS regression model with IPO return measured from offering price to the 15th day closing price, and issuer’s offering cost as dependent variables. Findings of the study indicate that like Carter and Manaster (1990), there is a significant negative impact of investment banks’ reputation on the degree of underpricing. Further, competition in the market among underwriters is also negatively related to the price run-ups in the post-issue trading providing at least as much explanatory power as the standard reputation variable does. Finally, total cost of the issue to the issuer is, in fact, lower when larger issues are put into the market. These savings are not reflected, on an average, in the IPO returns, rather, they are reflected in lower underwriter compensation when measured on a per dollar basis.

Dewenter and Malatesta (1997) compare initial offer prices in privatizations of state-owned companies to initial prices in public offerings of private companies using a sample of 109 international privatization IPOs—13 in Canada, 10 in France, 10 in Hungary, 3 in Japan, 12 in Malaysia, 19 in Poland, 4 in Thailand, and 38 in the UK—and compare the one-day, seven-day, and thirty-day holding period returns following the offer date to information on IPOs of privately-owned companies in these countries taken from...
Loughran et al (1994) who review and summarise international empirical research on IPOs. Evidence indicates that government officials in the U.K. underprice IPOs significantly more than their private company counterparts. In Canada and Malaysia, however, the opposite is true. Overall, across seven countries jointly, study could not reject the hypothesis that mean initial returns of IPOs of state-owned companies are the same as IPOs of privately-owned companies. This finding goes contrary to Vickers and Yarrow (1988), Jenkinson and Mayer (1988), Jacquillat (1987), and Perotti and Guney (1993) who all suggest that underpricing is greater for IPOs of state-owned than for privately-owned firms. Further, findings indicate that initial returns for privatizations in the relatively primitive capital markets of Hungary, Malaysia, Poland, and Thailand tend to exceed those for privatizations in the more highly developed capital markets of Canada, France, Japan, and the U.K. Study is of the opinion that primitive capital market conditions and nascent government regulation increases uncertainty about the intrinsic value of privatization offers and depresses offer price which is consistent with offer pricing theories that emphasize asymmetric information. Privatization initial returns for firms in regulated industries tend to exceed those for firms in unregulated industries. Finally, the cross-sectional regression results rejects the hypothesis that government officials design their privatization programmes to build political support over time by ensuring especially attractive returns in the first few privatizations.

Benveniste et al. (1998) find that IPOs that receive secondary market price support from their underwriters are characterized by severely attenuated selling by small-quantity, presumably retail, traders and more aggressive selling by large-quantity, presumably institutional, traders. The increase in institutional trading is concentrated in the first day of trading while the attenuation of retail trading persists. This pattern exists in spite of the likelihood that retail investors receive relatively large initial allocations of (fully priced) stabilised offers. Thus, the evidence is consistent with institutional investors being the primary beneficiaries of price stabilisation efforts and with the use of penalty bids to constrain retail selling activity.

Ursel and Ljucovic (1998) examine the underpricing of Canadian IPOs since July 1, 1987, when banks entered the underwriting business. Because underwriter prestige has been shown to affect underpricing (Carter and Manaster, 1990), study expects a change in underpricing given the acquisitions of underwriters by the large Canadian banks. The level of underpricing found by the study for a sample of 111 Canadian IPOs during the period July 1, 1987 to December 31, 1994 is much lower than that found by other studies.
Bank ownership of an issue's underwriter is found to be significantly related to lower underpricing. However, this appears to be due to the fact that banks acquire high prestige underwriters and not due to bank ownership per se.

Hameed and Lim (1998) investigate whether the choice of issue method (purely fixed versus combined fixed and tender methods) by firms going public in Singapore is influenced by their intention to convey firm quality to the investors using a sample of 53 IPOs between April 1993 and July 1995. Study finds that IPO firms that tender part of their shares (second method) have a longer and better track record than those that do not tender (first method). Also, the tendering firms are larger. Further, study finds a greater extent of underpricing in the fixed tranche of the tender IPOs (percentage change from fixed subscription price to first day closing price) relative to that of the purely fixed IPOs. This greater degree of underpricing is consistent with the idea that better quality firms underprice their shares to signal quality which is documented by Allen and Faulhaber (1989), Grunblatt and Hwang (1989), and Welch (1989). However, unlike the previous signaling models, information about the quality of firms in Singapore is revealed during the offer period itself instead of the post-IPO period. This is evident from the fact that for IPO firms opting to use the tender method, the underpricing in the fixed tranche is ‘recouped’ by the higher strike price for the tender tranche. Finally, study does not find statistical difference in overall underpricing between the tendering and non-tendering IPOs. Overall, results of the study show that in Singapore IPO firm’s decision to use the issue process is a mechanism to signal firm quality and that firms using tender method are of high quality. Also, results are consistent with the existing signaling literature that good quality firms underprice their IPOs to signal quality.

Lee et al (1999) find that IPOs made on the Stock Exchange of Singapore routinely provide sufficiently detailed data to allow reconstruction of both the application and allocation schedules. Using a sample of 91 IPOs on Stock Exchange of Singapore from July 1973 to December 1992, study shows that large investors tend to preferentially request participation in IPOs with higher initial returns, consistent with these investors being better informed. This finding shows that winner’s curse (Rock (1986)) is far more apparent in applications than it is in allocations. Study also shows that inferences based exclusively on application strategies are quite different from those drawn on investor allocations. These results suggest that caution is necessary in assessing the relative merit of competing explanations for IPO underpricing where the underlying demand is not identified.
Krigman et al (1999) examine the underwriters’ pricing errors focusing on the information content of first-day trading activity in IPOs using a sample of 1,232 US IPOs during the period January 1988 through May 1995. Study finds that flipping accounts for 45 percent of trading volume on the first day in cold issues compared to only 22 percent in hot issues, despite significantly higher trading volume in hot issues. Study finds that hot IPOs (with first-day unadjusted return equal to or greater than 10 percent but less than 60 percent) outperform in the first year (size-adjusted excess return using a buy-and-hold strategy), and cold IPOs (with first-day unadjusted return equal to zero or negative) underperform, while extra-hot IPOs (with first-day return in excess of 60 percent) provide the worst future performance. Flipping is found to be a significant predictor of future stock performance and a rational behavior as well, block traders who appear to possess and use superior information, flip issues that subsequently underperform the market and they sell less in the best future performing issues. Finally, using a five-factor model (market, size, book-to-market, general market momentum, and IPO market momentum) and using calendar time value-weighted portfolio regressions, study finds that the level of flipping still continues to differentiate good from poor first-year performers. This finding is in contrast with Fama (1997) who asserts that much of the apparent overreaction and underreaction to information disappears when portfolios are value-weighted and common factors such as size and book-to-market effects are controlled for.

Aggarwal (2000) examines what types of aftermarket activities underwriters engage in, how long these activities last, what cost the underwriters incur, and what combination of these activities helps to provide price support to weak IPOs. Study finds that the forms of aftermarket activity by underwriters are aftermarket short covering to stimulate demand and restricting supply by penalizing the flipping of shares. Out of a sample of 137 US IPOs issued between May and July 1997, in more than half of IPOs, a short position of an average 10.75 percent of shares offered is covered in 22 transactions over 16.6 days in the aftermarket, resulting a loss of 3.61 percent of underwriting fees. Study also finds that underwriters are also actively engaged in aftermarket activities even for offerings that are trading little above the offer price. These offerings would probably trade at or below the offer price if underwriters were not engaged in aftermarket activities. Overall, the results of the study show that underwriters manage price support activities by using a combination of aftermarket short covering, penalty bids, and the selective use of the overallotment option.
Chen and Ritter (2000) examine the relationships between underwriter reputation, underwriter spread, and underpricing of the IPOs. The size of the sample varies from 733 U.S. IPOs when considering underwriter reputation using Carter and Manaster (1990) to 803 companies for most of the other variables that went public between 1990 and 1992. Study finds that underwriter spread (underwriter fees divided by the gross proceeds of the offering) is significantly correlated with underpricing, which represents an implicit pricing of risk. Low-quality IPOs incur both higher underwriting spread and deeper underpricing. Using simultaneous equation system study finds that, indeed, deeper underpricing often is accompanied by higher underwriting spread. However, further analysis suggests that the IPO market, to a certain extent, is segmented. Low-reputation underwriters seldom market low-dispersion IPOs i.e., IPOs with lower SD of after-market returns or high-quality IPOs, although high-reputation underwriters may underwrite both high- and low-dispersion IPOs. For the medium-reputation underwriters, underwriter spread is having significant and negative impact on the initial underpricing suggesting a substitution relationship i.e., medium-reputation underwriters face a trade-off between explicit cost (spread) and implicit cost (underpricing). For low- and high-reputation underwriters, initial underpricing effects underwriter spread positively indicating a complementary relationship.

Ellis et al (2000) examine aftermarket trading of underwriters and unaffiliated market-makers in the three-month period after an IPO using a sample of 306 U.S. IPOs issued between September 1996 and July 1997. Study finds that lead underwriter is always the dominant market-maker, he takes substantial inventory positions in the aftermarket trading, which establishes important link between the premarket and aftermarket behaviour of the underwriter. Co-managers are not active liquidity providers for the IPO, their trading and inventory position are not significantly different from those of other market-makers. The lead underwriter engages in stabilization activity for less successful IPOs, his inventory position can reach over 22 percent of the issue for IPOs that trade below the offer price. Even though in the period immediately following the offering, aftermarket trading is not a significant source of profits to the underwriter relative to the fees generated from underwriting, it is not the case that providing liquidity and stabilizing the issues in the aftermarket are 'subsidized' by the underwriting activities. Both trading revenues and fees contribute to underwriter profits, thus, aftermarket trading activities cannot be viewed as a cost to the underwriter in the IPO process. Such a finding is in contrast to the assumption made by Benveniste, Busaba, and Wilhelm (1996), and
Chowdhry and Nanda (1996) that stabilization activity is costly to underwriters. Finally, study finds a significant link between underwriters' trading profits and IPO underpricing, suggesting that underpricing may be at least partially due to the integrated nature of the IPO process in that the underwriter directly benefits from underpricing the issue. Study interprets these results as showing that the economic linkages of the IPO process give underwriters an added incentive to underprice issues. Overall results of the study are consistent with the findings of various researchers about the aftermarket support role of underwriters for IPOs. Schultz and Zaman (1994) find that in the three trading days after the IPO, underwriters quote the highest bids and thus actively support the price of less successful IPOs. Hanley et al. (1993) find evidence that lead underwriters engage in stabilisation. Aggarwal (1998) finds extensive short positions by underwriters to provide price support for new issues, and Michaely and Womack (1999) find that underwriters issue more buy recommendations than non-underwriters and that these recommendations are positively biased.

Prezas et al. (2000) examine the pacing of stock for 251 U.S. equity carve-outs during the 1986-1995 period. Study documents a mean initial-day return of 5.83 percent and a mean one-week return of 5.43 percent. Among carve-outs, the initial underpricing is lower for issues represented by high prestige investment bankers supporting the certification role provided by the investment bankers. Also, carve-outs with a lower offer price, the initial underpricing is found to be lower. In comparison with 251 IPO firms matched by size and book-to-market ratio of equity, carve-outs exhibit significantly lower initial-day returns, but their buy-and-hold returns for six-month and one-year periods are not significantly different from IPOs. This is in contrast to significant underperformance of master limited partnership carve-outs found by Michaely and Shaw (1995). However, the IPO firms have a three-year return of 28.82 percent which is significantly higher than the 21.07 percent return for the carve-out firms.

Habib and Ljungqvist (2001) model owners of an IPO firm as solving a multidimensional problem when taking their firms public using a sample of 1,376 U.S. IPOs floated between 1991 and 1995. Study finds that underpricing decreases in promotion costs, and promotion costs increase in the number of shares sold. Furthermore, underpricing decreases in insider selling. At the margin, each dollar spent on promotion reduces wealth losses by 98 cents, indicating that the marginal cost of promotion equals the marginal benefit of reduced wealth losses and study argues that such optimising behaviour is hard to reconcile with Loughran and Ritter's (2002) conjecture that "issuers treat the.."
opportunity cost of leaving money on the table as less important than the direct fees.” Overall, study finds that owners can affect the level of underpricing through the choices they make in promoting an issue, such as which underwriter to hire or on what exchange to list. The benefits of reducing underpricing in this way depend on the owners’ participation in the offering and the magnitude of the dilution they suffer on retained shares. Finally, the extent to which owners trade off underpricing and promotion, is determined by the minimisation of their wealth losses.

As an explanation why managers do not sell any of their own shares in an IPO but instead wait until the end of the lockup period, Aggarwal et al. (2002) develop a model in which managers strategically underprice IPOs to maximise personal wealth from selling shares at lockup expiration. Model predicts that first day underpricing generates information momentum by attracting attention to the stock and thereby shifting the demand curve for the stock outwards. This allows managers to sell shares at the lockup expiration at prices higher than they would otherwise obtain. Further, study tests the model using a sample of 618 U.S. IPOs from 1994 to 1999 and consistent with the model, study finds that higher ownership by managers is positively correlated with first-day underpricing. Firms with greater underpricing receive significantly more recommendations from research analysts in the months leading up to the lockup expiration than do firms with less underpricing. The increased coverage leads to higher stock prices at the lockup expiration and finally, insiders sell more shares in the open market and through secondary offerings when there is more analyst research coverage. Study offers several potential explanations for the findings. Firstly, more risk-averse managers will underprice more in order to ensure that the IPO is successful and want to sell more at the expiration of the lockup in order to diversify their holdings. A second explanation is asymmetry information, as Welch (1989) argues that high quality firms underprice the IPO in order to get better prices for seasoned offerings. Thirdly, as Chemmanur (1993) argues, owner-managers of high-quality firms underprice the IPO in order to compensate investors for gathering information about the firm. The more information that is produced, the more likely it is that a high quality firm is revealed to be high quality, allowing the firm to sell shares in a secondary offering at prices closer to the firm’s true value. However, Spiess and Pettway (1997) who empirically tests Chemmanur’s (1993) model, did not find evidence that firms recover the cost of an underpriced IPO in either higher seasoned offering proceeds or in a greater wealth for the firms’ owners through sales of shares in SEOs.
Bartov et al (2002) empirically investigate valuations of Internet firms at various stages of the IPO from two perspectives. Using a sample of 150 internet firm IPOs covering a 42-month period from January 1996 to June 1999 and then matching this sample with non-internet IPOs, study first examines the association between the valuation of Internet IPOs and a set of financial and non-financial variables. Second, study documents differences in IPO valuations between Internet and non-Internet firms as well as across different stages in the IPO process—i.e., initial prospectus price, final offer price, and first trading day price—within each set of firms. The two primary conclusions of the study are—first, there are noticeable differences between valuations of internet and non-internet firms, especially at the prospectus and final IPO stage. Specifically, the valuation of non-Internet firms generally follows the conventional wisdom regarding valuation: positive earnings and cash flows are priced, while negative earnings and negative cash flows are not. The valuation of Internet firms, however, departs from conventional wisdom, with earnings not being priced, and negative cash flows being priced perhaps because they are viewed as investments. This difference between the two classes of firms may be expected, given the age and unique nature of the Internet industry. Second, there are significant differences between the initial valuation of firms at the prospectus and IPO stage and their valuation by the stock market at the end of the first trading day. For non-Internet firms, the difference is largely ascribed to the relative offering size. For Internet firms, however, the differences are with respect to positive cash flows, sales growth, R and D, and high-risk warnings, in addition to the relative offering size.

Bradley and Jordan (2002) examine the extent to which IPO underpricing can be predicted based on public information before the offer date using a sample of 3,325 U.S. IPOs between 1990 and 1999 and focusing on four variables—share overhang, file range amendments, VC backing, and previous issue underpricing. Study finds that a substantial portion of IPO underpricing can be predicted using variables readily observable before the offering date—i.e., 35 percent to 50 percent of the variation in IPO underpricing can be predicted using public information known before the offer date. For certain industries, more than half of the variation in IPO underpricing can be explained using public information. Overall, the evidence strongly indicates that IPO offer prices do not fully adjust to public information. The significant implication of this finding is that models of IPO underpricing that rely on relatively high degrees of informational asymmetries (Benveniste and Spindt (1989) and Rock (1986)) are more difficult to support if IPO underpricing is highly predictable using easily obtained public information.
Fishe (2002) presents a model of how stock flippers affect IPO pricing which is built on the empirical work of Aggarwal (2000) and Ellis et al (2000). Aggarwal finds that underwriters do not post ‘stabilising’ bids to provide price support for a new issue, but rather over-sell the issue to hold a short position. Both the studies find that underwriters will cover the short position in a weak IPO by purchasing the shares in the aftermarket, and use the over-allotment option to cover in hot IPOs. The present model attributes these findings to stock flippers. The model shows that stock flippers encourage a lower offer price and over-selling of the issue, which may lead the underwriters to take a short position in the issue. The short position must be covered either with aftermarket repurchases or with shares from the over-allotment option. In effect, over-selling, combined with green shoe option, gives the underwriter a put option, which limits losses on the over-sold position. The model implies that the underwriter can profit from flippers by covering the short position with aftermarket purchase in weaker IPOs, i.e., in those where the aftermarket price falls below the offer price. This view of the model is different from some of the existing models of price stabilisation, which imply that aftermarket purchases are costly to the underwriting syndicate and thus reduce profits. For example, Benveniste et al. (1996) suggest that price support is a bonding mechanism that allows investors to pre-commit to purchase the IPO without worrying that the underwriter is promoting it to generate a higher offer price. Chowdhry and Nanda (1996) show that price stabilisation helps to alleviate the ‘winner’s curse’ for uninformed investors. Hanley et al. (1993) suggest that a weak issue may harm the underwriter’s reputation and therefore affect future IPO opportunities. Aftermarket price support helps reduce the loss of reputation capital. Schultz and Zaman (1994) argue that the underwriter uses stabilisation to control the final size of the issue. Ritter (1998) suggest that price support may allow underwriters to favour certain clients over others and that selling extra shares (to be repurchased in the aftermarket) increases the demand for the issue.

Ljungqvist and Wilhelm (2002) examine whether or not, discretionary share allocation in IPO is beneficial, or whether it should be more accurately (and pejoratively) thought of as a discriminatory practice that serves bankers’ interest at the expense of other parties to the transaction. Using a sample of 1,032 IPOs between January 1990 and May 2000 consisting of three parts – 15 EU countries, non-EU Europe, and the rest of the world, study aims to estimate the structural links between IPO allocations, pre-market information production, and initial underpricing. The important findings of the study are allocation policies favour institutional investors, both in the US and worldwide.
Increasing institutional allocations result in offer prices that deviate more from the pre-marketing price range. Constraints on bankers' discretion reduce institutional allocations and result in smaller price revisions, indicating diminished information production. Finally, initial returns (percentage relation between offer price and market price on fifth day of trading) are directly related to information production and inversely related to institutional allocations. Overall results of the study indicate that discretionary allocation does not pose a net cost to issuers because it promotes price discovery in primary markets and diminishes the attendant costs of information acquisition. These results are consistent with Benveniste and Spindt (1989) who argue that investment banks favour allocating shares to informed/institutional investors in order to induce them to reveal their information, Cornelli and Goldreich (2001) who find that higher allocations are given to those institutional investors who participate regularly and to those who provide more information. Loughran and Ritter (2002) present a prospect theory model explaining why issuers don't object to large amounts of money being left on the table in IPOs. Using a sample of 3,025 U.S. IPOs between 1990 and 1998, study shows that most IPOs leave relatively little money on the table. The IPOs where a lot of money is left on the table are generally those where the offer price and market price are higher than had originally been anticipated. At the same time that underpricing is diluting the present shareholders of firms, the shareholders' wealth increases much higher than they had anticipated. Thus, the minority of issuers losing wealth via leaving large amounts of money on the table are generally simultaneously discovering they are wealthier than they expected to be. By integrating the loss with the gain, they are left happy, even though they have just been victimized. Thus, the explanation offered by the study emphasizes the covariance of the money left on the table and changes in the wealth of the issuing firm's decision makers. The partial adjustment of offer price is based on the Benveniste and Spindt (1989) model of IPO underpricing which predicts that regular investors should be rewarded for revealing their private information. Regular investors, in order to truthfully reveal their demand to an underwriter during the book-building phase of an IPO's marketing, must be rewarded with more underpricing on deals for which there is strong demand. Thus, deals in which the offer price is revised upward will have greater underpricing. Finally, study also argues that underpricing is a form of indirect compensation to underwriters. First, it makes it easier for them to find buyers for IPOs reducing their marketing costs (Baron, 1982). Second, investors will engage in rent-seeking behavior to improve their priority.
for being allocated shares in hot IPOs. They do this by trading with the brokerage arm of the underwriters and overpaying for commissions.

Lowry and Shu (2002), using a sample of 1,841 U.S. IPOs between 1988 and 1995, examine the relation between risk and IPO underpricing and test two aspects of the litigation-risk hypothesis. Results show that the relation between the probability of a lawsuit and initial returns lends support to both the insurance and deterrence aspects of the litigation-risk hypothesis. First, firms with higher legal exposure tend to underprice their offerings by a significantly greater amount, suggesting that firms use underpricing as a form of insurance against further litigation (insurance effect). Second, consistent with the effectiveness of underpricing as a form of insurance, study provides evidence that underpricing decreases the expected litigation cost by reducing lawsuit probability (deterrence effect). Findings of the study support Ibbotson (1975) and Timc (1988) who posit that firms intentionally underprice their shares as a form of insurance against future liability. Timc (1988) especially finds that the 1933 Securities Act in the U.S. increased expected litigation costs, and therefore resulted in more underpricing, but contradicts Drake and Vetsuypens (1993) who find that sued firms are not overpriced and interpret their result as inconsistent with the litigation-risk hypothesis. Finding of the study also goes against the arguments by skeptics of the litigation-risk hypothesis, Alexander (1993) among others, who point to the high cost of underpricing relative to the average lawsuit settlement costs and the low historical lawsuit frequency.

Amihud et al. (2003) examine adverse selection or winner's curse theory by Rock (1986) and information cascade or herding theory by Welch (1992) explaining IPO underpricing using a sample of 284 Israeli IPOs that went public between November 1989 and November 1993 and where the allocation to subscribers is by equal proration which enables to simulate the return earned by uninformed investors. Study finds that underpricing is negatively related to the rate of allocation to subscribers, which is consistent with the existence of adverse selection. However, the mean initial return earned by uninformed investors is negative which is because they lose on overpriced offers while apparently their allocations in underpriced offers are too small. This is inconsistent with Rock's (1986) prediction that in equilibrium, uninformed investors should earn zero initial return and therefore, present study suggests that IPOs are overpriced from the viewpoint of uninformed investors. Next, examining herding effect, study finds that the distribution of allocations to IPO subscribers exhibits an extreme U-shaped pattern, indicating strong herding among investors. Investors either subscribe...
overwhelmingly to new issues or largely abstain, in which case the issue is undersubscribed. This is consistent with Welch’s theory of information cascades by which investors set their own demand after having observed the demand of others. This leads to herding where investors’ demand is either very high or is very low, in which case the offering fails.

Burch and Fauver (2003) examine the pricing of U.S. IPOs by foreign firms that are already seasoned in their domestic countries. Presumably, these equity offers have less downside risk for investors than typical IPOs since domestic share prices can be used to help establish a preoffer value for the firm’s equity. In spite of the presumed diminished downside risk, study finds that offers by firms from countries that impose foreign ownership restrictions and capital controls are, on an average, underpriced, experiencing an average first-day return in the U.S. of 12.7 percent. This result stems in part from the underwriter’s failure to price the issue to fully reflect the post-offer premium that often arises for the U.S. shares. In contrast, offers by firms from countries without ownership restrictions have an average first-day return of 0.0 percent.

Demen and Womack (2003) address the question of what kind of selling and underwriting procedure might be preferred for controlling the amount and volatility of underpricing using 264 French equity offerings between 1992 and 1998. Of the three mechanisms in France—book-building procedure, auction mechanism, and fixed price mechanism—the first two are dominant in French capital market. Study computes regressions where mean and, separately, the variance of the underpricing of the IPO firms is explained by firm-specific and recent market return independent factors. Market return, a proxy for the overall market’s price momentum in the three months prior to an offering, is found to be a significant ex ante predictor of the level of underpricing in French IPOs. Further, examining which underwriting mechanism best controls its effect on IPO underpricing, study finds that the auction mechanism is associated with less underpricing and lower variance of underpricing. Regression analysis shows that the auction procedure’s ability to incorporate more information from recent market conditions into the IPO price is an important reason for the reduced underpricing and lower variance of underpricing. The finding of the study as to which mechanism is capable of reducing volume and variability in underpricing is relatively unexplored in the U.S. since one selling procedure, book-building, has predominated the capital market. Still, there have been some theoretical works testing the efficiency of issue mechanisms. Benveniste and Spindt (1989) suggest that American book-building procedure is efficient, since it
encourages investors to reveal their beliefs about the issue’s value, at a cost of initial underpricing. Welch (1992) focusing on fixed-price procedure, used in some European countries, shows that this procedure can cause informational cascades. Benveniste and Busaba (1997) present a theoretical comparison of the two listing mechanisms and conclude that book-building procedure generates higher expected proceeds than if a fixed-price method is used.

Demers and Lewellen (2003) explore the potential marketing benefits of going public and of IPO underpricing \([\text{closing price on the first trading day-offer price}/\text{offer price}]\) by examining the impact of IPO underpricing on website traffic, which is a direct measure of product market performance for internet firms and also using IPO-related media interest. Trueman et al. (2001) establish that internet traffic measures, such as the number of unique visitors to a company’s website, are significantly associated with future revenues, while Hand (2000), Rajgopal et al. (2000), Demers and Lev (2001) establish that such measures are significantly associated with the contemporaneous market values. To analyze web-traffic data, study uses a sample of 55 internet IPOs that went public from April 1999 through December 2001, to analyze IPO-related media interest, which does not involve web-traffic data, study uses two more samples – 373 internet IPOs and 220 non-internet IPOs that went public from January 1990 through February 2000. Examining the impact of IPO underpricing on the website traffic of internet companies, study finds that underpricing is positively associated with post-issue growth in web-traffic, after controlling for other determinants of traffic growth. Estimating the cost associated with gaining one additional website visitor through underpricing for an average internet firm suggests that initial returns generate significant marketing benefits for internet firms, and that underpricing might be substantially less costly for these firms than suggested by the raw amount of money left on the table at IPO. To investigate IPO-related media interest generated by underpricing, study examines the association between post-IPO media exposure, an indirect measure of marketing benefits, and IPO underpricing. Findings reveal that media mentions in the month of IPO are positively associated with underpricing for both internet and non-internet samples. Overall findings of the study suggest that there are marketing benefits associated with going public and with IPO underpricing, and these benefits extend beyond the internet sector and the hot issues market of late 1990s for the U.S.

Aggarwal (2003) examines the role of flipping activities in the IPO aftermarket using a sample of 193 U.S. IPOs issued between May 1997 and June 1998. Study finds initial
trading volume to be high in IPOs, however, flipping accounts for only a small proportion of this trading volume. Flipping accounts for only 19 percent of trading volume and 15 percent of shares offered, during the first two days of trading. Study attributes high trading volume in the IPO aftermarket to other factors such as buying and selling by investors who are not necessarily original buyers of the IPO, or trading activity between market makers. Flipping is found to be more prevalent among hot IPOs than among cold IPOs. Even though, Kriegman et al. (1999) find that flipping accounts for 45 percent of trading volume on the first day in cold issues compared to only 22 percent in hot IPOs, their results are driven by the low trading volume in cold IPOs and high trading volume in hot IPOs. Further, study finds that institutions consistently flip a larger proportion of shares allocated to them than do retail investors. This result does not lend support to the hypothesis that institutions are strong hands that hold onto their shares for the long term and are therefore favored in the allocation process (Wall Street Journal, May 5, 1999, p C19). Finally, institutions do not quickly flip cold IPOs to take advantage of price support activities by the underwriter. Overall, the present study is superior to Kriegman et al. (1999) in studying flipping activities because the present study relates flipping to initial allocations while Kriegman et al. relate flipping to trading volume.

Corwin et al. (2004) analyse the liquidity provision for IPOs using a sample of 220 NYSE-listed IPOs between January 1995 and September 1998. They find that for NYSE-listed IPOs, limit order submissions and depth relative to volume are unusually low on the first trading day. Initial buy-side liquidity is higher for IPOs with high-quality underwriters, large syndicates, low insider sales, and high premarket demand, while sell-side liquidity is higher for IPOs that represent a large fraction of outstanding shares and have low premarket demand. The results of the study suggest that uncertainty and offer design affect initial liquidity, though order flow stabilizes quickly. Study also finds that submission strategies are influenced by expected underwriter stabilization and preopening order flow contains information about both initial prices and subsequent returns.

Ejara and Ghosh (2004) present comparative analysis of the pricing and aftermarket performance of IPOs by ADRs and a matching sample of US firms over the 1990-2001 period. Offered by large, well-known multinationals, ADR IPOs go through a detailed scrutiny, and incur significant costs, during the pre-IPO period to recast financial statements in conformity with SEC rules and the US GAAP. This mitigates the information asymmetry between the IPO firm and investors. The analyses of the study
indicate that (1) ADR IPOs are significantly less underpriced than comparable U S IPOs, (2) IPOs from developed countries are more underpriced, and (3) Privatisation IPOs are less underpriced than non-privatisations. The lower underpricing of ADR IPOs persists even after differential IPO attributes, the traditional proxies for information asymmetry and, the unique characteristics associated with ADR IPOs, are accounted for. Finally, study concludes that extant literature offers only partial explanation for this puzzling phenomenon.

Lowry and Schwert (2004) investigate underwriters' treatment of public information throughout the IPO pricing process and sheds light on the extent to which the IPO price setting process is efficient. Using a sample of 3,878 U S IPOs that went public between 1985 and 1999, study finds that underwriters do not fully account for publicly available information when they set the preliminary price range. The statistical significance of these relations suggests that the midpoint of the price range is a biased predictor of the offer price. Public information can predict about 3 percent of the variation in the price update. The low economic significance of the relation indicates that underwriters do in fact incorporate most public information into the preliminary price range. Even if underwriters tend to omit available information, study notes that there is no opportunity to profit from this bias. Further, focusing on the relation between initial returns and public information learned during the filing period, study finds a statistically significant relation between initial returns and market returns before the offering, indicating that public information is not fully incorporated into the offer price. This is partially consistent with Loughran and Ritter (2002a) findings suggesting that public information is only partially incorporated into the offer price, even though Benveniste and Spindt (1989) would not predict this. However, unlike Loughran and Ritter (2002a), study finds the economic significance of this relation to be quite low suggesting that almost all public information is incorporated into the offer price. Overall, findings of the study show that while underwriters omit some public information when they set both the initial price range and the final offer price, the vast majority of public information is, in fact, fully incorporated, and hence, it appears that the IPO pricing process is almost efficient.

risk composition hypothesis, introduced by Ritter (1984) assumes that riskier IPOs would be underpriced by more than less-risky IPOs. The realignment of incentives hypothesis, which was introduced by Ljungqvist and Wilhelm (2003), argues that the managers of issuing firms acquiesced in leaving money on the table during the 1999-2000 bubble period, reasons for increased acquiescence are reduced CEO ownership, fewer IPOs containing secondary shares, increased ownership fragmentation, and an increased frequency and size of ‘friends and family’ share allocation. The changing issuer objective function hypothesis has two components – firstly, spinning hypothesis which argues that underwriters set up personal brokerage accounts for venture capitalists and the executives of issuing firms in order to allocate hot IPOs to them and secondly, analyst lust hypothesis according to which issuers place more importance on hiring a lead underwriter with a highly ranked analyst to cover the firm and they become less concerned about avoiding underwriters with a reputation for excessive underpricing. Study finds that much of the increased underpricing in the bubble period is consistent with the predictions of the changing issuer objective function hypothesis. Using multiple regression tests, study finds little support for changing risk composition and the realignment of incentives hypotheses in explaining increase in underpricing over time. Consistent with the changing issuer objective function hypothesis, study finds that underpricing becomes much more severe when there is a top-tier lead underwriter in the latter time periods. Further, these conclusions are not substantially altered even after controlling for the endogeneity of underwriter choice.

Cheng et al (2004) examine the intraday patterns of IPOs in Hong Kong using a sample of 159 IPOs during the period 1995-1998. For each IPO, offer-to-open return and 47 intraday return series, involving 47 five-minute trading interval, are computed on the first day of trading. Findings of the study reveal that IPO underpricing occurs only at the pre-listing market and vanishes afterward or to say that Hong Kong market is efficient in adjusting for IPO underpricing. There is profit opportunity only for those investors who could subscribe for new issues and no profit opportunity for day-traders who buy and sell shares of newly listed issues during the first trading day. Investors could make a quick profit of 14.9 percent if they subscribe for the new issues and sell them in the opening transactions during the sample period. However, the degree of underpricing declines after the Asian financial crisis of 1997. The intraday return volatilities, computed using highest and lowest price during each interval, are high during the beginning and the end of trading sessions. McGunness (1992) studying 92 IPOs in Hong Kong in the period 1980-
1990 finds that most of the post listing returns are attained by the close of the first trading day. However, the study did not examine the intraday trading pattern like Chen et al. and also the sample periods of the two studies are totally different.

Camp et al. (2006), studying 49 IPOs listed on New Zealand Stock Exchange between October 1989 and October 1992, explain why the choices issuers make at the offering (e.g., underpricing) might seem irrational when considered in isolation, but when considered within the multidimensional menu of choices they appear rational. The study argues that the choices made by the issuers are strategic. The average change in the issuer's wealth (4.52 per cent) is lower than the average loss implied by underpricing (12.09 per cent). The results support the notion that the choices issuers make at the offering generate a compensatory benefit in the aftermarket. The issuer is compensated for the cost of going public through enhanced aftermarket trading volume, which is highly valuable to issuers in an environment where the escrow of IPO shares is voluntary.

Overall, the findings of the study conclude that the choices issuers make at the offering reflect the trade-off between the costs and benefits of the IPO.

Chaturvedi et al. (2006) attempt to identify causal variables responsible for underpricing of Indian IPOs using a sample of 50 Indian IPOs that went public between January 1999 and April 2005 following book-building route. Study uses a multiple linear regression model with underpricing or first-day gain as dependent variable. Study finds that it is the extent of oversubscription of an IPO, which determines the first day gains. Oversubscription in turn, is being determined by several factors which work as strong signals. These signals that lead to oversubscriptions are market index during the period of IPO, type and nature of business, foreign collaboration or the track record of promoters/company. If these signals are strong, they lead to a 'rush' for that particular IPO and, thus, oversubscription. Such oversubscription leads to larger first-day gain for the IPO as many of the unsuccessful applicants approach the secondary market on the first day of trading bidding for the shares and thus putting upward pressure on the price.

Prasad et al. (2006) examine the results of the implementation of a Malaysian government policy in 1976, which mandated that at least 30 percent of any new shares on an IPO offer be sold to the indigenous Bumiputera population or to mutual funds owned by them. The study examined the short-run and long-run underpricing of 113 Malaysian IPOs that went public between 1968 and 1992 and found that Malaysian IPOs are highly underpriced compared to IPOs in developing countries, creating a market microstructure effect. It also confirmed that the Malaysian government's regulatory intervention in spite
of noble public policy intentions appeared to be the significant factor for the emergence of an average first-day underpricing increase of Malaysian IPOs by 61 percent during the period after the regulatory economic policy was instituted. Furthermore, the study found that this high underpricing persists even for the long run, in contrast to the long-run performance of IPOs in the U.S. These results imply that conventional explanations alone, such as information asymmetry, fads, and demand pressure, among others, may be inadequate to fully explain the relatively high levels of underpricing of Malaysian IPOs compared with any other share market, suggesting an impact of a unique 'market microstructure'.

Ellis (2006) examines the enormous trading volume in the first two days of trading following an IPO using a sample of 559 Nasdaq listed IPOs during October 1996 to June 1997. Study finds that the composition of trading varies widely with the initial return and not all trading is investor-related. In hot IPOs, large trading volume represents large investor interest. Customers are buying and selling shares equally and shares are owned by investors at the end of two days of trading. Market makers do not build large inventory positions, but rather act as intermediaries for customer trades. However, in cold IPOs, trading volume mostly comprises flipping trades and interdealer trades. Flipped shares are bought and sold again in the first two days, with the majority accumulating in market-maker inventory and then being sold to lead underwriters. They are then used to cover the lead’s short position. Very little new investor demand exists in the aftermarket, and market-makers provide liquidity to investors who wish to sell in the absence of other buyers. These findings of the study support Krigman et al. (1999) who find flipping to be highest in IPOs with lowest initial return, find that flipping accounts for almost half of the trading volume (45 percent) for cold IPOs, but only 14 percent for hot IPOs. However, findings contradict Aggarwal (2003) who finds that flipping is highest in hot IPOs and lowest in cold IPOs, on average, only 15 percent of shares sold in an offering are flipped. Bayley et al. (2004) who find that flipping only accounts for small proportion of trading volume in Australia and also day trades comprise more than 50 percent of post-listing trading.

Cook et al. (2006) test whether pre-issue publicity attracts retail or noise investors to an IPO, and attracting retail investors through publicity is good for issuers, investment bank’s regular IPO investors, and to investment banks themselves, using a sample of 3,123 U.S. IPOs with offer dates between 1993 and 2000. Study uses number of articles involving firm’s name as a measure for the pre-issue publicity associated with an IPO and
HPR as a measure of post-IPO performance. Study finds a positive and significant correlation between retail trading activity during the first day of trading in an IPO and the IPO's pre-issue publicity. Pre-issue publicity is also positively correlated with upward revisions in IPO offer prices and offer price valuations that are above comparable firms in their industry. Insider wealth gains exceed their dilution losses when more pre-issue publicity is associated with their IPO. Initial IPO returns are positively correlated with pre-issue publicity. Investment banker compensation is positively and significantly correlated with pre-issue publicity. Finally, reinforcing the importance of marketing to issuers and investment bankers, study finds that issuers are less likely to switch lead investment bankers when they are effective at promoting their IPO but, when they do switch, they often are able to increase the pre-offer publicity associated with their SEO. These findings of the study are consistent with the models in Demen (2005) and Ljungqvist et al. (2006) who argue that issuers and regular (institutional) customers of investment bankers benefit from the presence of sentiment investors or noise traders in the market for an IPO. Dorn (2003), Cornelli et al. (2006), and Purananandam and Swaminathan (2004) also provide evidences consistent with these models. Hill (2006) examines the relationship between IPO underpricing (percentage return from offer price to first day closing price) and share ownership dispersion in the aftermarket using a sample of 502 UK IPOs listed on LSE between 1991 and 1998. Study finds that IPO underpricing does not play a significant role in determining the proportion of block holding (holding in excess of 3 percent of the issued share capital of the firm post issue) in the share ownership structure of a firm, either at the IPO, or over the long term (7 years post issue). Such a finding supports Field and Sheehan (2004) who, studying the US IPOs, find no evidence that underpricing plays a role in determining the post IPO share ownership structure. However, the finding contradicts Stoughton and Zechner (1998) who argue that underpricing arises from managers' attempts to encourage a block shareholder to undertake monitoring of the firm post the IPO and Brennan and Franks (1997) and Booth and Chua (1996) who argue that underpricing can be employed to encourage oversubscription which allows managers to achieve ownership dispersion post the IPO. Hill and Wilson (2006) analyse the relationship between IPO underpricing (percentage return from offer price to first day closing price) and value gains on flotation using a sample of 502 UK IPOs listed on LSE between 1991 and 1998. Study finds that underpricing is significantly related to various proxies for anticipated value gains on the
This is consistent with Noland and Pavlik (1998) who suggest that IPO underpricing is related to the extent of value gains on flotation. Their study was based on two other works: Merton (1987) who argues that an IPO will lead to an increase in firm value relative to its incomplete information equilibrium value owing to the effect of an IPO on the distribution of information about a firm across the investor community, and Amihud and Mendelson (1986) who provide evidence that since an IPO would be expected to increase the liquidity of a firm’s shares, there should be a reduction in the required rate of return on these shares upon listing and thus a negative relationship between required returns and liquidity. The present study further evaluates two alternative driving mechanisms behind this relationship which are:

1) Where investors are given large returns in IPO, directors of the company are given a more positive reception to the rigours of managing a listed company, from which they derive non-monetary utility. Underpricing provides a pool of goodwill from which issuing company hopes to benefit from future SEOs. Also, as Chemmanur (1993) argues, underpricing at the IPO improves post IPO value by encouraging increased following of the firm by analysts. Directors gain from this increased value via a reduction in the threat of takeover and also they gain monetarily where they retain shares in the firm. 

2) Underwriters have an incentive to underprice since the gains from underpricing, i.e., the long run profits from the repeat business of key clients, outweigh the losses in the form of lost commission at the IPO which is dependent on gross proceeds. Results of the study suggest that underpricing is driven by both underwriters and issuing company directors, each of whom derive net benefits over the longer term from underpricing at the IPO.

Hao (2007) identifies factors that create incentives to engage in laddering (a practice whereby the allocating underwriter requires the ladderer to buy additional shares of the issuer in the aftermarket as a condition for receiving shares at the offer price) and models the effect of laddering on IPO pricing. Study has several important implications. First, in equilibrium, more expected underpricing (without laddering) leads to a greater extent of laddering. Second, if there are information momentum effects, whereby positive initial returns of IPO stocks induce more information production and additional demand, there also is a greater extent of underpricing. Third, laddering results in a higher offer price being chosen by the underwriter, if the ladderers are not expected to sell all their shares in the immediate aftermarket. Fourth, because the offer price is not increased as much as the first day closing price is increased by laddering, laddering increases money left on the table. Fifth, laddering by itself does not necessarily increase the realised percentage of
underpricing. Sixth, by boosting the immediate aftermarket price, laddering contributes to long-run underperformance and a negative correlation between short-run and long-run returns. Finally, when the underwriter shares in the profits that its investor clients make on underpriced IPO allocations, the incentives to engage in laddering are increased.

Lowry and Murphy (2007) examine whether IPO options to top executives and IPO underpricing are positively related (managerial influence hypothesis) using a sample of 874 U.S. IPOs (288 with IPO options, 586 with no IPO options) that went public between 1996 and 2000. Study finds no evidence that U.S. firms granting IPO options have higher first-day returns than firms not granting such options. This finding is inconsistent with the hypothesis that top executives of firms with IPO options take actions to increase the value of these options by setting especially low offer prices. The results are consistent with other parties, such as underwriters or board of directors, having greater influence than executives in influencing either the offer price or the timing of IPO options. Findings of the study contrast sharply with literature on managerial self-dealing at shareholder expense. For e.g., Ljungqvist and Wilhelm (2003) find a positive relation between the proportion of family and friends' shares and underpricing. Rocholl (2005) finds that top managers in approximately 80% of German Neuer Markt IPOs during 1997-2001 are granted IPO options and these IPOs are significantly more underpriced than IPO companies in which no top executives hold IPO options.

Griffin et al. (2007) examine client trading in the IPO aftermarket using a sample of 1,294 Nasdaq listed IPOs that went public between 1997 and 2002. Study finds that on the first day of trading, over 85 percent of the sample IPOs experience more client buying than selling through the bookrunner (lead underwriter) and purchases of lead underwriter clients exceed sales by an amount equal to 8.79 percent of the total issue. Lead underwriter clients do not buy to build larger long-term positions (inconsistent with strategic allocation to long-term shareholders), capitalize on superior execution quality (inconsistent with bookrunner offering more attractive prices to encourage buying or discourage selling), or because of clientele effects (inconsistent with investors migrating their trading to brokerage houses that have a propensity to issue IPOs). However, characteristics of net buying that are at odds with these explanations and other behaviors (like institutional purchases of cold IPOs) are all consistent with lead underwriters engaging in quid pro quo arrangements (consistent with laddering) with clients. Thus, the results are strongly consistent with the laddering hypothesis and inconsistent with other explanations. This finding is in line with Fulghieri and Spiegel (1993) model which
shows how an investment bank allocates underpriced shares to clients who provide business for other parts of the bank and Loughran and Ritter (2002) who provide an explanation for the firm's ex ante choice of an underwriter who is likely to underprice the issue ex post and because underpricing is lucrative for clients of the underwriter who receive IPO allocations, these clients engage in rent-seeking behavior to increase their probability of receiving shares. Finally, price contribution analysis over the first day of trading shows that such client buying activity contributes to first-day price increases, most bookrunner client net buying occurs in the first 30 minutes of IPO trading, suggesting that this demand likely contributes to the opening secondary market price.

Dolvin and Jordan (2008) test whether or not periods of high underpricing, measured as a first-day return, adversely affect wealth of preexisting shareholders using a sample of 4,913 U.S. IPOs issued between 1986 and 2004. In doing so, study focuses on two issues. First, it examines the average level of underpricing over time in conjunction with the extent of share retention, measured using ‘overhang’ which is the ratio of shares retained to shares offered, by preexisting shareholders. In addition, study estimates the underlying wealth loss from underpricing as a percentage of the estimated value of shares owned by the preexisting shareholders of the firm i.e. opportunity cost of issuance or OCI. To test the relationship among the three, study divides the whole sample period into four sub-periods and computes underpricing, share overhang, and OCI for each sub-period. Study finds that underpricing has varied substantially over time, especially during the third sub-period of internet bubble, while share overhang remains essentially constant during the first two sub-periods, increasing during the third one, and falling back during the last. OCI has varied within a relatively narrow range, in fact, after controlling for various firm and market characteristics, study does not find any significant change in OCI over the four sub-periods. Overall, the variation in IPO underpricing through time has generally been accompanied by similar, offsetting movements in overhang and this relation results in an OCI that is essentially stable through time, particularly after controlling for characteristics of the offer. Finally, many factors known to be related to underpricing are not found to be significant determinants of OCI to the preexisting owners.

Flag and Margetis (2008) investigate how underpricing is affected by lead underwriters. Most research articles have focused on one primary control for underwriters, the Carter and Manaster (1990) ranking, when controlling for the influence underwriters have on underpricing. The present study proposes some new controls to explain better how underwriters influence underpricing, supplementing underwriter ranking with a deal flow.
measure and previous underwriter underpricing. These new measures are not only statistically significant but also increase the explanatory ability of the model in explaining underpricing. These results support Lowry and Schwert's (2004) notion that IPO pricing does not fully incorporate all public information available.

Garg et al (2008) examine whether underpricing exists in the Indian stock markets and if so, what is the effect of various factors — such as bullish and bearish market, or hot and cold periods — on the level of underpricing using a sample of IPOs listed on NSE for the period 2000-2006. Short-term underpricing is measured from offer price to first day closing price while long-term underpricing is measured from offer price/first day opening price to closing price on 90th and 120th trading day. The findings of the study are that there exists a significant level of underpricing in the short-run, IPOs are usually overpriced over long-period, first day return computed from opening price does not differ significantly from the return computed from closing price, the level of underpricing does not differ much in the hot and cold IPO markets, and finally, abnormal returns from IPO underpricing differ significantly in the bearish and bullish phases of the market.

Bora et al (2012) study underpricing of book-built and fixed-priced IPOs in India by taking a sample of 72 fixed-priced and 231 book-built IPOs that were listed between April 2001 and June 2011. Underpricing is computed from offering price to the opening price on the listing day. Study finds underpricing of 21.42 percent for fixed-priced IPOs and 18.22 percent for book-built IPOs, both not adjusted for market returns. Thus, computation of raw underpricing (without adjusting for market movement) exhibits that book-building leads to better and efficient pricing of IPOs when compared to fixed-price method. However, when market-adjusted underpricing is computed, the difference disappears with 16.71 percent for fixed-priced IPOs and 16.75 percent for book-built IPOs. Further, the study analyses the long run performance for both the sub-groups taking the average of 52 week high and low price at which these IPO shares were traded on BSE for the year 2010-2011 (current price) and then computing Karl Pearson's Coefficient of Correlation between the issue price and the current price. Study finds that IPOs following fixed-price method perform better than book-built IPOs in the long run. Finally, study also notes that most of the small sized IPOs prefer fixed-priced mechanism, while IPOs of bigger size prefer book-building route.

This section discusses various research papers on the underpricing of IPOs. The studies mainly concentrate on wide range of theories and explanations developed explaining underpricing. Allen and Faulhaber (1989), Grunblatt and Hwang (1989), and Welch...
(1989) state that high quality firms deliberately underprice their IPOs to signal their quality with the hope of recouping this initial loss through better price in SEOs. Findings of Aggarwal et al. (2002) that higher ownership by insiders is positively correlated with first day underpricing is consistent with Welch (1989) that high quality firms underprice their IPOs more in order to get better price for SEOs. Also Hammed and Lim (1998) find support for the theories. However, Garfinkel (1993), and Michaely and Shaw (1994) do not find support for the signaling theories. While Lowry and Shu (2002) find support for the Litigation Risk Theory of IPO underpricing, originally developed by Logue (1973), Ibbotson (1975), and Timc (1988),–, Drake and Vetsuypens (1993) do not find any support for the theory. Johnson and Miller (1988) and Carter and Manaster (1990) argue that IPOs underwritten by prestigious underwriters exhibit lower underpricing. Rock (1986) develops information asymmetry theory of IPO underpricing where there are two groups of investors – informed and uninformed. In line with this theory, Beatty and Ritter (1986) demonstrate that there is a monotone equilibrium relation between expected underpricing of an IPO and the uncertainty of investors regarding its value. Miller and Reilly (1987) also show that level of underpricing is correlated with both ex ante uncertainty and ex post uncertainty. Michaely and Shaw (1994) find support for the information asymmetry theory, when investor groups are homogeneous, they do not find underpricing.

### 4.4 Long Run Performance of IPOs

Aggarwal and Rivoli (1990) investigate the long run aftermarket price behavior of IPOs from the closing price on day 1 up to 250 trading days (one year) using a sample of 1,598 U.S. IPOs during the period 1977-1987. Study finds that returns to investors who purchase these IPOs at the closing price on day 1 and hold until day 250 are significantly negative after adjusting for market movements. Such a phenomenon is evident in aggregate and also in various cross-sectional groups based on issue size, offering price, year of issue, and underwriter class. Initial day returns are found to be positive and significant for each group. Further, market-adjusted returns to investors who purchase at the initial offering price and hold for 250 days are also negative and when computed for various cross-sectional groups, in no case the return is significantly positive. Such a finding is not consistent with systematic underpricing of the issues by the underwriters. Overall results of the study are consistent with fads explanation i.e. temporary overvaluation caused by over-optimism on the part of investors in the early aftermarket.
for IPOs leading to abnormal returns to investors who subscribe IPO shares at the offer price and dispose them, but not due to systematic underpricing of IPO shares. The finding is consistent with Time (1988) who considers the possibility of the existence of speculative bubbles in the IPO market.

Ritter (1991) examine the long run performance of 1,526 U.S. IPOs from 1975 to 1984. Study finds that these IPOs substantially underperformed a sample of matching firms from the closing price on the first day of public trading to their three year anniversaries. However, study has documented time-and industry-dependence of the long run performance of these IPOs. Younger companies and companies going public in heavy volume years did worse than average. The patterns are consistent with an IPO market in which investors are periodically optimistic about the earnings potential of young growth firms, and companies take advantage of these 'windows of opportunity.' This is consistent with Kim and Stulz (1988) who present evidence that issuers take advantage of differences in borrowing costs that periodically arise between the domestic and Eurobond markets, which provides evidence that issuers successfully time offers to lower their cost of capital. Further, the finding of the present study is consistent with the findings of Weiss (1989) and Peavy (1990) who document that investors in new issues of closed-end funds in 1985-87 suffered substantial losses as the funds moved from premiums over the NAV at the time of issue to substantial discounts 6 months later. Elton, Gruber, and Rentzler (1989) document that publicly offered commodity funds going public in 1979-83 performed poorly, in spite of extremely high monthly returns reported in their offering prospectuses. Finally, Uhlir (1989) documents a pattern of returns of IPOs of common stock in West Germany that is almost identical to that presented in the current study for the 12 months after going public.

Loughran (1993) demonstrates that differences in the characteristics of the companies listed on the two exchanges i.e., NYSE and Nasdaq explain much of the disparity. About 60 percent of the return differential can be attributed to the poor performance of recent initial public offerings, which comprise a large portion of the firms on Nasdaq. On average, IPOs underperform during the six calendar years after going public. This is in contrast to the findings of Reinganum (1990) who reports that small NYSE securities have average returns about 6 percent per year higher than those of similarly-sized Nasdaq securities during the 1973-1988 period. Reinganum attributes the return differential to market microstructure differences.
McGuinness (1993) examine the post-listing return performance of unseasoned offerings of common stock in Hong Kong using a sample of 92 unseasoned offerings for the period 1980-1990. Measuring excess market returns from the first closing traded price in the stocks to various closing dates within a 24 month (500 day trading) post-listing period, indicated that favorable returns within the first few months of listing were reversed leading to a longer term decline in returns with significant negative returns between the first day of listing in the stocks and the 400th and 500th days of listing. Such reversal in return performance over the long term is consistent with Aggarwal and Rivoli (1990), Uhlir (1989) and Ritter (1991) who find that unseasoned issues provide positive returns in the short run but negative returns over the long run. Further, the interviews conducted with investment bankers and analysts revealed three speculative factors as responsible for the reversal of trend. First, financial analysts raised the probability that investment bankers to the offerings might be motivated to 'support' newly listed stocks in the post-listing period. Second, market makers who are major stockholders in the HK market, encourage a speculative rise in stock prices and, upon subsequent selling, drive prices down over the long term. Third, once capital commitment between principal pre-listing stockholders in the offering firms and the investment bankers to the issue elapsed, the initial owners in the offerings could sell their holdings and drive prices down over the longer term. Empirical analysis reveals that offering firms with higher committed capital levels experienced significantly lower cumulative post-listing returns between 180th and 250th days of listing providing support for the committed capital variable in the interview.

Levis (1993) investigates initial and long-run performance of 712 UK IPOs listed on LSE between 1980 and 1988. First day return is measured using offer price and first trading day closing price adjusted for benchmark return, while long-run performance up to 36 months is computed using CAR, BHAR, and WR. Study documents positive average first day return which is consistent across different issue size, proportion of equity offered, and across different time periods. Study also shows that IPOs in the UK underperform different benchmarks 36 months following their first day of trading. The magnitude of underperformance is more pronounced when account is taken of the superior performance of smaller companies during the period. The finding on long-run underperformance of UK IPOs is consistent with Aggarwal and Rivoli (1990), and Ritter (1991) and demonstrates that long-run underperformance of IPOs is not a phenomenon unique to US IPOs. Finally, taking up the issue left unresolved by Ritter (1991), study investigates whether long-run underperformance persists beyond 36.
months. Using a sample of 346 IPOs covering the period 1980-1985, the benchmark-adjusted return by the fourth and fifth year anniversaries of public listing suggests that long-run underperformance extends beyond 36 months.

Aggarwal et al. (1993) examine the aftermarket performance of IPOs in Latin America using a sample of 62 Brazilian IPOs in 1980-1990, 36 Chilean IPOs in 1982-1990, and 44 Mexican IPOs in 1987-1990. Return on a stock is computed using mean holding period market-adjusted returns measured as percentage difference between purchase price and price at the end of a given time period adjusted for market return during the same time period. Study finds initial one-day returns to be 78.5 percent, 16.7 percent, and 2.8 percent for Brazil, Chile, and Mexico, respectively. While the initial return for Brazil is significant, for Chile, and Mexico, they are not significant. The long-run mean market-adjusted return from day one is -47.0 percent in Brazil after three years, while it is -23.7 percent for Chile. The one-year mean excess return from day one is -19.6 percent for Mexico. Even though, all the three measures indicate long-run underperformance, only Brazilian measure is significant. For Brazil, there seems to be a negative relationship between the initial returns and the long-run returns, suggesting overpricing of IPOs on the first trading day. These findings for Latin American markets are similar to the U.S. (Aggarwal and Rivoli (1990), Ritter (1991)) and U.K. (Levis (1993)) pattern of long-run underperformance, suggesting that the long-run performance patterns are not just sample- or country-specific. However, a word of caution is required before coming to such a conclusion because of the small size of the sample and the fact that most IPOs in the study are concentrated during a few years.

Loughran and Ritter (1995) examine the long-run performance of both IPOs and SEOs in the U.S. using a sample of 4,753 IPOs and 3,702 SEOs. Using BHARs, study finds that firms issuing stock during 1970 to 1990, whether an IPO or an SEO, have been poor long-run investments for investors. The average annual return during the five years after issuing is only 5 percent for firms conducting IPOs, and only 7 percent for firms conducting SEOs. Investing an equal amount at the same time in a non-issuing firm with approximately the same market capitalization, and holding it for an identical period, would have produced an average compound return of 12 percent per year for IPOs and 15 percent for SEOs. The magnitude of underperformance is large. It implies that 44 percent more money would need to be invested in the issuers than in the non-issuers to be left with the same wealth five years later. Further, holding both size and book-to-market ratio constant, study finds that issuing firms have lower subsequent returns than nonissuers.
Study also documents that the degree to which issuing firms underperform varies over time. Firms issuing during years when there is little issuing activity do not underperform much at all, whereas firms selling stock during high-volume periods severely underperform. Overall, findings of the study is consistent with a market where firms take advantage of transitory windows of opportunity by issuing equity when, on an average, they are substantially overvalued. This supports the findings of Mikkelson and Shah (1994) who report that for firms conducting IPOs from 1980 to 1983, while their sales grew, total cash flows did not grow sufficiently to justify high valuations at the time of the offerings.

Seguin and Smoller (1997) examine a sample of 5,896 stocks listed on Nasdaq between 1974 and 1988 to see whether the price per share has significant statistical power in forecasting subsequent returns and attrition rates. Consistent with anecdotal evidence, study documents a higher mortality rate for lower-priced stocks than for higher-priced issues. Surprisingly, mortality is not related to market capitalisation. The results also hold for subsamples partitioned by industry and issue year. On an average, investors are not adequately compensated for this additional mortality risk, earning lower risk-adjusted rates of return on portfolios of lower-priced shares than on portfolios of higher-priced shares.

Steib and Mohan (1997) examine the performance of 103 German IPOs that went public during the early years of the German reunification. These IPOs generated positive initial returns of 7 percent approximately over the entire period of April 1988 to August 1994. These initial returns, however, were subject to significant fluctuations depending on the four subperiod during which the new equity was offered to the public: ‘East Phantasy’, ‘Reunification Euphoria’, ‘Disillusionment’, and ‘Optimists Recovery’. However, these same IPOs, on an average, performed poorly in the long-run. The period starting immediately before reunification and ending in early 1994 is characterized by changing market sentiments. The research shows that risk, initial returns, and aftermarket trading of IPOs are affected by prevailing market sentiments.

Rajan and Servaes (1997) examine data on analyst following for a sample of 2,725 U.S. IPOs completed between 1975 and 1987 to see how well they relate to three well-documented IPO anomalies—initial underpricing, long-run underperformance, and market timing of IPOs. Study finds that higher underpricing leads to increased analyst following. Analysts systematically overestimate the earnings potential and long-term growth prospects of these companies, they are not only overoptimistic, but are more
overoptimistic about a firm’s long term prospects than a firm’s short term prospects. Study documents a positive relation between the number of IPOs coming to the market in a given industry during a given quarter and long-term earnings growth projections for recent IPOs in these industries. This finding suggests that firms take advantage of the optimism by raising funds from the public. This is consistent with Lerner (1994) who, using a sample of venture backed biotechnology firms, finds that these firms go public when equity valuations are high. Loughran and Ritter (1995), and Rajan and Servaes (1995) who argue that firms take advantage of windows of opportunity. Finally, relating the long-term growth projections to the aftermarket stock price performance of IPOs, study finds that firms with superior projected growth substantially underperform indicating that investors appear to believe the inflated long-term growth. This finding is similar to the finding of Teoh et al. (1995) who argue that firms adopt discretionary accounting accruals adjustments to manipulate reported earnings before and soon after the IPO and as a result firms with extensive discretionary accounting accruals perform poorly in the aftermarket.

Madhusoodanan and Thirpalraju (1997) analyse the price behavior of Indian IPOs in the short-run as well as long-run. Using a sample of 1,922 IPOs that went public between 1992 and 1995, study computes listing day, one month, three months, six months, one year, two years, and three years returns after listing and adjusts these returns using the returns on the BSE Sensex for the corresponding period. Findings of the study indicate that, in general, the underpricing in the Indian IPOs in the short-run is higher than the experience of other countries. In the long-run too, Indian offerings have given high returns compared to negative returns reported from other countries. Further, study also reveals that none of the merchant bankers showed any better pricing capabilities. Finally, issues with firm allotments to mutual funds and NRIs prior to the issue performed worse than issues without allotments, thus proving that firm allotments to market the issue is a gimmick. Mutual funds which are supposed to be better investment managers than common investors have fooled themselves by subscribing to firm allotments prior to the issue, in general, at a higher premium than others.

Page and Reyneke (1997) examine the long-run performance of IPOs from South Africa using a sample of 118 IPOs listed on Johannesburg stock exchange between 1980 and 1991. HPRs up to 48 months which analyses on monthly return basis with first month starting from the closing price on the listing day are used. Study finds that over the first four years of their listing, issuing companies significantly underperform a set of
comparable companies matched by size, P/E ratio, as well as their relevant JSE sector indices. The underperformance is evident in aggregate and in various cross-sectional groupings based on size, initial return, percentage of equity offered to the general public, and number of times for which the issue is over-subscribed. Use of four year wealth relatives also indicates significant underperformance. The four year underperformance exceeds the initial underpricing and, consequently, investors who purchased at the initial offer price and held onto the shares also underperform in the long term which is particularly consistent with Aggarwal and Rivoli (1990) who find that investors who purchase at issue price and hold for 250 trading days experience negative returns.

Overall, results of the study is in line with international evidence of long run underperformance of IPOs documented by various researchers like Ritter (1991), Loughran (1993), and Loughran and Ritter (1995) for the U.S., Levis (1993) for the U.K., Aggarwal et al (1993) for Latin America, and Keloharju (1993) for Finland. Carter et al (1998) examine three alternative measures of underwriter prestige and their association with initial (underpricing) and long-run returns (computed from the offer date +6 through the earlier of offer date +765 or the stock’s delisting date using a buy-and-hold strategy) on IPOs using a sample of 2,292 U.S. IPOs issued between 1979 and 1991. The three prestige measures used are – Johnson and Miller (1988), Carter and Manaster (1990), and Megginson and Weiss (1991). Study finds that underperformance of IPOs relative to the market over three-year holding period is less severe for IPOs handled by more prestigious underwriters. Study also finds that IPOs managed by more reputable underwriters are associated with less short-run underpricing. These findings are consistent with Michaely and Shaw (1994) who, using investment bank’s capital as a proxy for its prestige, find that IPOs managed by high prestige investment bankers tend to have smaller initial returns and less negative long-run returns than do IPOs handled by lower reputation underwriters. It is reasonable to presume that higher quality underwriters attempt to market IPOs that will experience the least negative long-run market-adjusted returns as Chemmanur and Fulghieri (1994) argue that investors use the investment bank’s past performance, as measured by the quality of firms in which they have previously sold equity, to assess their credibility. By marketing IPOs that have relatively better long-run performance, investment banks protect their reputation.

Finally, in the regression analysis, the MW and the JM measures become insignificant when the CM measure is introduced simultaneously indicating that CM underwriter reputation proxy has relatively greater explanatory power than the other two proxies. Among the three
existing proxies for underwriter reputation, the CM measure is the most significant in the context of initial returns and also in the context of the three-year performance of IPOs. Brav et al. (2000) examine whether a distinct equity issuer underperformance anomaly exists. In a sample of IPO and SEO firms from 1975 to 1992, study finds that underperformance is concentrated primarily in small issuing firms with low book-to-market ratios. SEO firms that underperform these standard benchmarks have time series returns that covary with factor returns constructed from non-issuing firms. Study concludes that the stock returns following equity issues reflect a more pervasive return pattern in the broader set of publicly traded companies.

Espenlaub et al. (2001) focus on the characteristics of lock-in agreements in the UK and on the behaviour of stocks returns around the lock-in expiry date using a sample of 188 UK IPO firms, 83 classified as high-tech and 105 others, that went public on the London Stock Exchange (LSE) during 1992–1998. Study finds that the lock-in contracts of LSE-listed firms are much more complex, varied and diverse than US contracts, which usually standardise the lock-in period at 180 days after the IPO. Brau et al. (2000) show that 70 percent of their sample IPOs had lock-in periods of exactly 180 days, Field and Hanka (2001), Mohan and Chen (2001), and Bradley et al. (2000) also find that lock-in periods are largely standardized at 180 days during the 1990s. The average length of the lock-in period entered into by UK directors, based on the sub-sample of firms with absolute expiry dates used in the event study, appears to be 561 days, significantly longer than the typical US lock-up period of 180 days. Study also finds evidence of negative abnormal stock returns, using standard event-study methodology, at and around lock-in expiry of similar magnitude to those reported in US studies (Brav and Gompers, 2000; Ofek and Richardson, 2000; Field and Hanka, 2001; Bradley et al., 2000 and Brau et al., 2000), but contrary to Mohan and Chen (2001) who do not find any statistically significant negative returns at the time of the expiry of lock-in agreements. However, these abnormal returns for the present study are typically not statistically significant. While the deterioration in stock returns immediately around the expiry date appears to be particularly much more pronounced for high-tech stocks than for others, the differences in performance are not statistically significant.

Keasler (2001) investigates abnormal returns around the announcement of an early release of the lock-up agreement. Using a sample of 45 IPOs which largely consists of technology offerings from 1998 to 2000, the study finds significant negative abnormal returns associated with the early lock-up release announcement. Negative abnormal
returns are more pronounced for venture capital backed firms than for firms not venture capital backed. In addition, findings of the study also show that early lock-up release reduces announcement day effects associated with the scheduled lock-up release. Scheduled lock-up release day abnormal returns, found in previous studies to be significantly negative (for e.g., Field and Hanka, 2001, Brav and Gompers, 2000, Bradley et al., 2001, Ofek and Richardson, 2001, Espenlaub et al., 2001), are reduced for firms announcing the early lock-up release.

Karmakar (2002) investigates the new issue market in India and measures the performance of IPOs both in short- and long-term using a sample of 3,493 Indian IPOs from January 1990 to October 1996. Short-term performance is measured from offer price to closing price on first trading day and then annualising the return by multiplying by 365/days from issuing date to listing date, while long-run performance is analysed on the basis of 1, 2, 3, 6, 9, and 12 months annualized returns using the offer price and the closing price at the end of respective months. Findings of the study reveal that the initial return of IPOs in India is abnormally high and in fact, is much higher than the average initial return of other developed countries. However, the initial return computed in the present study is annualized and is not market adjusted. The short-run high initial return is found to be extreme in the years 1991 and 1994. While the extraordinary high return in 1991 is observed more or less in every industry, the hot issue period of 1994 seems to be associated with the issues of finance companies. The initial high return has, however, shaded away over the period of one year after listing with the positive abnormal returns to investors purchasing at the initial offering declining to almost 1/6th of its original level. The abnormal initial return is partly explained by underpricing and the rest is attributed by the study to aftermarket inefficiencies.

Gompers and Lerner (2003) examine the long run performance, up to five years, of 3,661 U.S. IPOs from 1935 to 1972. Study finds underperformance when event time buy and hold abnormal returns are used. The underperformance disappears when cumulative abnormal returns are used. A calendar time analysis shows that IPOs return at least as much as the market over the entire sample period. The intercepts in CAPM and Fama-French three factor regressions are insignificantly different from or even greater than zero. Thus, the results demonstrate that the relative performance of an IPO sample depends on the method of examining performance. One methodology suggests that the sample underperforms, others suggest superior performance. The weakness of the evidence for underperformance and the failure to observe consistent pattern, raise doubts...
about whether a unique IPO effect indeed exists. Fama (1998) suggests that spurious (false/fake) anomalies can be anticipated when stock returns are examined repeatedly. Alternatively, systematic underperformance may be present in the data, but this systematic underperformance would then affect a much larger class of companies. Finally, the overall findings of the study contradict the findings of Brav and Gompers (1997) that IPOs appear to perform like other long-standing public companies.

Schultz (2003) examines a phenomenon that he refers to as pseudo market timing and shows that it can explain the poor event-time performance of stocks that have issued equity. Study proposes that the poor long-run performance of equity-issuing firms in event-time is real in the sense that IPOs and SEOs have underperformed relative to their ex-ante expectations, but that is not indicative of any market inefficiency. The premise of the pseudo market timing explanation for underperformance is that more firms go public when they can perceive a higher price for their shares. As a result, ex-post there are more offerings at peak valuations than at lower prices. This is termed as pseudo market timing.

The issuing companies did not know prices were at a peak when they issued stock. If prices had kept rising, even more offerings would have been forthcoming until prices eventually fell and offerings dried up. Using simulations with parameters estimated from historical data over 1973 through 1997, study shows that pseudo market timing can easily lead to a level of ex-post underperformance, using both CARs and BHARs, similar to that documented for IPOs and SEOs. The finding of the study that ex-post there are more offerings at peak valuations than at lower prices is consistent with Ritter (1991), Lerner (1994), Loughran and Ritter (1995, 2000), Baker and Wurgler (2000), and Hirshleifer (2001) who, discussing a behavioral explanation for poor performance subsequent to equity offerings, suggest that stock prices periodically diverge from fundamental values, and that managers and investment bankers take advantage of overpricing by selling stock to overly optimistic investors.

Wiggenhorn and Madhura (2005) test whether the mispricing of newly public firms is affected by liquidity and information during the quiet period, from the end of the quiet period until the lock-up expiration date, and post-lock-up. The sample consists of 4,541 U.S. IPOs from 1992 to 2001 with a total of 2,622 events that are identified using a minimum one-day trigger of +/- 15 percent change in stock price. Study finds that liquidity is affected by the underwriter's stabilization efforts during the quiet period and the founder's ability to sell shares in the post-lockup period. For winners, there is an underreaction during the quiet period, no significant reaction during the lock-up period.
and an overreaction during the post lock-up period. This supports the theory of Daniel et al. (1998) on investor overconfidence about private information and biased self-attribution as applied to the quiet period. During the lock-up period, the expectation is that there are no liquidity changes and the information effect is uncertain since the degree of information dissemination is not uniform. For losers, the expectations are less clear. The results show modest evidence of overreaction in the quiet period. The overall results for both the lockup and the post-lockup periods show no significant over- or under-reactions. However, the impact of public versus private information is statistically significant for both periods. Finally, after controlling for the public news and other potentially confounding factors, the results confirm that the degree of mispricing of winners is conditioned on the period within the aftermarket. Study attributes these results to different liquidity and information effects among the three periods.

Jaskiewicz et al. (2005) examine the long-run stock market performance of German and Spanish IPOs between 1990 and 2000. Using 153 German and 43 Spanish IPOs and following the same definition of family-owned businesses for both countries by using the power subscale of the F-PEC, as proposed by Astrachan et al. (2002), study gets 95 and 21 family-owned business IPOs from Germany and Spain, respectively. Calculating buy-and-hold-abnormal returns to determine abnormal returns, study shows that three years after going public, investors, on average, realize an abnormal return of -32.8 percent for German and -36.7 percent for Spanish IPOs. In both countries, nonfamily business IPOs perform insignificantly better. This is consistent with existing family business IPO performance studies by Aussenegg (1997) and Ehrhardt and Nowak (2003) who report a significant underperformance of family businesses when compared to other nonfamily business IPOs or market benchmarks, but contradicts Anderson and Reeb (2003) and Villalonga and Amit (2004) who find that long-run performance analyses of already-quoted companies indicate a better performance for family than for nonfamily businesses. In line with the findings of Brav and Gompers (1997) and Brav et al. (2000) that smaller companies have a worse stock market performance than bigger companies, results of the present study show that family business IPOs are, on an average, significantly smaller than nonfamily IPOs. Regression analyses show that for the whole sample there is a positive company size effect. In family-owned businesses, strong family involvement has a positive impact on the long-run market performance supporting Interest Convergence Theory of Jensen and Meckling (1976), whereas the age of the firm has a negative
influence. However, study finds no evidence favourable to the market overreaction or hot issue markets.

Alvarez and Gonzalez (2005) test the signaling hypothesis of IPO underpricing, proposed by Allen and Faulhaber (1989), Grinblatt and Hwang (1989), and Welch (1989), which predicts that IPO firms that underprice (high-quality firms) should obtain more funds in subsequent seasoned offerings and should exhibit superior long-run performance. Using a sample of 52 Spanish firms that went public during the period 1987-1997, study computes buy-and-hold abnormal returns by monthly compounding during 1, 3, or 5 years after the IPO. Results reveal the existence of negative long-run abnormal stock returns, in line with the international evidence. Further results reveal that performance of IPOs in the five-year period subsequent to the initial offer is positively related to initial underpricing, as well as to the number of SEOs made by the firm from the second to the fifth year after the IPO. High-quality firms choose to undervalue with the aim of selling more stocks in seasoned offerings, at a higher price than they could obtain in the absence of signal. Consequently, there exists a positive relation between the level of underpricing of IPOs and the long-run performance of the firm. Overall, these results confirm the signaling hypothesis of IPO underpricing.

Guo et al. (2006) investigate the impact of R and D activities of firms going public on the initial underpricing and long-term underperformance of IPOs using a sample of 2,696 U.S. IPOs issued during 1980-1995 period. In a regression of underpricing, measured as the percentage return from offer price to first day closing price, on various explanatory variables, pre-IPO R and D intensity (ratio of annual R and D expenditure to sales) turns out to be a highly significant regressor. The long-run performance is measured first, using a four factor calendar time-series regression approach and then, using Fama-MacBeth panel regression methodology. The long-run (three years post IPO) underperformance is found to be a phenomenon restricted to non-R and D IPOs, high-R and D IPOs outperform low-R and D IPOs, which in turn outperform non-R and D IPOs in the long-run. Overall, study finds that the issuers' R and D intensity is positively associated with the initial IPO underpricing and also positively associated with the long-term performance of IPOs, thus signaling out R and D as a major contributor to both the short- and long-term performance of IPOs. Study also provides evidence that R and D intensity affects analysts' forecasts of IPO long-term earnings. The significance of the findings of the study is that investors can increase their information search about the nature of the R and D conducted by IPO issuers and thus can reduce information.
asymmetry Similarly managers can achieve the same by enhancing information disclosure about their R and D expenditure. The findings of the study make even more sense in the light of the work by Chan et al. (2001) and Eberhart et al. (2004) who find that, for seasoned stocks, investors are slow to recognize the full extent of R and D benefits, probably due to the considerable information asymmetry associated with R and D.

Ahmad-Zaluki et al. (2007) investigate the long-run share price performance, up to three years post-listing, of 454 Malaysian IPOs during the period 1990-2000. Study finds significant overperformance for equally-weighted event time CARs and buy-and-hold returns using two market benchmarks. Such a finding contradicts many of the previous works. Lee et al. (1996) find that Australian IPOs exhibit severe underperformance in the long run, Ritter (1991), and Loughran and Ritter (1995) report that U.S. IPOs do experience significantly negative returns in the first three to five years following an IPO. However, the overperformance is not significant when matched companies are used as benchmarks or when value-weighted scheme is employed to calculate returns. The significant abnormal performance also disappears under the calendar-time approach using Fama-French (1993) three-factor model. These results are consistent with the view of Gompers and Lerner (2003) that the reported relative performance of an IPO sample depends on the method used to measure performance. Cross-sectional analysis reveals that smaller Malaysian company IPOs perform better than larger IPOs which is consistent with Jehc et al. (2001), and Corhay et al. (2002). IPOs with relatively small gross proceeds outperform their matching company benchmark in the long run which contradicts Ritter (1991), Page and Reyneke (1997), while IPOs with low initial returns produce high raw long run returns, they underperform their matching company benchmark which contradicts Paudyal et al. (1998), Jehc et al. (2001), and Ritter (1991). Finally, study does not find significant difference in the long-run performance of IPOs listed on the Main Board and the Second Board of the KLSE.

Sehgal and Singh (2007) investigate the initial and long-run performance of 438 IPOs listed on BSE that went public between June 1992 and March 2001. Underpricing of an IPO is measured as the percentage difference between the closing price on the first day of trading and the offer price. To examine the long-run performance, study calculates BHARs and CARs for 60 months subsequent to IPO date. Study finds benchmark-adjusted initial returns to be 99.2 percent which is in line with other researches in India like Shah (1995), and Madhusoodan and Thirupalraj (1997). The underpricing also
conforms to international evidence (Ibbotson (1975), Rock (1986), Chalk and Peavy (1987), Miller and Reilly (1987), Allen and Faulhaber (1989), Grinblatt and Hwang (1989), Welch (1989), Barry and Jennings (1993), Chemmanur (1993), Booth and Chua (1996), and Ritter (1987)) though the magnitude of initial return is higher than that of other countries. Buy-and-hold returns have been found to be negative between 18 and 40 months of holding, however, such underperformance disappears after 40 months, i.e., underperformance persists for about one-and-a-half years subsequent to IPO to a little more than three years. To check the robustness of this result, CARs also exhibit the existence of underperformance in the second and third years. Thus, long-run underperformance appears in the second year and subsists till the third year, though it dies out in the fourth and fifth years. Such a behavior of the long run performance of the IPO sample, documented by both the measures, does not conform to international evidence of persisting underperformance as evidenced by Loughran and Ritter (1995), Ritter (1991), Aggarwal, Leal and Hernandez (1993), Jog (1997) and others, but with the exception of Kim et al (1995) and Loughran et al (1994). Among the Indian studies, the long-run positive performance found by the study is consistent with Madhusoodan and Thirupalraj (1997), but contradicts Madan (2003).

Using company IPO data from China’s Shanghai Stock Exchange, Cai and Liu (2008) find comparable levels of underperformance of IPOs in line with the existing research findings of poor long-run performance of IPOs worldwide, particularly in the U.S. Further, in line with U.S. results, initial over-optimism and the size of the offer are important explanatory factors for the underperformance of IPOs. Additional variables include the earnings per share prior to listing, the decision to switch investment banks at the time of issue and whether the firm issues shares that can be purchased by foreign investors. These factors suggest that firms in China are able to manipulate the issue process. In the context of Chinese economic reforms, of particular note is the positive performance impact of the government shareholding after issue, which supports a signal argument in relation to continuing government support. As a result, study provides an interesting insight into the influence of the regulatory environment and economic transition on the long-run performance of IPOs in China.

Chan et al (2008) examine the individual and joint relation of discretionary accounting accruals (DA), underwriter reputation, and VC backing with the long-run performance of IPOs up to four years using a sample of 3,626 U.S. IPOs for the period 1980-2000. The long-run performance is measured by developing a time series of portfolio returns and
then running the four-factor model regression following Carhart (1997) Study finds greater differentiating power when the three variables are simultaneously examined. IPOs with high DA, low-reputation lead underwriters, and no VC backing (‘loser’ IPOs) significantly underperform the benchmark, whereas, IPOs with low DA, prestigious lead underwriters, and VC backing (‘winner’ IPOs) significantly outperform in the long run. The results are particularly strong in the subsample of larger IPOs. A confluence of the three variables is more important in isolating winners and losers than any one of them individually. Finally, to explain the abnormal returns associated with IPO winners and losers, study tests two hypotheses – mispricing (the three variables contain some vital information about the future prospects of the IPO, but investors do not fully incorporate these effects into pricing initially) and misspecification (results could be driven by omitted risk factors and therefore abnormal stock performance will disappear when appropriate risk factors are controlled for). Study finds that negative drifts associated with loser IPOs are more likely due to mispricing, while winner IPO results are more in line with a misspecification story.

This section discusses the long run performance of IPOs, mostly from the listing day to the end of one to five years from listing. Studies conducted in different capital markets report long run underperformance. Aggarwal and Rivoli (1990) and Ritter (1991) report underperformance of US IPOs in the aftermarket. Both these studies attribute long run underperformance to temporary overvaluation or optimism by investors in the immediate aftermarket. Loughran and Ritter (1995) note that firms issuing (both IPO and SEO) during years of little issuing activity do not underperform much, whereas firms selling stock during high-volume periods severely underperform which is consistent with a market where firms take advantage of transitory windows of opportunity by issuing equity when, on an average, they are substantially overvalued. Discussing a behavioral explanation for poor long run performance of IPOs, Schultz (2003), consistent with Aggarwal and Rivoli (1990), suggests that stock prices periodically diverge from fundamental values and that, managers and investment bankers take advantage of overpricing by selling stock to overly optimistic investors. However, contradicting Aggarwal and Rivoli (1990), Rajan and Servaes (1997) document that higher underpricing leads to increased analyst following and analysts systematically overestimate the earnings potential and long term growth prospects of these companies. Firms with superior projected growth substantially underperform indicating that investors appear to believe the inflated long term growth. Levis (1993) documents long run...
underperformance for UK IPOs Aggarwal et al (1993) document long run underperformance of IPOs for three of the Latin American countries – Brazil, Chile, and Mexico Steib and Mohan (1997) and Page and Reyneke (1997) document long run underperformance of IPOs for Germany and South Africa, respectively Jaskiewicz et al (2005) provide evidence that IPOs of family-owned businesses in Germany and Spain significantly underperform three years after going public Alvarez and Gonzalez (2005) report negative long run abnormal stock returns for Spanish IPOs during one, three, and five years after going public Madhusoodanan and Thirpalraju (1997) report that in the long run Indian IPOs have given high returns compared to negative returns reported from other countries Sehgal and Singh (2007) report negative long run returns between 18 and 40 months of holding and also note that such underperformance disappears after 40 months Also, Megginson et al (2000) report statistically significant positive abnormal performance for the Share Issue Privatisations in the US over one-, three-, and five-year horizons and Ahmad-Zaluki et al (2007) report overperformance for Malaysian IPOs up to three years post listing

4.5 Role of Venture Capitalists in IPOs
Megginson and Weiss (1991) examine whether the presence of venture capitalists (VCs), as investors in a firm going public, can certify that the offering price of the issue reflects all available and relevant inside information using a sample of 320 US VC-backed IPOs that went public from January 1983 through September 1987 and comparing them with 320 non-VC backed firms matched as closely as possible by industry and offering size Findings of the study provide support for the certification role of VCs in IPOs Consistent with certification hypothesis, findings indicate that VC backing results in significantly lower initial returns (underpricing) and underwriting spread charged by the investment banker handling the issue Further support for the hypothesis is found by the fact that VC backed issuers are able to attract more prestigious auditors and underwriters than non-VC backed issuers and VC backed issuers are able to elicit greater interest from institutional investors during the IPO and are able to take their firms public at a younger age than other firms Overall, the presence of VCs in the issuing firms serves to lower the total costs of going public and to maximize the net proceeds to the offering firm Finally, the credibility of VCs’ information is enhanced by the fact that they retain a significant portion of their holdings in the firm after the IPO The present study is in line with the work of several researchers, including James (1990), Blackwell et al (1990), and Barry et
al (1991) who have developed and tested models based at least in part on the formal certification hypothesis presented in Booth and Smith (1986). A related body of work, represented by DeAngelo (1981), Beatty and Ritter (1986), Titman and Trueman (1986), Johnson and Miller (1988), Carter (1990), Simon (1990) and Carter and Manaster (1990) has examined how investment bankers and auditors help resolve the asymmetric information inherent in the IPO process.

Barry (1994) surveys recent research on venture capital and suggests directions for future research. There is new empirical evidence in the field, and new theoretical models have resolved some issues. The paper selectively examines recent findings, particularly models and empirical work about the staging of financing, the use of syndicates, the process of screening investments, and the participation by venture capitalists in IPOs. Finally, the paper identifies some of the remaining issues for which new research is needed which are as under:

- Angel investing - a process in which a wealthy person or group places funds in a venture without taking on the consulting role of venture capitalists
- Do companies perform better when venture capital is present than when it is absent, all else equal? This question ultimately suggests another, "Is more value created when venture capital is present than when it is absent?"
- Interaction among multiple principals and agents - as VCs serve a dual role as principal in some respects and agents in other respects in working with an entrepreneur, whether these multiple agency relationships can play an important role in determining the success of venture capital investing
- Exit strategies and value maximization - Are merged companies essentially not good candidates for an IPO? Do mergers occur earlier or later in a company's development than would an IPO? Are there characteristics of the product market that dictate the IPO-versus-merger decision?
- How do various types of venture capital organizations like public venture capital funds or captive venture capital firms perform? How are they similar, and how do they differ?
- Is venture capital a superior form of investment? Is it inferior? The performance of venture capital investing remains an open issue. The results vary by time period, by type of fund, and by the degree to which the funds are combined into portfolios.
Brav and Gompers (1997) investigate the long-run underperformance of IPO firms using a sample of 934 venture-backed IPOs from 1972-1992 and 3,407 nonventure-backed IPOs from 1975-1992 in the U.S. Study uses five year equal weighted and value weighted buy-and-hold returns, calendar time portfolio returns, and Fama-French (1993) three factor regression to measure the long-run performance of both the samples. Study finds that venture-backed IPOs outperform nonventure-backed IPOs using equal weighted returns. One possible explanation for better long-run performance by venture-backed IPOs is VCs reputational concerns, as Gompers (1996) demonstrates because VCs repeatedly bring firms public, if they become associated with failures in the public market, they may tarnish their reputation and ability to bring firms public in the future, and therefore, they may consequently be less willing to hype a stock or overprice it. However, present study finds that value weighting significantly reduces performance differences between the two samples and substantially reduces underperformance for nonventure-backed IPOs. In tests using several comparable benchmarks and the Fama-French (1993) three factor asset pricing model, venture-backed companies do not significantly underperform, while the smallest nonventure-backed firms do. Finally, study finds that underperformance is not exclusively an IPO effect. When issuing firms are matched to size and book-to-market portfolios that exclude all recent firms that have issued equity, IPOs do not underperform. Thus, study finds that underperformance is a characteristic of small, low book-to-market firms regardless of whether they are IPO firms or not.

Brav et al. (2004) examine a set of 126 small VC-backed manufacturing firms (with fewer than 500 employees each) and compare it to a control sample of 108 non-VC-backed manufacturing firms going public between January 1990 and December 1996. Study examines four measures - degree of underpricing, three-year sales growth, three-year cumulative stock return, and three-year survivability - of post-IPO performance as a measure of success for VC-backed and non VC-backed small manufacturing companies. Study tests if the presence of VC backing results in significant differences in success between the two samples and finds that VC-backed and non VC-backed IPOs are not statistically distinguishable through three years after the offer date. Once significant difference is not found between the two samples, study tests to determine if certain types of VCs make a difference and whether some VCs do better than others or whether the top VC-backed IPO firms outperform the control sample. These tests also indicate that no statistical differences exist across any of the various factors and VC and deal.
characteristics are not discriminating factors within VC sample. To conclude, study finds no meaningful difference between the initial underpricing, three-year sales growth, three-year cumulative stock return or three-year survivability between VC and non VC-backed IPOs. This is in contrast to the findings of Megginson and Weiss (1991) and Barry et al. (1990) who conclude that VCs serve a certification function and mitigate information asymmetries between the issuing firm and IPO investors. Also Brav and Gompers (1997) testing the long-run performance of VC- and non VC-backed IPOs, find that VC-backed firms significantly outperform non VC-backed firms. However, they also find that only small, non VC-backed IPOs underperform.

Cumming et al. (2005) provide theory and evidence in support of the proposition that VCs adjust their investment decisions according to liquidity conditions on IPO exit markets. Study refers to technological risk as a choice variable in terms of the characteristics of the entrepreneurial firm in which the venture capitalist invests, and liquidity risk as the current and expected future external exit market conditions. Study shows that in times of expected illiquidity of exit markets (high liquidity risk), venture capitalists invest proportionately more in new high-tech and early-stage projects (high technology risk) in order to postpone exit requirements. When exit markets are liquid, venture capitalists rush to exit by investing more in later-stage projects. Study further provides complementary evidence that shows that conditions of low liquidity risk give rise to less syndication. The theory and supporting empirical results of the study facilitate a unifying theme that links related research on illiquidity in private equity.

Sheu and Lin (2007) investigate the role of venture capital on the board composition and ownership structure of companies making IPOs from the IT industry on the Taiwan Stock Market between 2001 and 2003. The study compares the board composition and ownership structure of VC-backed and non VC-backed firms from the IT sector. Results of the study suggest that VC firms focus their investments by providing intensive monitoring service, and allow or enable greater independence with regard to board composition and ownership structure. VC investment can influence board composition and ownership structure within invested companies. Further, the ratio of director’s and supervisor’s holdings of seats in companies invested in by venture capitalists is found to be smaller than the ratio of ‘inside holdings’ of seats in companies not invested in by venture capitalists suggesting that the monitoring processes and consulting services of venture capitalists influence traditional governance practices, and therefore investment by venture capitalists is relevant to developing a more independent governance structure.
From these results, it is argued that investment by venture capitalists is related to a more independent governance structure and a higher degree of information transparency. This finding of the study supports the findings of Bouresli et al. (2002) and Baker and Gompers (2003) who argue that the intervention of VC influences board composition and ownership of the invested company and leads to more independent company governance mechanisms. These studies suggest that differences in board governance and structure between VC-backed and non-VC-backed companies may be attributed to the actual 'presence' of venture capital.

Chahine et al. (2007) analyse the investment patterns and the stock market performance effects of two types of early stage investors: venture capitalists (VCs) and business angels (BAs) using a sample of 444 entrepreneurial IPOs (IPOs in which the original founders retain equity stakes and board positions) in the UK (303) and France (141) during the period 1996-2002. UK IPOs are found to have relatively lower underpricing (percentage difference between offer price and first trading day closing price adjusted for market movements) compared to French IPOs which is consistent with prior research in France and the UK (Chahine (2006), and Espenlaub et al. (1999)). Findings of the study indicate that UK IPOs have a higher retained ownership and lower participation ratio by BAs, but a lower retained ownership and participation ratio by VCs than in France. BA and VC investments are substitutes, and they are endogenously determined by a number of firm- and founder-related factors, such as founder ownership and underwriter reputation. Controlling for the endogenous choice of risk financiers’ ownership indicates that VCs play a significant role in reducing underpricing in UK IPOs, whereas they increase it in French IPOs. This suggests that VCs in the more mature UK market benefit issuing firms by providing certification and monitoring, whereas VCs in the younger French market are more likely to grandstand and cause higher underpricing. This certification effect is more significant in UK IPOs involving both high VC and BA ownership. Finally, underpricing increases with VC participation ratio where the higher exit of VCs seems to increase the risk premium required by outside investors, in particular in the UK. Finding of the study that VCs play certification role and thus reduce underpricing, particularly in the UK, is consistent with Megginson and Weiss (1991) who find VC-backed IPOs to have lower underpricing than non-VC backed IPOs. However, Gompers (1996) and Lee and Wahal (2003) find that VCs, particularly younger ones, may grandstand and take their portfolio companies public earlier than expected, leading to
higher underpricing which is inconsistent with the finding of the present study about the role of VCs in UK IPOs, but is consistent with the role of VCs in French IPOs. Using a sample of European venture capital (VC) investments, Cumming (2008) examines the relation between VC contracts and exits. The data indicate that ex ante, stronger VC control rights increase the likelihood that an entrepreneurial firm will exit by an acquisition, rather than through a write-off or an IPO. The findings are robust to controls for a variety of factors, including endogeneity and cases in which the VC preplans the exit at the time of contract choice. These findings are consistent with control-based theories of financial contracting, such as Aghion and Bolton.

Cumming and Johan (2008) empirically consider the role of preplanned exits (the investor's initial strategy to sell the investee firm via an acquisition or an IPO at the time of initial contract with the entrepreneur), legal conditions, and investor versus investee bargaining power in the allocation of cash flow and control rights in entrepreneurial finance. Study introduces a sample of 223 entrepreneurial investee firms financed by 35 venture capital funds in 11 continental European countries. The findings of the study are-first, preplanned acquisition exits are associated with stronger investor veto and control rights, a greater probability that convertible securities will be used, and a lower probability that common equity will be used, the converse is observed for preplanned IPOs. Second, investors take fewer control and veto rights and use common equity in countries of German legal origin, relative to Socialist, Scandinavian, and French legal origin. Third, more experienced entrepreneurs are more likely to get financed with common equity and less likely to be financed with convertible preferred equity, while more experienced investors are more likely to use convertible preferred equity and less likely to use common equity.

Schwenbacher (2008) analyses how start-ups financed by venture capital choose their innovation strategy based on the investor's exit preferences and thereby form different outcomes in the product market. It considers innovation choices and venture capital exits (IPO vs trade sale) in a setting in which entrepreneurs derive private benefits from staying independent, which is better guaranteed under an IPO. The entrepreneur has incentives to distort the innovation strategy in order to induce the venture capitalist to bring the company public. The analysis generates a number of empirical implications for the link between innovation, valuation, venture capital exit routes, and market structure.

Caselli et al. (2009) test two hypotheses concerning the presence of innovation in venture capital investments and the growth of innovative venture backed firms. To examine these
hypotheses study considers a sample of 37 Italian venture backed firms that went public on the Italian Stock Exchange between 1995 and 2004 and by a statistical matching procedure study picked 37 twin firms among the non-venture backed IPOs for the same period. The findings of the study show that innovation is an important factor during the selection phase but once the investment is made, the company does not promote continued innovation and concentrates all efforts to improve other economic and managerial aspects.

This section discusses the role of venture capitalists (VCs) in IPOs. Megginson and Weiss (1991) provide support for the certification role of VCs in IPOs—VC backed IPOs result in significantly lower underpricing, are able to attract more prestigious auditors and underwriters, elicit greater interest from institutional investors during IPOs, and are able to take their firms public at a younger age than other firms. Overall, firms with VC backing could reduce the total cost of going public and maximize net proceeds from the IPO. Findings of Chahine et al. (2007) also support VC certification role in their study on UK VC-backed IPOs. Brav and Gompers (1997) note that venture-backed IPOs exhibit better long run performance as compared to nonventure-backed IPOs. Study notes a possible reason for this as the reputational concern of VCs—as Gompers (1996) notes because VCs repeatedly bring firms public, if they become associated with failures in the public market, they may tarnish their reputation and ability to bring firms public in the future and therefore, they may consequently be less willing to hype a stock or overprice it. However, findings of Brau et al. (2004) do not support the certification role of VCs in IPOs.

4.6 Earnings Management and/or Operating Performance

Degeorge and Zeckhauser (1993) investigate the transition from private to public ownership of companies that had previously been subject to leveraged buyouts (LBOs). Using a sample of 62 US reverse LBOs that went public between 1983 and 1987, study finds that the return to public ownership of reverse LBOs coincides with a peak in their operating performance. In the period before going public, reverse LBOs substantially outperform comparison firms, whereas in the following period, they underperform them, although the net performance remain positive. This pattern of performance is predicted by models of information asymmetry between owners and the market (Myers and Majluf 1984) consider a situation in which managers know more than the market does about the future prospects of the firm. The findings of the study are consistent with one
explanation for the transition from private to public ownership. Pure selection effects—behavioral effects and debt overhang—would induce LBOs to wait for an exceptionally good year to go public again. As a consequence of these pure selection phenomena alone, reverse LBOs would be disproportionately good performers before the IPO, and their performance would regress toward the mean subsequently. Study also finds that reverse LBOs’ stocks do not underperform comparison firms over a two-year horizon after the IPO, in fact, they outperform them. This finding indicates that the market is not surprised by the pattern of operating performance before and after the IPO suggesting that reverse LBOs are more correctly priced at the time of the offering than the average IPO.

Jam and Kim (1994) investigate the change in operating performance of firms as they make the transition from private to public ownership using a sample of 682 U.S. IPOs for the period 1976 to 1988. Over a six-year period extending from the year prior to the IPO until five years after the offering, study finds a significant decline in post-issue operating performance of firms going public. Further, study presents evidence to support the contention that high pre-IPO operating performance levels may lead investors to develop optimistic assessment of earnings growth for the IPO firms. Despite an increase in sales and capital expenditures, however, the pre-IPO performance levels are not sustained, leading to a decline in expectations. Study also provides evidence suggesting a positive relation between managerial ownership retention and post-IPO operating performance. Study offers several potential explanations for the decline in post-issue operating performance. First explanation is related to the potential for increased agency costs when a firm makes transition from private to public ownership. The reduction in management ownership is likely to lead to the agency problem described in Jensen and Meckling (1976). As a result of the heightened conflict of interest between initial ownership and shareholders, the performance of the firm could suffer as managers have incentive to increase perquisite compensation. A second reason could be that managers attempt to window-dress their accounting numbers prior to going public. This results in pre-IPO performance being overstated and post-IPO performance being understated. A third explanation is that entrepreneurs time their issues to coincide with periods of unusually good performance levels, which they know cannot be sustained in the future. The common threads running through all three explanations are the presence of information asymmetry and/or a conflict of interest between the original entrepreneurs and the new shareholders. Finally, study finds no evidence to show that firms that underprice more provide superior operating performance after the IPO.
Teoh et al. (1998) examine the relation between the long-run IPO performance and IPO firms' earnings management using a sample of 1,649 U.S. IPOs for the period 1980-1992. Study uses discretionary current accruals (DCA) – which are under the control of management as proxy for earnings management. To assess the long-run performance of IPOs both CARs and BHARs are used. Study finds that DCAs or earnings management are high around the IPO relative to those of non-issuers. Issuers with higher discretionary accruals have poorer stock return performance in the subsequent three years. A firm classified to be in the quartile with most aggressive earnings management, which results in higher reported earnings, experiences on an average, a 15 to 30 percent worse three-year performance after its earnings report than a firm classified to be in the most conservative quartile. This finding holds even after controlling for other variables responsible for IPO underperformance and using both the measures of underperformance. The IPO issuers in the conservative quartile also return to the capital market for an SEO about 20 percent more frequently over a five-year period than those in the aggressive quartile, indicating a potential post-issue benefit to less-aggressive IPO earnings management. The finding of the study is in line with Jam and Kim (1994) who find a significant decline in post-issue operating performance of firms going public and one of the reasons offered by them for such decline being managers attempt to window-dress their accounting numbers prior to going public.

Singh and Mittal (2003) examine the accuracy of sales and profit forecasts contained in the IPO prospectuses. For a sample of 220 Indian IPOs that went public between 1992 and 1996, study calculates forecast error as the percentage change from actual sales/profit to forecast sales/profit. Study finds that both sales and profit forecasts are optimistically biased in both par and premium issues. Sales forecasts are substantially more accurate and less biased than their earnings counterparts, suggesting that profit is more complex to forecast than revenue. Among the premium issues, both sales and profit absolute forecasting errors show a decreasing trend as the amount of premium increases, meaning that larger the amount of premium, the more accurate the forecasts are. Further, investigating which variables contribute for absolute sales and profit forecast errors, study demonstrates that only issue size is significantly and negatively related to sales forecast errors. Profit forecast errors are explained by the age of the company and quality of the appraisers. These findings contradict Smith (1992) and Firth et al. (1995) who find that larger firms with bigger issue size issued less accurate forecasts in New Zealand and Singapore, respectively. They argue that managers of large firms generally have
more difficulty in monitoring the use of funds and have greater difficulty in predicting 
firm’s future performance. Further, they find that firm’s age, the forecast horizon and the 
audit firm’s reputation are not significantly related to the accuracy. Finally, in the present 
study, majority of the companies which approached the market during the 1992-1996 
boom period, could not achieve their projections confirming the general belief that the 
companies mispriced their issues on the basis of rosy projections.

DuCharme et al. (2004) find that abnormal accounting accruals are unusually high around 
stock offers, especially high for firms whose offers subsequently attract lawsuits.

Accruals tend to reverse after stock offers and are negatively related to post-offer stock 
returns. Reversals are more pronounced and stock returns are lower for sued firms than 
for those that are not sued. The incidence of lawsuits involving stock offers and 
settlement amounts are significantly positively related to abnormal accruals around the 
offer and significantly negatively related to post-offer stock returns. The results support 
the view that some firms opportunistically manipulate earnings upward before stock 
issues (Jain and Kini (1994)) rendering themselves vulnerable to litigation.

Mudambi and Treichel (2005) examine why, even when financial resource constraints are 
significantly relaxed, some new ventures struggle to survive while others prosper. Using 
the data of approximately 200 new Internet ventures that went public during the years 
1997 through 1999, study proposes that the performance of new ventures is a function of 
pre-IPO characteristics. Study determined that firm-level characteristics, including top 
management team, financial position, networks, and location, are related to the 
performance of struggling new ventures. Study found strong evidence of agency 
relationships, so that a substantial reduction in equity holdings by the entrepreneurial 
team is a strong signal of impending crisis. Interestingly, similar reductions by venture 
capital (VC) backers did not serve as a signal of crisis.

Chong and Ho (2007) examine whether IPO firms in Singapore can enhance the 
credibility of their earnings forecasts via the use of lockup agreements using a sample of 
195 IPO firms for the period 1990 to 2000 of which 114 voluntarily provided a forecast 
disclosure in their prospectus while 81 did not. Study finds that forecasters in Singapore 
are more likely to accept longer lockup periods, so that the lockup expires after the first 
post-IPO earnings announcement. Further, earnings forecast provided by Singapore IPO 
firms are, on average, quite conservative, especially for firms with longer lockup 
periods. This finding contradicts Penman (1980), Waymire (1984), McConomy (1998), 
Clarkson (2000), and Clarkson et al. (1992) who find that voluntary forecast disclosures
by insiders are generally overly optimistic. Consistent with Healy and Palepu (2001) who find that US seasoned firms are less likely to provide voluntary disclosure of earnings forecast if they face fewer information asymmetry problems, results of the present study show that firms with a larger market capitalization or lower market-to-book, firms in regulated industries, and firms that conduct IPOs early in the financial year or in a 'hot' market, are less likely to forecast, on the other hand, firms with good news to disclose are more likely to provide a forecast of their future performance. Overall, results of the study suggest that by providing credibility for the information disclosure, lockup agreements complement earnings forecast disclosures in mitigating asymmetric information problems.

Coakley et al (2007) analyse the post-issue operating performance of 316 venture-backed and 274 non-venture UK IPOs during 1985-2003. Study finds a significant decline in operating performance five years after the offering compared to the pre-IPO year which is consistent with Jain and Kim (1994, 1995), Mikkelsen et al (1997) for the US market, Pagano et al (1998) for the Italian market, Khurshed et al (2003) for the UK market, Wang et al (2003) for the Singaporean market, and Cai and Wei (1997), and Kutsuna et al (2002) for the Japanese market. However, closer analysis reveals that this finding of an overall decline is not robust, rather it is driven by dramatic underperformance during the 1998-2000 bubble years while IPOs issued over the remainder of the sample period do not underperform. Contrary to the Jain and Kim (1995) finding of a certification effect for venture-backed IPOs, but consistent with Georgen et al (2006) who find that VCs do not perform a certification role in the going public process in the UK, the operating performance differential between venture-backed and non-venture IPOs is not found to be significant by the present study except for a few individual years. However, cross-section regression results indicate support for venture capital certification in the non-bubble years but a significantly negative relation between operating performance and venture capitalist board representation during the bubble years. The bubble year underperformance is explained by market timing and by low quality companies taking advantage of investor sentiment. This is supported by cross-section regression results showing significantly positive relation between past earnings and post-IPO earnings which is also consistent with Pastor and Veronesi (2005) prediction that profitable IPOs perform well post issue.

Ball and Shivakumar (2008) show that IPO firms report more conservatively, contrary to the findings that managers of IPO firms overstate pre-IPO performance because of which
there is decline in post issue operating performance (Jain and Kim (1994)) Study attributes this to the higher quality reporting demanded of public firms by financial statement users and consequentially higher monitoring by auditors, boards, analysts, rating agencies, press, and litigants, and to greater regulatory scrutiny (Ball and Shivakumar (2005)) Study also questions the evidence of Teoh et al (1998b) supporting the alternative hypothesis that managers opportunistically inflate earnings to influence IPO pricing Study conjectures that upward-biased estimates of “discretionary” accruals occur in a broad genre of studies on earnings management around similar large transactions and events

Chen et al (2008) examine how local governments in China help listed firms in earnings management to circumvent (bypass) the central government’s regulation This is because after the socialist system in China embraces the market economy, it has created many conflicts of interests and collusion between firms and different layers of governments The central government in China sets regulations to ensure the quality of firms listed in the capital market, while local governments engage in inter-jurisdictional competition for more capital, and their interests are aligned with listed firms through the stringent IPO quota system Study finds that local governments provide subsides to help firms boost their earnings above the regulatory threshold of rights offering and delisting Moreover, this collusion between government and listed firms in earnings management exists mainly in firms controlled by local governments

Jain and Kim (2008) examine the impact of strategic investment choices at the time of the IPO on the post-issue operating performance and survival of newly public U S firms using a sample of 3,837 IPOs that went public during 1980-1997 Study evaluates relation between strategic investment choices (involving four key resource allocations – extent of diversification, R&D expenditures, capital expenditures, and advertising expenditures) measured at the time of going public on the improvement in pre-to-post IPO operating performance through cross-sectional regression analysis Results indicate that both the extent of diversification as well as industry-adjusted capital expenditures intensity at the IPO are generally positively related to the improvement in operating performance during the post-IPO phase The impact of industry-adjusted R and D expenditure on post-IPO change in operating performance is however, extremely sensitive to the choice of expectation model (involving three such models – first, the ‘levels’ approach utilizing the post event abnormal operating performance as the dependent variable, second, ‘change’ model utilizing the industry adjusted change in
operating performance, and third, regression based model that regresses the post-event industry adjusted operating performance against the pre-event industry adjusted operating performance) and performance metric (operating income deflated by BV of assets, operating income deflated by sales, operating income plus R and D expense deflated by BV of assets, and operating income plus R and D expense deflated by sales) This is consistent with Kothari et al (2002), Eberhart et al (2004), and Anagnostopoulou and Levis (2006) who provide mixed evidence about the relation between R and D investments and future operating performance and conclude that the benefits of investment in R and D are more uncertain than capital investments Study does not find any relation between industry-adjusted advertising intensity and improvement in post-IPO performance Hazard model analysis reveals that strategic investment choices made at the time of going public significantly influence the probability of failure and time-to-failure While the extent of diversification and R and D expenditure are positively associated with probability of survival and time-to-failure, the effect of industry-adjusted capital expenditures is sensitive to the specific metric used to measure relative capital expenditures Finally, study does not find a consistent relation between pre-IPO industry-adjusted investments in advertising and post-IPO probability of failure or time-to-failure This section discusses the operating performance and/or earnings management of IPO firms Degeorge and Zackhauser (1993) note that the return to public ownership of reverse LBOs coincide with a peak in their operating performance In the period before going public, reverse LBOs substantially outperform comparison firms; whereas in the following period, they underperform them This pattern of performance is consistent with a model of information asymmetry between owners and the market This is further supported by Jain and Kim (1994) who find that over a six year period extending from the year prior to the IPO until five years after the offering, there is a significant decline in the post-issue operating performance of firms going public Coakley et al (2007) also find a significant decline in operating performance five years after the offering compared to the pre-IPO year Teoh et al (1998) note that IPO firms window dress their accounting numbers in the form of earnings management at the time of going public 4.7 Follow-on Public Offerings Korajczyk et al (1991) examine the implications of asymmetric information for the timing of new issues and for the relation between the pricing and timing of new issues using a sample of 1,247 equity issue dates of SEOs in the U S for the period 1978 –
1983 Using earnings releases as a proxy for information releases, study finds strong evidence that equity issues cluster in the first half of the period between information releases, firms almost never issue equity just prior to an earnings release. Earnings release preceding an equity issue is unusually informative consistent with the argument that the incentive to delay an equity issue is greater the greater the informativeness of the pending earnings release. In addition, study finds that earnings releases preceding an equity issue convey unusually good news about the firm which is consistent with the finding of Asquith and Mullins (1986) that there is, on an average, a price run-up preceding equity issues. Finally, examining the relation between the timing of the issue and the price drops at issue and issue announcement, study finds that the magnitude of the price drop at issue announcement is increasing in the time since the preceding earnings release. In addition, the magnitude of the price drop at issue is increasing in the time since the issue announcement. Overall findings of the study indicate that equity issues tend to follow credible information releases. If the asymmetry in information increases over time between information releases, the price drop at the announcement of an equity issue increases in the time since the last information release.

Loderer and Mauer (1992) examine whether managers rely on dividends to obtain higher prices in primary seasoned stock offerings and whether the market's reaction to dividend and stock-offering announcements justifies such a policy using a sample of 450 primary offerings of seasoned common stock in the U.S. issued by 350 firms for the years 1973-1984. The evidence does not support either conjecture. Study finds that the dividend policy of issuing firms is indistinguishable from that of nonissuing firms in the sense that issuing firms are not more likely to increase dividends. There is only weak evidence that firms time stock offering decisions immediately after dividend declarations to benefit from the attendant information disclosure regardless of whether dividends are increased, decreased, or left unchanged. Study is also unable to detect obvious benefits in the data from linking dividend and stock offering decisions. Dividend decisions do not seem to reduce valuation uncertainty and they do not appear to lead to less negative announcement effects. Moreover, the market does not seem to penalize issuing firms who do not announce a stock offering promptly after a dividend declaration. These findings of the study contradict the John and Williams (1985) signaling model which predicts dividends are used to signal firm value, with the resulting benefit that the firm and/or its stockholders can obtain a higher price when selling shares. The model implies that all issuing firms, except those with the lowest value, declare dividends before the offering.
Findings of the present study also contradict Korajczyk et al. (1989) who argue that managers time equity issue announcements close to earnings disclosures to benefit from those information events. Using a sample of 269 seasoned issues of common stock in the U.S. from 1979 to 1983, Jam (1992) tests adverse selection model of Myers and Majluf (1984) and Miller and Rock (1985) in which rational investors presume that, on average, managers approve equity issues when, based on their superior information, they perceive the equity to be overvalued. Present study finds that equity issue announcing firms experience a negative abnormal return during the three-day announcement period (day -2 to day 0) while a large positive preannouncement period abnormal return (day -120 to day 0) indicating that equity issues are made after firms experience relatively 'good times.' Cross-sectional results indicate that announcement of equity issues conveys negative information about earnings which is consistent with the earnings information hypothesis. Given the information released in the equity issue announcements, financial analysts would revise their forecasts of earnings downward. Overall, findings of the study show that earnings forecast revisions by financial analysts subsequent to the announcement of equity issues are significantly related to announcement period abnormal returns which are consistent with the models of Myers and Majluf (1984) and Miller and Rock (1985).

Denis (1994) measures the relation between the market reaction to primary SEOs and alternative measures of the profitability of the issuing firm's growth opportunities using a sample of 435 U.S. primary SEOs between 1977 and 1990. Study documents a positive relation between several ex ante measures of growth opportunities and announcement period abnormal stock returns. However, a closer examination reveals that the positive relation between the ex ante proxies for growth opportunities and announcement effects is not monotonic but, rather, is driven by a small subset of younger, smaller, high growth firms. For the remainder of the sample firms, the estimated profitability of new investment is unrelated to the market reaction to the equity offerings. In addition, contrary to the predictions of Ambanksh et al. (1987) and Jensen (1986) even those firms with the most valuable growth opportunities display nonpositive announcement effects. These findings of the study suggest that investment opportunities play, at best, a minor role in explaining the market reaction to equity offerings. The evidence is consistent with two nonmutually exclusive alternative interpretations. First, it may be the case that the investment projects of most firms are anticipated by the market prior to their equity offering announcements. Consequently, the equity offering does not convey any new...
information regarding investment opportunities. Alternatively, it may that for most firms, the value of future growth opportunities is small relative to the value of assets in place. Consequently, the market reaction to new equity offering will be dominated by news (presumably negative) about the value of assets in place as in Myers and Majluf (1984). When the value of growth opportunities is large relative to the value of existing assets, the role of investment opportunities may be much more important.

Spiess and Affleck-Graves (1995) document that firms making SEOs during 1975-1989 substantially underperformed a sample of matched firms from the same industry and of similar size that did not issue equity. This underperformance persists even after controlling for trading system, offer size, and the issuing firm's age and book-to-market ratio. It is similar to that previously documented for IPOs, suggesting that managers take advantage of overvaluation in both the initial and seasoned equity offering markets.

Safieddine and Wilhelm (1996) investigate the nature and magnitude of short-selling activity around SEOs, the relation between short-selling activity and issue discounts, and the consequences of SEC's Rule 10b-21 which prohibits the use of shares purchased at the offer price to cover short positions established after the filing of a registration statement. Using a sample of 474 SEOs during the period 1980 - 1991, study finds that short interest between the announcement of a seasoned offering and the offer date is approximately three times the level observed during the three months preceding the announcement. Higher levels of such activity are related to lower expected proceeds from the issuance of new shares. Short interest returns to normal levels following the offer date. Similar to the pattern in short interest, option open interest increases sharply prior to seasoned offering and declines just as sharply following the offer date. In general, heightened short-selling activity is associated with larger issue discounts. Finally, the adoption of Rule 10b-21 appears to have curbed short-selling activity and reduced issue discounts. Such a finding goes contrary to Gerard and Nanda (1993) who suggest that if Rule 10b-21 inhibits nonmanipulative short-selling activity, it could inadvertently increase the expected issue discount by detracting from secondary market price efficiency.

Bayless and Chaplinesky (1996) search for windows of opportunity for seasoned equity issuance by linking the decision to issue seasoned equity with the cost of issue. Taking a sample of 1,881 US seasoned issues of common equity from 1974 through 1990, study distinguishes hot and cold issue markets based on aggregate equity issue volume in contrast to Choe et al. (1993), and Moore (1980) who distinguish hot and cold markets.
based on macroeconomic criteria Two-day cumulative average prediction error, CAPE (-1, 0) is computed for the total sample of equity issues in hot, cold, and normal markets net of market returns Study finds that average price reaction in hot markets is significantly less negative while the reaction in cold markets is significantly more negative than at other times Regression analysis provides evidence that investors react differently to firm and market characteristics in hot and cold markets in ways that suggest greater concern for firm specific information, and indirectly asymmetric information, in cold markets Taken together, overall results of the study are consistent with windows of opportunity for equity issues that result, at least partially, from reduced levels of asymmetric information This is consistent with Myers and Majluf (1984) who suggest that firms may be able to time their equity issues for periods when the level of asymmetric information is low Results also lend strong support to managers’ concerns about the timing of equity issues and to investment bankers’ attempts to make market timing a more integral part of the equity issue decision Lee (1997) examines the relation between seasoned equity issuing firms’ three-year buy-and-hold returns after issuing and insiders’ personal trading (top executives’ open-market transactions) of their stock before the issue using a sample of 2,164 U.S. SEOs for the period 1976 – 1990 and thus investigates whether or not managers of issuing firms knowingly sell overvalued equity Results of the study show that primary issuers, who sell mostly newly-issued primary shares, significantly underperform their matching firms in the long-run even when top executives purchase shares before issuing However, only those secondary issuers with top executives who sell their shares before the issue significantly underperform their matching firms, even though secondary issuers, on an average, do not underperform their benchmarks These results are consistent with the notion that an increase in free cash flow problems plays an important role in explaining the underperformance of SEOs and indicate that those primary and secondary issuers whose top executives sell their shares before the SEO seem to be knowingly selling overvalued equity, while those primary issuers with top executives who purchase shares before issuing do not seem to be knowingly selling overvalued equity The finding that issues where top executives sell their shares before the SEO underperforms, is consistent with Myers and Majluf (1984) who show that with asymmetric information, managers with superior information about the firm have an incentive to issue overvalued equity and consequently, the stock price of the issuing firm drops on the announcement of a new issue Further support is found in Loughran and Ritter (1995) and Spiess and Affleck-
Graves (1995) study who present empirical evidence that, on an average, issuing firms subsequently underperform various return benchmarks in the long-run (up to five years) by economically significant amounts.

Loughran and Ritter (1997) examine the operating performance, and link stock price performance to operating performance, of firms conducting SEOs using a sample of 1,338 SEOs from 1979-1989 in the US. Study finds that the operating performance of issuing firms, as measured by different accounting measures, peaks at approximately the time of the offering and then declines after the offering, the median profit margin decreases from 5.4 percent in the fiscal year of the offering to 2.5 percent four years later, mean ROA falls from 6.3 percent to 3.2 percent, median operating income to assets falls from 15.8 percent to 12.1 percent. These declines are much larger, in both economic and statistical sense, than the corresponding declines for nonissuing firms matched by asset size, industry, and operating performance. Such post-issue deterioration is found to be more severe for smaller issuers. This finding contrasts Healy and Palepu (1990) who report no post-issue operating performance decline for the median SEO issuer, however, the difference between the two studies is that their work consists of SEOs where all the shares offered were newly-issued or primary offerings by the firms, while the present study comprised of combination offerings. Further, subsequent deterioration in the operating performance is reflected in low post-issue stock returns (market-adjusted average annual return during the five years after issuing). Firms which rapidly increase either sales or capital expenditures have lower subsequent stock returns than other firms. While issuers are disproportionately fast growing firms, study finds that holding the growth rate constant, issuing firms substantially underperform nonissuers. Study interprets this finding as firms are investing in what the market views as positive NPV projects but, in fact, the projects all too often have negative NPVs. Issuers continue to invest heavily even while their performance deteriorates suggesting that the managers are just as overoptimistic about the issuing firms’ future profitability as are investors. This finding is consistent with Jensen’s (1993) hypothesis that corporate culture is excessively focused on growth. Finally, the overall findings of the study are similar to the evidence regarding IPOs. Loughran and Ritter (1995) report that stocks of IPOs underperform by 7 percent per year in the five years after an issue, whereas the stocks of firms conducting SEOs underperform by 8 percent per year, Jain and Kim (1994) and Mikkelson et al (1997) report that the median IPO has a subsequent deterioration in its operating performance. The evidence on the investment performance of SEOs in the UK and Japan
is virtually identical to the U.S. patterns, as shown by Levis (1995), Cai (1996), and Kang et al. (1996).

Gombola et al. (1997) examine insider trading following the announcement of a SEO and compare the change in pattern of insider trading after the passage of the Insider Trading Sanctions Act (ITSA) of 1984 designed to increase expected costs of illegal insider trading, using a sample of 344 primary SEOs in the U.S. from 1981 through 1989. The results of the study indicate that managerial insiders engage in significant abnormal net selling activities, with concentrated selling in the month immediately following the offering announcement together with continued substantial net selling for several additional months. The abnormal net selling is driven by greater selling activity by managers, rather than decreased buying activity. Managers’ selling documented in the study suggests that insiders may delay a significant amount of trading to avoid legal and market penalties. Significant abnormal insider net selling is evident both before and after the passage of the ITSA, together with some weak evidence of greater abnormal net selling after passage of the Act. Study also finds more post-announcement abnormal insider selling for growth firms (with higher Tobin’s q ratio) than for mature firms, which is consistent with a greater degree of overpricing for growth firms than mature firms (Spiess and Affleck-Graves (1995)). Overall results of the study are consistent with Karpoff and Lee (1991) who find significant insider selling prior to SEO announcements, which they interpret as consistent with the joint hypothesis that insiders have access to private information and that the expected gain from insider trading exceeds the expected costs of any prospective market and legal penalties, but inconsistent with Eyssell and Reburn (1993) who show that abnormal insider net selling prior to SEO announcements decreased following the 1984 Act.

Galloway et al. (1998) examine the disclosure of issue-size revisions of seasoned stock offerings to see what information revisions impart to investors. Using a sample of 339 U.S. SEOs with issue-size revisions in the 1980-1984 period, study tests firm-originated information hypothesis which discloses something managers know about the firm, and market-originated information hypothesis which is information market participants have but is not conveyed until trading takes place. Dividing the sample firms into upward revisions and downward revisions, study computes announcement effects as two-day abnormal returns computed from the day before until the day on which the revision is announced, abnormal returns are the difference between actual and predicted returns. Predicted returns are generated using a market model by regressing each firm’s returns on
the CRSP value-weighted index over the 201 trading days from 250 days before to 50 days before the first announcement. Results of the study reject the notion that revisions reveal firm-originated news, instead are consistent with the market-originated news hypothesis and suggest a mechanism that investors and underwriters use to learn about the demand for an offering. The rejection of firm-originated information hypothesis is inconsistent with Myers-Majluf (1984) model, according to which the disclosure, say, of an upward revision in issue size would tell market participants that the stock is overpriced, Miller-Rock (1985) model, according to which the same upward revision would seem to suggest that internally generated funds fall short of the firm's financing needs. Finally, support for market-originated information hypothesis supports Romer (1993) who shows that, if investors are uncertain about the quality of their information, market prices do not fully reflect all the information available about the firm, changes in supply can elicit that information and impound it in prices.

By examining firm performance around announcement of common stock issues, Cornett et al. (1998) test whether firm with the discretion to issue equity do so when they are overvalued, and whether market is overly optimistic about the prospects of firms that voluntarily issue equity taking a sample of 150 U.S. SEOs by 120 different banks, of which 70 are voluntary issues (at the discretion of the bank's managers) and 80 involuntary issues (needed to meet regulatory capital standards), from June 1983 through December 1991. Study finds that bank performance after the stock issue varies depending on whether the stock issue is voluntary or involuntary. Specifically, the performance of banks that voluntarily issue common stock is similar to that found for nonbank issuers in that the two-day announcement period abnormal returns are negative and significant, post-issue operating performance deteriorates during a three-year period following the stock issue, and benchmark firms adjusted stock returns over the three-year post-issue period, using buy-and-hold returns, are negative and significant. Also, these issuing banks have systematically negative market reactions to post-issue quarterly earnings announcements. However, none of the measures is significantly different from the industry for banks that involuntarily issue stock. These results tend to confirm that firms with discretion to issue equity do so when they are overvalued, the market is indeed overly optimistic about the prospects of firms that voluntarily issue equity. These findings of the study are consistent with Cornett and Tehranian (1994) who find that stock price reactions associated with voluntary stock issuances of commercial banks are negative, while for banks that involuntarily issue stock, the price decline is significantly
less than the voluntary issuers. Finally, consistent with the findings on banks that voluntarily issue equity, for nonblank issues, Korajczyk et al (1990), Lucas and McDonald (1990), Loughran and Ritter (1995), Spiess and Affleck-Graves (1995), and Jung et al (1996) have reported negative excess returns for periods following the issue announcement, though cumulative positive excess returns for periods preceding the issue. Ghosh et al (2000) examine the underpricing of SEOs by equity REITs over the period 1991-1996 using a sample of 178 U.S. SEOs issued by 91 REITs. The findings of the study indicate that, REIT SEOs are significantly underpriced both with respect to the closing price on the day before, and with respect to the closing price on the day of the offer, which is consistent with Parsons and Raviv’s (1985) model. Study further examines the underpricing separately for pre-1990 and post-1990 REITs because of the systematic difference in organization structure, management style, and institutional ownership of stock between pre-1990 and post-1990 REITs. Consistent with the hypothesis that underpricing is a function of degree of information asymmetry between various parties and that there is more information asymmetry in the form of higher institutional ownership regarding post-1990 REITs, study finds that post-1990 REIT SEOs are more underpriced. Finally, when underpricing is related to firm and issue-specific characteristics, study finds support for the notion that information asymmetric explanations of IPO pricing are valid for SEOs as well.

Friday et al (2000) examine the operating performance of REITs in the U.S. using 200 SEOs from 112 REITs between 1990 and 1996. Study finds that the median operating performance for the sample firms is better than the industry in the year before the SEO and in the three years following the SEO, and firms show flat to increasing levels of operating performance changes prior to the SEO. Also, the median unadjusted operating performance increases significantly in the three years following the SEO, when adjusted for median industry operating performance, the change is found positive but insignificant. These findings contrast with industrial firm results, where performance changes are negative following an SEO, for e.g. Loughran and Ritter (1997) argue that due to asymmetric information between shareholders and managers, managers can time equity issues to coincide with future declines in operating performance that the market cannot anticipate. Myers and Majluf (1984) in their model on information asymmetry find that stock price changes will be negative following SEO announcements and the negative price reaction could be caused either by declining operating performance or by changes in the perceived risk of the issuing firm. Jensen (1986), in his free cash flow theory,
predicts that when firms issue equity, firms will experience declining performance following equity issuance due to poor investment of these funds. One possible explanation offered by the study for the differing results is that REITs in the U.S. have regulatory constraints that lower their exposure to the agency costs of free cash flow and limit their ability to time equity issuances, REITs are forced to pay 95 percent of their taxable income as dividends, which limits the level of internally generated funds available for investment. Because REITs are forced to access external markets for investment capital, issuing equity is not as likely to signal future poor performance.

McLaughlin et al. (2000) study the relation between investment banker reputation and announcement-period returns and between banker reputation and three-year post-issue holding-period returns for firms conducting SEOs in the U.S. between 1980 and 1994. Using a sample of 649 SEOs, study finds a significant and positive relation between banker prestige and issuing-firm announcement-period (three-day event window) returns. However, study finds no significant relation between investment banker reputation and long-run post-issue stock price performance. Results for three-year post-issue returns indicate that the information conveyed by the choice of investment banker is incorporated into stock prices at the announcement of the offer, and thus suggesting that the market quickly impounds the value of that certification. Thus, study finds strong support for an overall information/certification role for investment bankers in SEOs. Finally, study designs an empirical model to predict the prestige of the issuer’s underwriter and finds that announcement-period returns are significantly related to banker prestige for issuers with high levels of information asymmetry. Further, positive benefits are associated with issuers paying higher fees only if those fees are paid to high-prestige bankers. This is consistent with the models of Myers and Majluf (1984), Miller and Rock (1985), and Krasker (1986) which imply that superior-quality issuing firms with significant information asymmetries can benefit substantially if investment bankers can credibly certify firm value to less-informed investors, and Chemmanur and Fulghieri (1994) who find that investment bankers, as repeat players in the equity market, acquire reputation capital that enables them to act as credible certified information.

D'Mello and Ferns (2000) examine the effect of information asymmetry on announcement-period and long-run returns by analyzing the role of security analysts as information intermediaries. For a sample of 576 seasoned common stock offerings in the U.S. from 1977 to 1988, study uses analyst activity to represent information available to investors in two ways – the number of analysts that follow a firm, and an estimate of
analyst consensus, standard deviation of analysts' earnings forecasts normalized by the 
price of the firm's equity at the close of the year prior to the announcement of the equity 
issue. Study finds that announcement period returns (a three-day net of market CAR over 
the day -1 through day +1) are significantly more negative for firms followed by fewer 
analysts and whose forecasts exhibit less consensus. These findings hold after controlling 
for firm size and growth opportunities. This finding is consistent with the conclusions of 
Dierkens (1991), Bayless and Chaplinsky (1996), and McLaughlin et al (1998) that 
information effects influence the market's reaction to announcement of new equity 
issues. Finally, using three-year holding-period returns and comparing them to the 
corresponding holding-period returns of a size and book-to-market ratio-matched control 
portfolio, study finds that firms whose long-term level of asymmetric information is low 
(i.e., firms with greater analyst consensus and higher analyst following, have higher returns 
than do other firms. Overall results of the study show that security analysts serve as 
information intermediaries in the capital market and the activities of the analysts can 
contribute to a reduction in the degree of information asymmetry between investors and 
corporate managers at the time of a new equity issue. Such a view is consistent with 
Jensen and Meckling's (1976) agency model in which they contend that security analysts 
have a comparative advantage in the production of firm-specific information and Brennan 
and Hughes (1991), Chung and Jo (1996), and Womack (1996) who argue that one of the 
analyst's major roles is to increase investor cognizance of a firm's securities.

Wu and Kwok (2002) examine the economic effect of global seasoned equity issues by 
comparing a sample of 354 global SEOs by U.S. firms from 1985 through 1995 and a 
domestic control sample of 1,715 purely domestic offerings during the same period. 
Using the average two- and three-day announcement period cumulative abnormal returns, 
study finds that firms announcing global offerings have significantly less negative market 
reactions than had they limited the issues to domestic only. The extent of the reduced 
price drop at issue announcement is found to be negatively associated with pre- 
announcement price run-up, firm size, and market-to-book equity, but positively 
associated with unsystematic risk. These results are consistent with the hypothesis that 
global participation can potentially mitigate the asymmetric information problem 
between insiders and investors. Willingness of investment banks to underwrite global 
issues and acceptance by foreign investors can be a form of certification of firm quality. 
Also, the issuers' unsystematic risk can be diversified away through global participation. 
Finally, using buy-and-hold strategy, study computes holding period returns to examine
long-run stock price performance after offerings and finds that global issuing firms outperform their domestic counterparts for up to three years following the offerings. The findings of the study are consistent with that of Chaplinsky and Ramchand (2000) who compare announcement effect of global offerings and a sample of purely domestic offerings made by U.S. companies and find that negative price reaction is reduced when some shares are sold abroad through a global tranche.

Corwin (2003) provides comprehensive analysis of the determinants of underpricing for a sample of 4,454 U.S. SEOs by 3,313 firms from 1980 through 1998. Seasoned offerings were underpriced by an average of 2.2 percent during the 1980s and 1990s, with the discount increasing substantially over time. Cross-sectional analysis suggests that SEOs are more underpriced for firms with high price uncertainty. Study finds no evidence that large price drops prior to the offer date led to increased underpricing prior to Rule 10b-21 which prohibits investors from covering a short position with stock purchased in a new offering if the short position was established between the filing date and the distribution date. This goes contrary to the findings of Gerard and Nanda (1993) who argue that manipulative trading prior to a seasoned offer may worsen the winner’s curse problem faced by uninformed investors and lead to increased underpricing. However, after the implementation of increased short sale restrictions through Rule 10b-21, study finds that large price moves in either direction lead to more underpricing. A possible explanation for this result offered by the study is that prices are considered less informative in the presence of increased short sale restrictions and large price moves are associated with more uncertainty. Study also finds strong support for the hypothesis that SEO underpricing reflects temporary price pressure. Specifically, underpricing is positively related to relative offer size and this effect is most pronounced for those securities hypothesized to have relatively inelastic demand. Study finds no evidence that SEO underpricing is related to transaction cost savings. Additionally, study finds that underpricing is significantly related to underwriter pricing conventions such as price rounding and pricing relative to the bid quote. Finally, study finds that SEO underpricing is significantly related to the concurrent level of underpricing in the IPO market suggesting that the increase in underpricing may reflect changes in underwriter-firm relationships or in the economies of underwriting businesses that affect both IPOs and SEOs (Loughran and Ritter (2001), Daniel (2002) and Ljungqvist and Wilhelm (2002)).

D’Mello et al. (2003) investigate the relation between announcement period returns and the sequence of SEOs using a sample of 2,286 primary SEOs by 863 firms in the U.S.
between 1979 and 1996, study finds that for industrial firms, there is a monotonically positive relation between the returns and the sequence of issues. Thus, investors react less negatively to each successive SEO announced by the firm. Further, the stock price reactions to the fourth and subsequent issues by industrial firms are insignificant. For firms that conduct at least two SEOs, there is no difference in returns between industrial firms and utilities or financial institutions. The lower negative returns for later announcements by industrial firms is explained by reduced adverse selection costs (Myers and Majluf (1984) and Miller and Rock (1985) argue that information asymmetry between managers and capital markets is the primary explanation for the negative returns at SEO announcements. A reduction in the level of asymmetric information, and hence adverse selection costs, at subsequent equity issues explains the pattern in stock returns.)

Further, study finds no evidence that improved firm performance after the previous offer or expectations of superior performance after the current issue affects stock price reaction to the current issue announcement. Finally, study also finds that firms take advantage of the patterns of announcement period stock returns and asymmetric information levels by raising more capital and by shortening the interval between successive SEOs for issues conducted later in the sequence.

Clark et al. (2004) test the windows of opportunity hypothesis for 424 U.S. SEOs from 1980 to 1996 examining their long run stock and operating performance. Study finds that on an average, abnormal returns following SEOs are positive though not significant. However, consistent with windows of opportunity, study finds that, for the sub sample of secondary issuers in which the seller is classified as insider, both 3 and 5-year post issue abnormal returns are negative and significant. Examining the operating performance of secondary offers by insiders and noninsiders, study finds that offers made by insiders experience a decline in the post issue period relative to the offers made by noninsiders. This change in abnormal performance from the pre-issue to the post issue period is significantly negative for the insider group, but not for the noninsider group. Overall, the evidence is interpreted as consistent with insiders exploiting windows of opportunity by issuing shares that are overvalued because the market incorrectly believes that past accounting performance will continue into the future. Windows of opportunity appear to arise as investors anchor their expectations of future operating performance on past trends as noted by Loughran and Ritter. However, the study finds little support for the notion put forward by Daniel et al. (1998) that investors are underreacting to information in the announcement of a secondary sale.
Zhang (2005) studies insider selling in follow-on offerings in the framework of prospect theory and Information-momentum theory using a sample of 2,982 U.S. IPOs from 1990 to 1997, and 4,161 SEOs from 1990 to 2000, of which 964 are the first SEOs offered within three years of the IPO and the remaining 3,197 are SEOs issued by IPO firms three or more years after their IPO, or the second or third SEO of IPO firms. Study finds that dilution and insider participation in the IPO are negatively related to the number and size of SEOs, which is consistent with entrepreneur wealth loss minimization theory of Habib and Ljungqvist (2001), and prospect theory of Loughran and Ritter (2002). Newly public firms are more likely to issue seasoned equity within three years if they issued fewer shares at the time of the IPO and owner-managers sold fewer shares at the time of the IPO. The size of the SEO relative to the IPO is also not related to underpricing but negatively related to both dilution and participation. However, insider selling in SEOs is positively related to IPO selling, contrary to the theories. Although underpricing is not related to either the probability or size of SEOs, it is significantly related to insider selling in SEOs. For the set of firms that issue SEO within three years of their IPO, insiders sell more of their own shares if their IPO experience more underpricing consistent with signaling models. Insider participation in SEOs is also positively related to dilution and participation at the time of IPO. Insiders sell more shares subsequently in SEOs if their firm sold a larger percentage at the time of IPO and insiders sold more of their own shares. This evidence is inconsistent with both prospect theory and Information-momentum theory of Aggarwal et al. (2002). Finally, study finds that the size of SEOs is significantly related to the number of syndicate managers at the time of IPO. If the number of syndicate managers is a good proxy for information production, then the evidence is consistent with information-momentum theory.

Barnes and Walker (2006) examine the seasoned equity issues of companies traded on the LSE focusing on the effects of regulatory changes in the UK that have allowed firms more discretion in choice of issue type. The sample consists of U.K. equity issues over 1989-1998 period consisting of 600 right offerings (RO) and 268 placing with institutions (PL), where a lead issue manager or underwriter undertakes to purchase new issue shares from the firm at a given price and in turn to sell these to institutions in exchange for the placing fees. Study finds that PLs are received more favorably by the market than rights, a finding which is also supportive of the view that this flotation approach would be chosen by quality firms, and that offerings by rights would convey a negative signal of firm prospects. This is consistent with Slovin et al. (2000) who noted an increased use of
Further, study develops a model to explain the choice of equity issue method that achieves a high level of predictive accuracy. Modelling the determinants of issue method choice, study finds that higher levels of information asymmetry significantly increase the probability of an issue by PL, while higher institutional ownership seems to decrease the probability of a PL.

Bayless and Jay (2008) argue that the evaluation of returns following an equity issue has been hampered by a narrow focus on the period immediately following the issue. The study relaxes this constraint and compares the risk-adjusted performance of firms following an equity issue with their performance during periods when there was no issue activity. Study employs this methodology in a calendar-time framework along with a six-factor generating model of expected returns and a matched sample of non-issuing firms. The results indicate that the six-factor model of expected returns cannot explain firm's underperformance following an issue as suggested by Eckbo et al. (2000). The approach used by the present study also produces new empirical evidence that weak returns following an equity issue are consistent with pseudo market timing by issuing firms as argued by Schultz (2003), Schultz (2004).

Loughran (2008) examines equity issuance using location as a proxy for information asymmetries. Study creates yearly portfolios for 1980-2002 at the end of June of year $t$ and counting each firm-year separately, the sample consists of 22,988 urban observations, 32,496 small city observations, and 5,985 rural firm-year observations. Findings of the study are consistent with the joint hypotheses that information asymmetries between rural firms and investors seem to be large, and that firms appear to avoid issuing equity in the presence of these asymmetries. Even after adjusting for differences in size, prior stock returns, book-to-market ratios, and other factors, study finds that SEOs are found to be significantly less common for rural firms as these firms have few potential purchasers of stock located nearby. This finding supports Ivkovic and Weisbenner (2005) who find that the average household in the U.S. invests 31% of its portfolio in stocks located within a 250-mile radius, if investors had held market portfolio instead, only 13% of the average household's investments would be this close. Evidence that geographical closeness to a company provides information advantages also comes from the work on equity analysts by Malloy (2005) who finds that analysts located nearer a company's headquarters provide more accurate earnings forecast, and Bae et al. (2008) who find that local analysts have a strong information advantage over foreign analysts across 32 different countries. Study also finds that underwriters used by rural firms and firms located far
from major airports tend to be less prestigious as measured by Carter-Manaster ranking. This finding is consistent with the assertion that the location of a firm’s headquarters affects its ability to issue equity and plays a role in the ability of the firm to select quality underwriters for any offerings.

This section discusses various aspects relating to Seasoned Equity Offerings. Korajczyk et al. (1991) find that equity issues cluster in the first half of the period between information releases indicating that equity issues tend to follow credible information releases. However, Loderer and Mauer (1992) find only weak evidence that firms time stock offering decisions immediately after dividend declarations, dividend decisions do not seem to reduce valuation uncertainty and they do not appear to lead to less negative announcement effects. Jain (1992) reports that announcement of equity issues conveys negative information about earnings and given the information released in the equity issue announcements, financial analysts revise their forecasts of earnings downward. Findings of Denis (1994) suggest that investment opportunities play, at best, a minor role in explaining the market reaction to equity offerings. Bayless and Chaplinsky (1996) results are consistent with windows of opportunities for equity issues that result, at least partially, from reduced levels of asymmetric information. Clark et al. (2004) also document that insiders exploit windows of opportunities by issuing shares that are overvalued because market incorrectly believes that past accounting performance will continue into the future. Lee (1997) finds that top executives sell their shares before the SEOs underperform which is consistent with Myers and Majluf (1984) that with asymmetric information, managers with superior information about the firm have an incentive to issue overvalued equity and consequently, the stock price of issuing firm drops on the announcement of a new issue. However, the rejection of firm-originated information hypothesis using the upward revision of issue size in seasoned stock offering by Galloway et al. (1998) is inconsistent with Myers and Majluf (1984) model, according to which the disclosure, say, of an upward revision in issue size would tell market participants that the stock is overpriced. While Ghosh et al. (2000) reports SEO underpricing using both the measures – close-to-offer and offer-to-close, Corwin (2003) reports only one measure of SEO underpricing – close-to-offer. Loughran and Ritter (1997) find that operating performance of SEO firms peaks at approximately the time of the offering and then declines after the offering which is consistent with findings of Jain and Kim (1994) and Coakley et al. (2007) for IPO firms. McLaughlin et al. (2000) find strong support for information/certification role of investment bankers in SEOs. D’Mello
and Ferns (2000) show that security analysts serve as information intermediaries in the capital market and the activities of the analysts can contribute to a reduction in the degree of information asymmetry between investors and corporate managers at the time of a new equity issue. Loughran (2008) observes that information asymmetry between rural firms and investors seem to be large and firms appear to avoid issuing equity in the presence of these asymmetries.