CHAPTER 2: LITERATURE REVIEW

Our study combines three strands of research: one, research on long-run performance of equity issuance which shows the evidence of market timing; two, literature on pseudo market timing hypothesis and testing of pseudo market timing hypothesis; and three, literature on independent effects of market timing and growth opportunities on equity issuance. We present literature review of these three strands as below:

2.1 Literature review on market timing and long-run performance of equity issuance

Ritter (1991) is the first paper to examine the long-run performance of IPOs. The author gives four main reasons as to why it is important to examine the long-run performance of IPOs using stock returns. Firstly, the investors may take advantage of price patterns which emerge due to an event (for example, in which case, an IPO), by adopting active trading strategies to obtain high returns. Secondly, positive or negative abnormal returns after the IPOs may raise a question on the efficiency of the IPO market. Thirdly, if high volume of IPOs follows long-run underperformance, then issuers possess market timing ability and take advantage of overvaluation. Fourthly, if the post IPO returns are lower than the market returns then the cost of external equity for those firms will be lowered because cost of equity depends on the floatation cost for going public and also on the returns which investors receive after the IPO. He analyzes 1,526 U.S. IPO firms which got listed on American Stock Exchange (AMEX), New York Stock Exchange (NYSE) and NASDAQ during 1975-1984. Two measures are used to examine the long-run performance of IPO firms: cumulative average adjusted returns (CAARs) and three years buy and hold returns (BHRs). In order to calculate CARs, four benchmarks are used to compute the adjusted returns after rebalancing monthly portfolios. Out of four benchmarks, three
benchmarks are market indices and one is match firm. Three post-issue year BHRs are computed for IPOs and match firms where match firms are those firms which are listed on AMEX and NYSE and have the same industry and approximately of similar size in terms of market capitalization as the IPO firm. In order to interpret three year BHRs, the author calculates a performance measure called wealth relative. Wealth relative is computed in the following way:

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Wealth\ Relative\ (WR) = \frac{1 + \text{average three year BHRs}^{1} \text{ of IPO firms}}{1 + \text{average three year BHRs} \text{ of match firms}}
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If the wealth relative is greater than 1 then it indicates that IPO firms have outperformed the portfolio of match firms and if the wealth relative is less than 1 then it means that IPO firm has underperformed the portfolio of match firms. The performance of IPOs is analyzed from various ways: firm-wise, industry-wise, year-wise, gross proceeds-wise and age-wise. The results show that there is a variation in the degree of underperformance but it persists in all cases. Small size offer IPO firms which have the highest initial returns performed worst in the long-run relative to big size offer IPO firms. However, the WR of all IPO firms is less than 1. Long-run underperformance also varies across different industries. Out of all 14 industries considered, underperformance is found in 11 industries. The WR of only financial firms is greater than 1 whereas WR of all the other industry firms is less than 1. Financial firms outperformed substantially whereas oil and gas firms underperformed substantially. When the performance is categorized by the year of issuance of equity, it is seen that underperformance is more in the period of heavy equity issuance. Lastly, WR of young companies is less than that of mature firms which indicates that young companies performed worse than the mature firms. Ordinary least square regression is further used to regress 3 year return of IPO firms on initial return, age, oil

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1 BHR for ith firm is calculated as \( \prod_{t=1}^{T} (1 + r_{it}) \) where \( r_{it} \) is the proportional change in the stock price of ith firm from period t-1 to t.
and gas industry dummy, financial industry dummy, market return and annual volume of IPOs. The results of regression support the previous results that oil and gas firms perform worse and financial firms outperformed. The author concludes that the long-run underperformance indicates that the issuers are able to time the market to take advantage of “windows of opportunity” which is also consistent with the “fads explanation” where firms go public when investors are irrationally more optimistic about the value of stocks of some firms. **Though the study has examined long-run performance from different perspectives, but it has few shortcomings:**

i. No statistical test is used to test if wealth relative is significantly different from 1.

ii. Match firm is selected on the basis of industry and size which may not be an appropriate representation of an IPO firm. The other measures on the basis of which match firm can be selected are market-to-book ratio and profitability.

iii. Event-time approach is used in the paper to measure long-run performance which has recently been criticized (e.g., Mitchell and Stafford, 2000; Schultz, 2003 etc.) and calendar-time approach to measure the performance is advocated.

Supporting Ritter (1991), Loughran and Ritter (1995) find the long–run under performance for the companies issuing equity in both IPO as well as SEO. They examine the long-run performance of 4,753 IPOs which got listed on AMEX, NYSE and NASDAQ and 3702 SEOs listed on AMEX, NYSE and NASDAQ which made equity offerings in the period from 1970 to 1990. Unlike Ritter (1991) who uses CARs and BHRs to measure long-run performance, they use only BHRs to examine long-run performance for two intervals – three year and five year. The authors use three different statistical methods to examine if the long-run performance is statistically significant in all cases. In the first method, they compare average annual returns for holding period of issuing firms with the match firms. Match firms are the firms which have
similar market capitalization and not issued equity in the last five years. In addition to non-issuing match firms, they use five different value-weighted and equally-weighted market indices as alternative benchmarks to evaluate average five-year buy and hold returns. The results show that both IPOs and SEOs under-perform severely relative to non-issuing firms and other alternative benchmarks. The authors state that many firms which go public are high growth firms and many firms which conduct SEOs have had high valuations (high market-to-book ratio). Since the benchmark firms are matched on the basis of size, the authors also analyze the long-run performance by running cross-sectional and time series regressions by using monthly returns after controlling for size as well as market-to-book effects. In cross-sectional regressions, the dependent variable is monthly return of individual stocks of all listed stocks and independent variables are market value, market-to-book ratio and “Issue dummy” which is 1 when the firm issued equity in the preceding five years and 0 otherwise. The coefficient of dummy variable “Issue” is found negative and significant in all cases. The time series regressions are run by using Fama and French (1993), three factor time-series regression model of monthly returns for two portfolios of issuing firms and non-issuing firms. The results of time series regressions also show long-run underperformance of IPOs and SEOs. Therefore, the authors conclude that managers possess the market timing ability and take the advantage of overvaluation while issuing equity.

Ritter (1991) and Loughran & Ritter (1995) show that firms which issue equity underperform in the long-run in terms of stock returns. Loughran and Ritter (1997) extend their argument and show that the firms conducting SEOs not only perform badly in terms of stock returns but the operating performance of the issuing firms also deteriorates after the issuance of equity. They mainly address four issues: they compare operating performance of issuing firms with non-issuing firms, large issuing firms with small issuing firms, analyze the capital
expenditures after the issuance in order to examine the over optimistic behavior of issuers, and to analyze the independent effect of new issuance irrespective of the growth rate on the post-issue returns. The sample of the study consists of 1338 SEOs which issued equity during 1979 – 1989 and are listed on NYSE, AMEX and NASDAQ. In order to compare the operating performance of issuing firm with a similar non-issuing firm listed on any of these stock exchanges, a match firm for each issuing firm is found. The firm is matched on the basis of three criteria: industry, asset size and the operating performance. The median performance parameters which are selected to analyze the operating performance are return on assets, operating income scaled by assets, operating income scaled by sales, profit margin, sum of research and development expenses (R&D) and capital expenditures (CAPEX) scaled by assets, and market-to-book value of equity. Their results show that all the performance measures of issuing firms improve prior to equity issuance but decline significantly after the issuance. Though the operating performance of non-issuing match firms also decline substantially in the same time period but the performance of issuing firms is significantly worse than that of non-issuing firms. The decline in the post-issue market-to-book value shows that issuers tried to take advantage by issuing overvalued equity. Small issuers performed worse than larger issuers. The results also indicate that in spite of decline in the profit margins in the post-issue period, the spending on R&D and CAPEX by issuing firms was high both, before and after the issuance which reflect the over optimism of managers who invest in negative NPV projects. The average annual stock returns of issuing firms for post-issue five year period are found to be significantly less than average annual returns on value weighted market index and on non-issuing firms. Further, the small issuers show more underperformance than the large issuers in terms of average annual returns. In order to test whether the low stock returns in the post-issue period is the effect of fast-growth or the effect of
equity issuance independent of growth, they run cross-section regression. The cross-section regression results show that irrespective of the measure of the growth, the post-issue market adjusted stock returns of fast growing firms are worse than the slow-growing firms. Furthermore, while the fast-growing firms perform worse, issuers always have significantly lesser stock adjusted returns than those of the non-issuers. This leads to their conclusion that both investors and managers are too optimistic about the future prospects of the company and managers take advantage of over optimistic investors by issuing overvalued equity.

Pagano, Panetta and Zingales (1998) use direct test to find out reasons for companies going public. In other words, they examine the determinants of IPOs. They compare ex ante characteristics and ex post consequences of the decision to go public of Italian IPOs with those of private firms which fulfill the requirements for listing at stock exchange. They postulate that if ex ante motives of the companies are fulfilled ex post then it reflects the rational expectations of managers for taking their companies public. They analyze a sample of 69 Italian companies which consists of 40 independent IPOs and 29 carve-outs (when a parent company takes its own subsidiary company public) during 1982-1992. To examine ex-ante determinants of firms, they use Probit regression in which their dependent variable is dummy variable which takes value 1 if the company goes public and 0 if it stays private. The independent variables are size, CAPEX, growth, ROA, Leverage, industry market-to-book ratio, relatives cost of credit, Herfindahl index and a calendar year dummy. The highly significant factor affecting the probability of a company to go public is found to be industry market-to-book value which reflects two possibilities: high growth opportunities in the sector to which the firm belongs or issuers possess the market timing ability to sell their equity at higher prices. However, the second set of results (ex post effects of IPOs on each of the above mentioned variables) show that investment and profitability decrease
after the IPO. This indicates the support for second explanation that the companies go public in order to time the market. The second important determinant is found to be size. The results indicate that the probability to go public for large companies is higher than that of the small companies which is consistent with the adverse selection cost theory of going public. According to adverse selection cost theory, the investors do not have the complete information about the true value of the issuing firm which creates hurdles and makes it costly for small and young companies to go public. Though the coefficients of CAPEX and growth are found to be positive, they are not significant which suggests that the decision to go public is not driven by the investment needs of the companies. The other variables such as leverage and Herfindhal index are found to be insignificant. With this, the authors conclude that companies go public in order to take advantage of industry-wide overvaluation and rebalance their books of accounts after heavy investment and growth rather than to finance investment in post-issue period. **The shortcoming of the paper is that both ROA and Leverage are included in the regression as independent variables and it may cause endogeneity.** Further, the sample of the study is 69 Italian firms which comprises of only 40 independent IPOs and 29 carve-outs.

Brav, Geczy and Gompers (2000) re-examine results of Ritter (1991) regarding the long-run stock performance of IPOs and SEOs by using improved methodologies. For example, they not only use event-time approach but also calendar-time approach to analyze long-run performance of firms issuing equity. They also claim that the long-run underperformance shown by previous studies is the result of improper controlling for firm size effects. They say that the benchmarks with which we compare the return of our sample firms should be composed of those firms which have the risk and return similar to those of sample firms. They also state that if excess returns (firm’s return minus benchmark’s return) are measured properly, then it not only
influences the magnitude of abnormal performance but also affects the power of the statistical test. They analyze a sample of U.S. 4622 IPOs and 4526 SEOs during 1975-1992. In addition to market indices, they create benchmark portfolios on the basis of size and market-to-book ratio. By using varying combinations of models, portfolio formation rules and benchmarks, the authors show these combinations lead to different conclusions. They use both event-time and calendar-time approach to analyze the impact of equity issuance on stock returns. In event-time approach, they use both cumulative abnormal returns (CARs) and buy-hold-returns (BHRs) to analyze the long-run performance for five years after the issuance. In each of these methods, they calculate both equally weighted and value weighted returns of the issuers in order to pinpoint the cross-sectional differences in abnormal performance if any. The calendar-time returns are analyzed by using Fama-French (1993) three-factor and Carhart (1997) four-factor model. The event-time results indicate that IPO firms perform similar to those non-issuing firms having similar characteristics which are size and book-to-market ratio. However, SEOs underperform relative to benchmarks. The results of calendar-time approach show that only small IPO firms with high market-to-book ratio underperform in the long-run whereas SEOs returns co-vary with the returns of non-issuing firms. This leads to the conclusion that in calendar-time approach, the long-run underperformance is not because of equity issuance per se but raised a question that why small size firms with high book-to-market ratio did underperform in the long-run.

The previous studies, Ritter (1991), Loughran and Ritter (1995, 1997) (which show the long-run underperformance of IPOs and SEOs) and Pagano et al (1998) (which show that the companies issue equity when market valuations are high and try to take advantage of misvaluation) mainly conclude that issuers possess the market timing ability and take advantage of ‘windows of opportunity’. These papers show that market returns predict the events like
equity issuance whereas Baker and Wurgler (2000) view market timing ability of managers from the perspective that events predict future returns. They claim that equity share in aggregate new equity and debt issues predict aggregate market returns. They examine equity and debt issues data for the period 1927 – 1996. They compare equity share with other market return predictors which are book-to-market ratio and dividend yield. In univariate regressions, they regress each of these predictors viz., equity share, book-to-market ratio and dividend yield on future one year equity market returns. They find that equity share is better predictor than other variables. In order to examine the incremental predictive power of equity issues over other predictors, they also run multivariate regression. In this regression, the dependent variable is equally weighted/value weighted equity market return and independent variables are: lagged equity market return, risk-free return (return on Treasury Bills), term premium, book-to-market ratio, dividend yield and equity share. The results show that the equity share is the most significant predictive variable and its significance is consistent across time. The other variables are not consistently significant and some are even insignificant. They show that firms issue equity before low return periods (or at the time of high returns) and prefer to issue debt before high return periods (or at the time of low returns). In particular, all the results show negative relationship between equity issue and subsequent market returns which means equity share predicts negative stock market returns. They also consider the efficient market explanations for the relationship between equity share and subsequent market returns but they fail to find support for any of them. They conclude that the markets are inefficient and managers take the advantage of those inefficiencies.

Continuing with the argument of previous studies that firms issue equity when their equity is overvalued and repurchase equity when their equity is undervalued, Baker and Wurgler (2002) examine the impact of this market timing on the capital structure. In particular, they
analyze the impact of historical market-to-book value on the capital structure. Their objective is two-fold. First, they investigate the evidence of market timing by examining whether market-to-book value ratio impacts capital structure through net equity issues. Second, they investigate whether market timing has persistent effects on the capital structure. They examine all the U.S. firms which appeared in COMPUSTAT from 1968 – 1999 and for which the IPO date is available. For the first objective, they use OLS regression in which the dependent variable is annual change in book value of leverage and the independent variable is market-to-book ratio with other control variables measuring profitability (earnings before interest, tax and depreciation divided by total assets), tangibility (net fixed assets divided by total assets) and the firm size (natural log of sales). The most significant variable affecting the change in leverage is found to be market-to-book ratio. The relationship of other control variables with the leverage is consistent with the theory. The negative relationship between market-to-book value and the leverage shows that firms issue more of equity when their market valuations are higher. They also divide the dependent variable i.e., change in leverage into three components which are: equity issues, retained earnings and the remaining change in leverage as a proportion to total assets in order to show that the impact of market-to-book value on annual change in leverage comes through net equity issues. In order to examine the persistent effects of market timing on capital structure they analyze the impact of weighted average of market-to-book ratio (on the basis of past 10 years), market-to-book ratio and other control variables (mentioned above) on different leverage variables for up to ten years. Book leverage, market leverage, cumulative change in leverage since the pre-IPO level and the future leverage are the different types of leverage variables. All the regression results indicate that the historical market valuation has a negative relation with the leverage. So, the authors conclude that the market timing has persistent
effects on capital structure. The regression analysis suffers from endogeneity since profitability and size are included in the regression as control variables.

Aydogan (2006) work is similar to Baker and Wurgler (2002) since he also examines the impact of market timing on capital structure. However, he criticizes Baker and Wurgler (2002) on the ground that their proxies to capture market timing which are: increase in external financing and market-to-book ratio, may convey that firm has long-term growth options. The author argues that it is important to isolate market timing to analyze its long-term impact on capital structure. He also claims that his measure to capture market timing is more direct because he directly deals with IPO hot issue markets where the chances of market timing are high. By doing so, he makes use of market timing measure which is a function of market conditions not of firm level characteristics as seen in the case of Baker and Wurgler (2000). The sample consists of 2200 U.S. IPOs during 1971 – 1999. He defines hot and cold IPO markets on the basis of IPO volume per month. In order to analyze the impact of market timing on issuance activity, he uses regression with industry-fixed effects in which the two dependent variables are proceeds of equity and number of equity issues. He uses a dummy variable called ‘HOT’ as a measure of market timing which indicates if the equity is issued during hot issue market. The other control variables are M/B, profitability (Earnings before interest, tax, depreciation and amortization divided by total assets), size (log of sales), R&D, tangibility of assets and lagged book leverage. The results show that hot market has a significant and positive effect not only on the amount of equity proceeds but also on the quantity of equity issues. In order to check whether the equity issuance is driven by some factors which can make the argument stronger for market timing, the same regression is run on variables which affect equity issuance other than market timing. Those

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2 An IPO market is considered as ‘HOT’ if it is characterized by high volume of IPOs or large number of issuers whereas it is considered as ‘COLD’ if it is characterized by low volume of IPOs or small number of issuers.
variables are change in leverage, investment expenditure, dividend payout ratio and profitability in post-IPO period. The results indicate that there is no difference in pre-leverage levels and the growth characteristics of hot and cold issue firms which shows that reduction in debt and capital expenditure was not the reason for them to go public. However, the results show that that hot IPO firms are less profitable and pay more dividend in post-IPO period than cold IPO firms which make the argument stronger that hot market issuers time the market and take advantage of higher market conditions. The author also shows that the effects of market timing on capital structure are not persistent because the issuers tend to reverse (increase) the leverage just after two years of equity issuance.

Ghosh (2006) analyzes the factors responsible for underpricing of Indian IPOs. He also examines whether these factors explain underpricing in hot issue period in the same way as the cold issue period in India. Relationship between underpricing\(^3\) (initial returns) of IPOs and follow-up offerings (SEO) made by IPO firms is also examined. The data for the study consists of 1,842 IPOs which got listed on Bombay Stock Exchange from 1993 to 2001. Four different proxies of underpricing are used which are: raw underpricing, annualized underpricing, underpricing adjusted against the movement of market index during the listing period and market adjusted underpricing (annualized). The magnitude of underpricing is observed as 96%. Underpricing is regressed on age, log of issue size divided by GDP deflator and different dummy variables (if issue is with premium, if issuing firm is from manufacturing sector, if issuing firm is from service sector, if the issuing firm is from software sector, if the issuing firm has subsequently issued equity after its IPO, if the issuing firm has issued equity during hot issue period and if the issuing firm belongs to any business group or government company). The

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\(^3\) Underpricing is calculated as the ratio of difference between the closing price on the first day of listing and the offer price to the offer price.
regression results show that the firms which have large issue size have less underpricing, more underpriced firms go for SEOs after their IPOs, firms which issue equity in hot issue period experience less underpricing and the coefficients of other variables such as age, dummies representing manufacturing, services and software sectors are insignificant. The author performs the regression analysis for hot issue and cold issue periods separately. This analysis shows that the age and industry dummies are not significant; underpricing is less in hot issue period for the firms which issued equity with premium which indicates that the Indian investors have confidence in offers with premium and they consider them to be less risky. The results also show that in hot issue periods, the firms which belong to business group and also the firms which subsequently issue equity after their IPO have higher underpricing. Logit model is also used to estimate which type of firms are more probable to go for subsequent equity issuance. The results of logit model indicate that firms which belong to business groups having large issue size and which have higher underpricing enter to market again to raise the funds. Overall results show higher level of underpricing in Indian IPOs. The paper examines only underpricing which is a short term phenomenon. The long-run performance of IPOs and valuation of IPOs have been ignored in the paper. The use of dummy variables in the regression is not proper and hence interpretation of the results is not meaningful. Valuation of IPOs is an important aspect because Purnanandam and Swaminathan (2004) have shown that the more underpriced IPOs are significantly overvalued which gives an opportunity to manager to time the market.

Marisetty and Subrahmanyam (2010) analyze the underpricing and long-run performance of 2713 Indian IPOs which issued equity from 1990 to 2004. They examine the short-run (underpricing) and long-run performance of stand-alone IPOs and the IPOs which are affiliated
with domestic business groups, government owned firms and foreign firms in India. They test two hypotheses: certification hypothesis and tunneling hypothesis with regard to group affiliation. According to certification hypothesis, family managed business firms provide financial help to their member firms through internal capital markets in case of need. This creates confidence among investors for family business firms and leads to less underpricing as compared to stand-alone firms. On the other hand, according to tunneling hypothesis, the controlling family firms try to expropriate cash flows from the other member firms which have less control. Due to this, the investors have less confidence in family managed firms and this leads to greater underpricing of business group firms as compared to stand-alone firms. Underpricing (initial returns) is regressed on various variables which are: size represented by log of asset size; issue size; subscription of promoters, public investors, institutional investors, other investors, extent of oversubscription, dummies to represent three different affiliations – private Indian group, stand-alone firm and government company, industry dummies and regime dummies. The results of regression show that group affiliated firms have more underpricing than stand-alone firms. Firms affiliated to foreign groups also show greater underpricing. Government owned firms show least underpricing. Investors’ overconfidence proxied by oversubscription explains the maximum underpricing of business group IPO firms. In this way, authors find support for tunneling hypothesis. This result also goes in line with overreaction hypothesis. The long-run performance of IPO firms measured by using CAARs and BHARs\(^4\) is negative for all IPOs. Though the paper examines the long-run performance of IPOs but it uses event-time approach to measure the performance which has been criticized by various researchers such as Fama (1998), Mitchell et al. (2000) and Schultz (2003). The use of calendar approach to analyze the

\(^4\) When market CARs and BHRs are subtracted from firm’s CARs and BHRs respectively then they are called CAARs (cumulative abnormal adjusted returns) and BHARs (Buy-and-hold adjusted returns).
long-run performance is advocated because the negative performance in event-time tends to disappear in calendar-time approach.

2.2 Literature review on pseudo market timing hypothesis and testing of pseudo market timing hypothesis

So far, the previous literature has claimed that managers can time the market because they have the insider information about the true value of equity and they sell equity when it is overvalued. Schultz (2003) is the first paper which claims that the markets are efficient and managers do not possess the market timing ability. This paper has come out to be very influential paper and spawned many papers. He argues that even in the absence of managers who possess insider information, we can find evidence which is consistent with the market timing. He says that issuers issue more equity when they can receive high price for their equity. They can receive higher price for their equity when markets on an average are rising. This does not mean that equity of issuers is mispriced and issuers take advantage by selling overvalued equity. Instead, rising markets show that there are more growth opportunities and firms issue more equity at high prices in anticipation of new investment projects. Through a simulated model, he shows that managers react to market-wide conditions by issuing equity believing that the markets are inefficient even though markets are efficient and when managers do not possess market timing ability. In such a scenario, equity issuance will be concentrated at higher prices ex post even though managers cannot determine those price peaks ex ante. He refers this situation to ‘Pseudo Market Timing’. By using simulations on U.S. IPO data and U.S. market return data during 1973 - 1997, he shows that chances of observing long-run underperformance of IPOs in event time methodology exceeds 50 percent. Furthermore, he shows that underperformance of more than 25 percent for five years in post-IPO period is quite natural and usual in an efficient market. He claims that analyzing long-run performance of IPOs or SEOs through event-time approach can
lead to false conclusions because under event study, we analyze the impact of an event on the stock prices but here the event equity issuance (number of IPOs or SEOs) is not an exogenous variable but rather depends on the level of market returns. In such a scenario, it is inevitable to observe underperformance which leads us to conclude that the managers time the market. He advocates the use of calendar-time approach over event-time approach to analyze the long-run performance. Event-time approach weights offerings (events) equally whereas in calendar time approach, months are weighted equally even though offerings or events cluster in time. In other words, event-time approach is a technique of investing equal amount in each offering whereas calendar-time approach is a technique of investing equal amount in each IPO month. He argues that previous studies have considered the clustering of IPOs or SEOs at market or stock prices as an evidence of market timing by issuers who issue equity knowing that it is overvalued. However, his simulations also observe this kind of clustering even when future returns are not predictable.

Lowry (2003) tries to find fluctuations in IPO volume across time in order to understand whether these variations are explained by efficient market or inefficient market factors. She analyzed 5349 U.S. IPOs which went public during 1960 to 1996. She explores three main explanations of time series variations of U.S. IPO volume which are in the form of three hypotheses: investor demand hypothesis, information asymmetry hypothesis and capital demand hypothesis. According to investor demand hypothesis, firms issue more equity when investors are overly optimistic and willing to pay more than the actual worth of the firm. According to information asymmetry hypothesis, firms issue more equity when information asymmetry between managers and the market reduces, which makes it less costly for a firm to go public. This hypothesis predicts a negative relation between information asymmetry and IPO volume.
Last, capital demand hypothesis says that firms issue equity when overall economy is rising and there is more demand for capital due to expansion. The proxies to test investor demand hypothesis used in the study are: post-issue market returns and discount of closed-end mutual funds, the proxies of information asymmetry hypothesis are variation in abnormal returns around listed firms’ earnings announcements and variations of earnings forecasts by analysts of listed firms, and the proxies which are used to test investor demand hypothesis are: GDP growth rate, growth of private and non-residential investment, number of new business formations, sales growth of all listed firms and a dummy for business cycle. The control variables are market wide M/B ratio, past market returns and initial returns of the issuers. The number of IPOs is regressed on all these variables. The quarterly and annual time series regressions (both at market level and industry level) show that all the factors contribute to variation in IPOs but the most significant are market demand and investor sentiment factors. The tests showing the effects of IPO volume on post-issue returns of the issuer also suggest the same results.

Bulter, Grullon and Weston (2005) affirm Schultz’s (2003) pseudo market timing hypothesis and suggest an efficient market explanation for what the previous literature has called as market timing ability of managers. Bulter et al (2005) raise their concern against Baker and Wurglers’ (2000) results which conclude that markets are inefficient and managers can time the market. The conclusions of Baker and Wurgler (2000) are based on in-sample results which show that equity share in aggregate issues is negatively related to future returns. The authors not only conduct in-sample (ex-post analysis) tests similar to those of Baker and Wurgler (2000) but they also conduct out-of-sample (ex-ante analysis) tests to test aggregate pseudo hypothesis. According to aggregate pseudo market hypothesis, we cannot conclude that managers can time market only on the basis of predictive power of equity (negative relation between equity share
and future returns) in in-sample (ex-post) tests but we need to investigate whether future returns are predictable in out-of-sample (ex-ante) tests. If returns are not predictable in out-of-sample tests then it can be said that the markets are efficient. The sample of the study is same as of Baker and Wurgler’s (2000) sample with a little extension of five years. They analyze all equity and debt new issues for the period from 1997 to 2001. Their analysis has three parts. First, they show the evidence of aggregate pseudo market timing hypothesis. Second, they show the distinction of aggregate pseudo market timing hypothesis, managerial market timing and substitution hypothesis. Third, they show out-of-sample test to check the predictive power of equity share. The authors claim that aggregate pseudo market timing occurs only at large market shocks. They carry out their analysis on the complete sample period as well as sample period excluding two major unpredictable and structural shocks in U.S. economy during the same time period identified by previous authors. These shocks are Great Depression from 1927 to 1931 and Oil Crisis from 1973 to 1974. Equity share has a strong negative relation with future returns in regression of complete time period which includes both the shocks whereas the significant relation between equity share and future returns disappears in the regression which excludes both the shocks. The authors state that their results cast doubt on managerial market timing ability shown by Baker and Wurgler (2000) because the in-sample predictive power of equity share comes from the two big economic shocks which are unpredictable. They also show that during high market valuations, managers do not substitute debt for equity rather they issue both debt and equity and out-of-sample tests indicate that there is no significant relation between equity share and future market returns. These results are also consistent with the aggregate pseudo market timing hypothesis.
Wagner (2007) examines the role of market timing in equity issues. By analyzing a sample of 2400 IPOs and 5300 SEOs during 1970 to 2005, the study mainly addresses two questions: Are equity issuances driven by market timing; and does market timing has persistent effect on capital structure. The study is related to Baker and Wurgler (2002) in a way that it also examines the impact of market timing on capital structure but it does not use the same measure M/B ratio. It uses a more direct measure of market timing i.e. the study examines market timing in hot market issue markets vs. cold issue markets similar to Alti (2006). The author also uses four ex ante characteristics of firms which reflect the opportunities of firms to time market and are: valuation uncertainty, financial constraints, price momentum and information content in stock prices. IPO and SEO proceeds are regressed on these four variables, hot issue dummy and other control variables. The regression results show that the firms which have opportunities to issue equity to take advantage of favorable conditions to issue equity. However, the performance of issuing firms measured in calendar-time is similar to the performance of match firms. Also, the effects of market timing on capital structure are not persistent in the sense the firms reverse their leverage immediately after the equity issuance. In nutshell, the results support pseudo market timing explanation of equity issuances.

Chan, Ikerberry and Lee (2007) test Shultz’s (2003) pseudo market hypothesis in the context of share repurchases in order to examine whether managers time the market while repurchasing equity. The motivation of the study comes from the fact that previous researchers have shown positive abnormal long-run stock performance of firms after share repurchase activity. Those researchers have considered market timing attempts by managers as the reason of positive long-run stock performance in the years following repurchase activity. The idea is that managers repurchase their stock when they believe that their stock is undervalued. The authors
study a sample of U.S. 5508 buyback announcements which took place during 1980 -1996. The authors examine completed as well as announced buybacks which did not materialize. They first show that the firms experience negative buy and hold returns relative to the match firms before announcement of buyback and earn abnormal positive buy and hold returns relative to the match firms after the announcement of buyback activity. This result suggests that managers can time the market but this result cannot be differentiated from pseudo market timing because according to pseudo market timing hypothesis firms earn positive abnormal returns even when managers cannot time the markets. They evaluate the first implication of pseudo market hypothesis by analyzing the extent to which the buyback activity depends on the past market returns. The regression results of share repurchase announcements on equally weighted and value weighted market returns partially support pseudo market timing hypothesis. When full sample is considered, there is a negative and significant relation between past market returns and repurchase announcements but when months of highest past market return are excluded then the coefficient estimates lose their significance. The former result supports pseudo market hypothesis whereas later the does not. Next, they examine the second implication of pseudo market hypothesis according to which we may observe abnormal performance following repurchase activity in event-time but not in calendar-time. They use Carhart’s (1997) four-factor regression to test this implication. The time series regression results show a positive and significant intercept which is an indication of abnormal performance (the intercept should not be significantly different from zero in case of no abnormal performance). The results of actual repurchase activity also show the similar results. The authors conclude that the repurchase activity of firms is driven by managerial market timing, not by pseudo market timing.
Gregory, Guermat and Shawawreh (2010) test behavioral market timing as against Schultz’s (2003) pseudo market timing hypothesis in the context of UK IPOs. Their sample consists of 2499 IPOs of London market which went public during 1975 to 2004. First, they examine the long-run performance of IPOs by using buy and hold returns (BHRs) for five post-issue years in event time. They compare BHRs of IPO firms with BHRs of three different benchmarks which are: equally-weighted size decile control portfolio, value-weighted size decile control portfolio and control firm based matched on the basis of size. The results show long-run underperformance of IPO firms. The authors further attempt to find the evidence of market timing. Put differently, they test the first implication of pseudo market timing which says that firms issue equity when the markets go up. If the relation between IPO activity and past market returns is positive then it can be said that pseudo market timing exists. IPO activity (volume and number of IPOs) is regressed on lagged dependent variable, lagged market return, trend variable and Fama-French factors (SMB and HML) for a given year. The lagged dependent variable is a proxy for cyclical movement, trend variable is a proxy for economy’s long-term growth and the other variables capture market timing. The results show that long term and short term cyclical variations are present, there has been an increase in IPO activity over time. Lagged market returns and SMB factor both have positive relation with the dependent variable. With this, it is proved that firms go public when on an average, markets valuations are showing an upward trend and in particular, when small firms are performing well along with the market. This set of results confirms first implication of pseudo market timing hypothesis. Next, they test another implication of pseudo market timing which says that if we observe long-run underperformance of IPOs in event-time then such underperformance should disappear in calendar-time approach. For this, they calculate equal weighted calendar-time returns and value weighted calendar-time
returns. The results show long-run underperformance even in calendar-time. So, they dismiss pseudo market hypothesis and suggest that managers time the market while launching IPOs.

Another study to test the market timing against Shultz’s (2003) pseudo market hypothesis is done by Ball, Chiu and Smith (2011). They claim that it is still not clear whether IPOs are driven by market conditions or due to market timing by managers. They analyze this issue in the context where venture capitalists exit via IPOs and acquisitions. Going public and selling the firm to another firm, are the two ways through which private investors or venture capitalists can exit from the business. They test ‘market timing hypothesis’ against ‘market conditions hypothesis’ by analyzing a sample of 3477 IPOs and 4686 mergers and acquisitions which took place in U.S. during 1978 to 2009. They state that market timing by managers could be driven by market wide/sector wide opportunism (where firms take the advantage of broad based phenomenon by predicting market or sector returns) or firm specific opportunism (where firms need not necessarily predict market or sector returns but can predict issuers’ market or sector adjusted returns). In either of these cases, the firm prefers IPO over M&A and experiences decline in market or sector returns (if it is aggregate market timing) and lower market or sector adjusted firm returns (if it is firm specific market timing). They also hypothesize that firms prefer IPOs over M&As if market conditions lead to high capital demand, reduction in adverse selection cost and reduction in cost of going public. This is called market conditions hypothesis. Seven variables are used as proxy for market conditions which are average S&P P/E ratio, patent activity, changes in private domestic investment, treasury bill rate (one-year), consumer confidence index, equity share in aggregate equity and debt issues and changes in equity fund net inflows. Variables which are used as proxy for aggregate market timing are equally weighted

\[\text{Market conditions hypothesis and pseudo market hypothesis are used interchangeably.}\]
/value weighted market returns and sector adjusted returns around the exit events whereas variables which are used to capture firm-specific market timing are market and sector adjusted returns as well as IPO initial returns. The results based on univariate analysis of aggregate market timing and firm-specific market timing variables are consistent with pseudo market timing with a little support of market timing for biotech sector on which the study pays the special attention. The authors also use probit regression where dependent variable dummy equals 1 if the event is IPO and 0 if the event is M&A. This dummy variable is regressed on aggregate market timing and firm-specific variables (underpricing and BHARs of the firm) then the results support market timing hypothesis. However, when market conditions variables are introduced in the regression then the market timing variables’ coefficient turn insignificant. In other words, the results become more consistent with market conditions or pseudo market hypothesis. The result is robust when dependent variable is taken as total number of IPOs with same independent variables.

2.3 Literature review on independent effects of market timing and growth opportunities on equity issuance

Purnandam and Swaminathan’s (2004) paper lays a foundation for the subsequent papers in this section of review. In this paper, the authors examine the valuation of IPOs to know how IPOs are priced as compared to their intrinsic or fair value. They compare the intrinsic or the fair value of an IPO with the offer price to know whether the IPOs are overvalued or undervalued. Fair value of IPOs is calculated with the help of various price multiples of non-IPO match firms in the same industry. Price multiples which are used to calculate fair value are price to earnings, price to sales, and price to EBITDA (earnings before interest, tax, depreciation and amortization). Firms are matched on the basis of sales (which is a proxy of size) and EBITDA profit margin (which is proxy of profitability) within the industry. They also examine the long-
run stock performance of IPOs by analyzing ex-post stock returns. They analyze 2288 U.S. IPOs which were issued during 1980 to 1997. The results from univariate analysis show that IPO firms are overvalued at offer price as compared to non-IPO firms. This overvaluation ranges from 14% to 50%. As a robustness check, they also use analysts’ forecasts for earning growth as additional matching criteria and find that still IPO firms are overvalued to the extent of 33% relative non-IPO firms. They also examine the relationship of price-to-value (P/V) ratio with first day IPO returns and long-run returns after the IPO is listed by using cross-section regression. The regression results show a positive relationship between P/V ratio and first day IPO returns and a negative relationship between P/V ratio and long-run ex post returns while controlling for market-to-book ratio, accruals and analysts’ earnings’ forecasts. These results indicate that the overvalued IPO firms perform poorly in the long-run which in turn is consistent with the fact that managers time the market by selling the overvalued equity. The authors conclude that while valuing IPOs, investors pay extra attention to the analysts’ growth forecasts and pay little attention to the profitability which increases the sale of overvalued IPOs.

Kim and Weisbach (2008) provide evidence at the global level to find out reasons of firms issuing equity. They examine to what extent equity issue decisions are driven by market timing as well as investment needs by analyzing a sample of 17226 IPOs and 13142 SEOs from 38 nations including India. The authors claim that this is first paper which provides the empirical link between equity issuance activity and post-issue investments. The main focus of the paper is on the ultimate use of proceeds raised in the offering, how the use varies with respect to the valuation of the firm and linking these variations with the different motives of equity offerings. In order to distinguish between the motive of market timing and the motive of financing investments behind equity offerings, they distinguish two types of shares which can be issued in
an offering – primary shares and secondary shares. Only sale of primary shares can bring capital to the firm which can later be used for investments whereas sale of secondary shares which were held by investors increase the capital of insiders (who sell them) not of the company. The authors state that chances of market timing are more in the sale of secondary shares. To analyze the impact of equity issuance on the use of proceeds, they use seven accounting parameters which are change in R&D, capital expenditures, total assets, acquisitions, inventory, cash and debt reduction. The changes in these variables are measured from one to four years after the issuance. Each of these variables is regressed on primary capital as a percentage of total assets while controlling for other sources of capital and size of firm. Country and time effects are also included. In order to capture the market timing effects, the different degrees of M/B ratio are interacted with primary and other sources of capital variables in another regression model. The results show that the firms issue equity both to time the market as well as to finance investments. Firms with low valuations use the capital raised in the offering mainly for investment purposes whereas firm with higher valuations tend to increase their cash holdings rather than making investments.

Considering the fact that higher market-to-book ratio has dual interpretations: higher misvaluation and greater growth opportunities, Elliott, Koeter-Kant and Warr (2008) decompose market-to-book ratio. They decompose market-to-book ratio in order to separate mispricing from growth opportunities to analyze the impact of both on equity issuance vs. debt issuance. Mispricing represents overvaluation or undervaluation of equity; and growth opportunities represent more investment opportunities. The authors follow Rhodes-Krof, Robinson and Viswanathan’s (2005) (hereafter, RKRV’s (2005)) decomposed framework in which market-to-book ratio \((M/B)\) is decomposed into market-to-value ratio \((M/V)\) and value-to-book ratio \((V/B)\).
$M/V$ measures mispricing and $V/B$ captures growth opportunities. $M$ is the market value of equity, $B$ is the book value of equity and $V$ is the fair or intrinsic value of equity. They calculate intrinsic value of the stock by using residual income model. In this model, they use two different inputs to compute intrinsic or fundamental value. First version of the model (also known as perfect foresight model) uses actual ex post future earnings as manager’s opinion of the value of the firm at the time of security issuance and the second version of the model uses analysts’ forecasts about the future earnings of the company which are available in the market at the time of the security issuance. Their sample consists of 9172 U.S. security issuances during 1980 to 1999. Out of 9172, we note that 3781 are seasoned equity offerings and 5391 are debt issues. The variables which are used to capture mispricing are absolute mispricing at time 0 (time of announcement of issuance), relative mispricing (change in mispricing in two years preceding the security issuance), market-to-book ratio, market value of equity in the month preceding to the issue divided by average of market value of equity of last two years before equity issuance and cost of capital. The results based on univariate analysis of mispricing shows that valuation of firms is more in the case of equity issuance than debt issuance. In other words, firms prefer to issue equity when it is overvalued. In multivariate tests, the authors use logit regression where dependent variable takes the value 1 when debt is issued and 0 when equity is issued. Issue type (equity or debt) is regressed on the above mentioned absolute and relative mispricing and the other control variables which are considered to be determinants of capital structure. The regression results show negative and significant relation between measures of mispricing and dependent variable. This indicates that even after controlling the growth options, mispricing has a significant explanatory power and plays a significant role in the equity issuance decision.
Another study which uses RKRV’s (2005) decomposition framework to divide market-to-book ratio (M/B) into mispricing components and growth option components is done by Hertzel and Li (2010). Their paper is different from Elliott, Koeter-Kant and Warr (2008) in two aspects. One, Elliott et al’s (2008) study is done on both debt and equity issuances whereas this study is carried on only equity issuances. Two, results of Elliott et al (2008) show only the relationship between security issuance decision and mispricing as well as growth opportunities in multiple ways, whereas the present paper not only deals with the relationship between equity issuance and components of M/B ratio but also analyzes the actual use of proceeds and stock price performance of firms after the issuance. The sample of the study consists of 4325 SEOs during 1970-2004. The authors carry out tests in three steps. In first step, they compare the mispricing and growth components of M/B ratio of issuing firms and non-issuing firms. The results show that mispricing and growth components of issuing firms are on an average significantly larger than those of non-issuing firms. This indicates that issuing firms are motivated to issue equity either due to misvaluation or growth options available to them. In the second test, the authors try to find whether equity issuance decision of the firms is driven purely by misvaluation or by growth options. For this, they use the methodology of Kim and Weisbach (2008) and regress the use of proceeds after the issue on the components of mispricing and growth. They identify seven accounting variables in order to examine the uses of proceeds in the post-issue period which can differentiate the growth motives and market timing motives behind equity issuance. Those variables are changes in R&D, capital expenditures, total assets, reduction in debt, acquisitions, cash holdings and inventory. The results of second tests in nutshell suggest that the firms which have more growth opportunities invest more in real assets whereas firms which have high misvaluation (overvaluation) tend to reduce their debt and accumulate cash
after the issuance. The authors state that these findings are consistent with the fact that firms issue equity to time the market as well as to satisfy their financing needs. The results of third tests show that issuing firms which have high mispricing component (misevaluation) have poor stock returns in the post-issue period and the issuing firms which have high growth component (more growth options) have no relation with the stock returns in the post-issue period. It can be said that firm level mispricing is an important factor determining poor stock returns after the equity issuance.

On the basis of the literature review explained in the present chapter, we identify gaps in the existing literature which can be addressed in Indian context and on the basis of those gaps, we frame our objectives. Gaps, objectives and formulation of hypotheses are given in the next chapter.