CHAPTER 3: RESEARCH GAPS, OBJECTIVES AND FORMULATION OF HYPOTHESES

In this chapter, we identify gaps in the existing literature and frame objectives of our study followed by formulation of hypotheses.

3.1 Gaps in the Literature

The prior studies which are on equity issuances (IPOs and SEOs) mainly examine one particular aspect. Most of the studies which examine the long-run performance of IPOs and SEOs conclude that the issuing firms underperform in the long-run relative to benchmarks because managers time the market and sell their overvalued equity\(^1\). These studies do not examine the direct impact of market timing on equity issuance. Similarly, the studies which analyze the direct impact of market timing on equity issuance do not evaluate the long-run performance of issuing firms\(^2\). In order to arrive at the conclusion that managers time the market and take the advantage of firm’s mispriced equity by issuing equity when it is overvalued, both the evidences are necessary – positive relation of market timing with equity issuance and long-run underperformance of issuing firms. We intend to fill this gap by first examining the impact of market timing and then examining the long-run performance of IPOs and SEOs in our study. In addition to this, we intend to separate market timing effects from growth opportunities (since market-to-book is proxy for both, misvaluation and growth opportunities) to construct better test of market timing and explore the investment based motives of equity issuance. In this way, to the best of our knowledge, ours is the first study to conduct a comprehensive and more extensive test of market timing which has not been

\(^1\) The examples of such studies are Ritter (1991), Loughran and Ritter (1995) and Loughran and Ritter (1997).
\(^2\) The examples of such studies are Baker and Wurgler (2002), Aydogan (2006) and Ball et al (2011).
conducted before. Moreover, even if these issues have been examined independently, they are done only in developed countries. No study on either market timing or on investment based motives has been conducted in emerging economy India. Although some Indian studies have shown the long-run underperformance of Indian IPOs but no one has studied the market timing. Most of the Indian literature on IPOs has been on underpricing and very few studies have shown the evidence of long-run underperformance neglecting market timing aspect. A handful of studies which have shown the long-run underperformance of IPOs have used event-time approach to measure abnormal performance. Since, recent studies have highlighted the drawbacks of event-time approach and shown that the use of event-time approach can lead to incorrect references so it is essential to analyze the long-run performance of issuing firms by using calendar-time approach. We intend to examine the long-run performance by using event and calendar-time approach. Also, the studies which are done on equity issuances in Indian context are only on IPOs. No study has been conducted previously on SEOs or FPOs (Follow-On Public Offering). We intend to fill this gap by studying both types of equity issuances – IPOs and SEOs.

Our study is related to Lowry (2003) as she examines the impact of market conditions on equity but our work is different from hers in the way that we examine the impact of market timing in addition to market conditions on equity issuance. Our study is similar to Ball et al (2011) as we also test aggregate market timing, firm-specific market timing as against market conditions (pseudo market timing) hypothesis. However, our study is unique as we analyze the equity issuance decisions of firms (IPOs and SEOs) whereas they analyze only venture capitalists which exit through IPOs and M&As. We also examine the long-run performance of issuing firms in order to give more clear picture of market timing which Ball et al (2011)
have ignored. Our work is also related to Brav et al (2000) as we also examine the performance of IPOs and SEOs in event-time and calendar-time approach. However, our work is different from theirs as our objective is to test market timing as against pseudo market timing and to know of pseudo market timing can explain the long-run performance of IPOs and SEOs whereas the objective of Brav et al (2000) is to find out the better method to measure abnormal performance. This work is related to Schultz (2003) as we also intend to examine if pseudo market timing affects equity issuance and explain the long-run performance of IPOs and SEOs. The difference between our work and Schultz (2003) is that his work is based on simulations whereas we intend to carry out empirical analysis. Our study is also related to Kim and Weisbach (2008) in the way that we also explore the investment motives of equity issuance by analyzing the actual use of proceeds but we are different from them because they use market-to-book as proxy for misvaluation whereas we decompose market-to-book ratio to mispricing and growth components in order to investigate their effects independently. However, we are different from them as they only consider SEOs but we intend to examine IPOs as well as SEOs. Our study is also similar to Butler et al (2005), Chan et al (2007) and Gregory et al (2010) as they test pseudo market timing hypothesis in equity issuance and equity repurchases by examining long-run performance of firms. However, our work is different from the work of these authors as we not only examine the long-run performance of issuing firms but we also analyze the impact of pseudo market timing by using various economy wide and market wide variables.

3.2 Research Objectives

On the basis of the prior literature and gaps in the existing literature related to the topic, we identify following objectives in our study:
1. To analyze the impact of aggregate market timing, firm-specific market timing and pseudo market timing on equity issuance.

2. To investigate whether pseudo market timing explains the long-run performance of firms issuing equity.

3. To study the investment based motives of equity issuance by examining the independent effects of market timing and growth opportunities on the actual use of proceeds of equity issuance.

3.3 Formulation of Hypotheses

3.3.1 Effect of aggregate market timing on equity issuance

The literature on long-run performance of IPOs and SEOs concludes that the firms underperform relative to benchmarks (either market or match firm) in the long-run after the equity issuance because managers time the market. Managers issue equity when their equity is overvalued and repurchase equity when their equity is undervalued. Now, this market timing can be aggregate or firm-specific.³

Aggregate market timing is market timing attempts by managers due to market inefficiencies. A firm may take the advantage of industry over optimism or overall market over optimism. Firms’ reaction to industry over optimism can be seen when that IPO volume of a firm is positively related with its past industry market to book ratio (Pagano et al 1998). Firms’ reaction to overall market over optimism can be seen when equity issues are preceded by high market returns and followed by low market returns. In other words, when IPO volume has a positive relation with past market returns and a negative relation with post issue market returns

³When market timing is driven by firm over-optimism (Ball et al 2011) then it is called firm-specific market timing. When issuers take the advantage of market wide or sector wide over-optimism then it is called aggregate market timing (Baker and Wurgler 2002).
(Baker and Wurgler, 2002; Lowry, 2003; and Ball et al 2011). Hence, equity issuance has a positive relation with past industry and market returns and negative relation with post-issue industry and market returns.

A stronger test of aggregate market timing is to analyze whether managers have more tendency to time the market in hot issue or cold issue markets because there is more scope to time the market in hot markets than cold issue markets (Aydogan, 2006; and Wagner, 2007). Also, hot issue markets attract firms from many industries having distinct characteristics (Helwege and Liang, 2004). Moreover, underperformance is found to be more pronounced in hot issue markets than cold issue markets (Ritter, 1991; Loughran and Ritter, 1995). This result provides us further justification to examine market timing effects in hot vs. cold issue markets. Hence, we expect that hot issue markets attract more equity than cold-issue markets.

The hypotheses which are raised from the above discussion on aggregate market timing effects on equity issuance are as follows:

**Hypothesis 1a:** The relationship between past market returns and equity issuance (number of IPOs/SEOs) is positive.

**Hypothesis 1b:** The relationship between past industry returns and industry equity issuance (number of IPOs/SEOs) is positive.

**Hypothesis 1c:** The relationship between post-issue market returns and equity issuance (number of IPO/SEOs) is negative.

**Hypothesis 1d:** The relationship between post-issue industry returns and industry equity issuance (number of IPO/SEOs) is negative.

**Hypothesis 1e:** The relationship between market-wide (Industry) market-to-book and equity issuance is positive (number of IPOs/SEOs).
3.3.2 Effect of firm-specific market timing on equity issuance

In addition to aggregate market timing, equity issuance can also be influenced by firm-specific market timing. Firm specific overvaluation also leads to equity issuance. Ex-post impact of equity issuance on issuer’s stock return reflects the firm-specific market timing by managers. This effect can be examined in two ways: one, short-run initial returns⁴ and other, long-run stock returns. Initial returns are considered as a proxy of underpricing. Higher the initial returns are higher is the underpricing. The issuing firms which has higher first day initial returns experience low ex post long-run stock returns relative to the match firms (Ritter, 1991; and Ritter and Loughran, 1995). Since, long-run underperformance of issuing firms is considered as the result of market timing by managers. So, higher initial returns are positively and post issue long-run stock returns are negatively related to the market timing or equity issuance (Ball et al, 2011)⁵. However, recent study by Purnanandam and Swaminathan (2004) directly examines the relationship between valuation of IPOs and its underpricing. They show that IPOs are underpriced and at the same time overvalued also. They also show that overvalued IPOs earn high initial returns and low long-run stock returns. Their result makes our argument of market timing even stronger because overvalued firms have more opportunities to time the market. Hence, we expect initial returns to be positively related and long-run ex post stock returns to be negatively related with equity issuance. We take post issue buy-and-hold adjusted returns (BHAR) as the proxy of ex-post long-run stock returns.

From the above discussion of firm-specific market timing, we frame the following hypotheses:

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⁴ Initial return is difference of first day closing price and the offer price as a percentage to offer price.
⁵ Ball et al (2011) test firm-specific and aggregate market-timing as against pseudo market timing in the context of venture capitalists’ exits via IPOs or M&As. The study mainly examines the question, “Does market timing affect the exit choice of venture capitalists.
Hypothesis 2a: The relationship between initial returns (underpricing) of the issuers and equity issuance (number of IPOs/SEOs) is positive.

Hypothesis 2b: The relationship between BHARs of issuers in post-issuance period and equity issuance (number of IPOs/SEOs) is negative.

3.3.3 Effect of pseudo market timing (market conditions hypothesis) on equity issuance

Market timing is challenged on the ground that it is not the market timing rather it is pseudo market timing which leads to IPO waves. According to pseudo market timing hypothesis, IPO waves occur due to favorable market conditions. Managers simply respond to favorable market conditions which can give appearance to market timing. Firms issue equity when they can receive good price of their equity and that is common when economy is performing well. Therefore, equity issues will be concentrated at peak prices ex post even if managers cannot determine those peak prices ex ante (Schultz, 2003; and Pastor and Veronesi, 2005). The measurement of market conditions is also a point of concern. Past market returns can be a proxy of market conditions to test pseudo market timing. Past market returns have a negative (positive) relation with equity repurchases (equity issuance) (Chan et al. 2007; and Gregory et al. 2010). However, dependence of equity issuance on past market returns cannot help us differentiate between market timing and pseudo market timing. There is only a thin line of difference between test of aggregate market timing and pseudo market timing using past market returns. The negative relationship between number of IPOs and past market returns is an evidence of both, market timing as well as pseudo market timing. In addition to this, if we see post-IPO

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6 The term ‘pseudo market timing’ is given by Schultz (2003). However, Pastor and Veronesi (2005) develop a model which predicts that IPO waves are rational and depend on the market conditions rather than manager opportunism or investor optimism.
market returns are less than pre-IPO returns then we can say that IPOs or equity issuances are driven by pseudo market timing (Ball et al 2011).

In addition to market returns, IPO waves can also be driven by high aggregate demand which in turn makes capital more expensive. High aggregate demand is another proxy of market conditions (Lowry, 2003; and Poulson and Stegemoller, 2008). Gross Domestic Product (GDP) and S&P P/E earnings ratio are proxies of capital demand and are expected to have a positive relation with equity issuance. One year T-Bill rate is a measure to capture the variations in risk-free rate and to control inflation and expected to have a positive relation equity issuance (Ball et al 2011).

The above discussion leads to formulation of following hypotheses to test pseudo market timing:

**Hypothesis 3a:** Post-issue market returns are lower than pre-issue market returns.

**Hypothesis 3b:** The relationship between each of pseudo market timing/market conditions variables – stock market index price-earnings ratio (P/E), T-Bill rate, gross domestic investment and equity issuance (number of IPOs/SEOs) is positive.

### 3.4 Long-run performance of IPOs and SEOs

The significant relation of market timing variables with equity issuance is not sufficed to conclude that managers can time the market. To conclude that managers can time the market, we need to observe that issuing firms underperform in long-run after the equity issuance. The strong argument which was given by researchers for the market timing by managers is the observed long-run underperformance of IPOs and SEOs after equity issuance over a period which ranges from one beyond five years. The decline in the stock prices after equity issuance which persists in long-run is an indication that stock prices reach the fundamentals after the issue and were overvalued at the time of issuance. This overvaluation is a window of opportunity for managers.
to issue equity (Ritter, 1991; and Ritter and Lounghran, 1995). However, objections have been raised to the above conclusion on the two grounds. First challenge is regarding measurement of performance of IPOs and the methodological issues. The long-run stock performance is sensitive to the selection of benchmark and the event study methodology which has been used in the abovementioned studies to measure the long-run stock performance is considered as flawed methodology, the validity of which has been questioned on the ground on its assumptions (e.g. Mitchell and Stafford, 2000). The second challenge has nothing to do with the methodological issues and comes from the pseudo market hypothesis. As long as firms issue equity on the basis of past market performance, we will observe negative abnormal stock performance in event-time even if equity is not mispriced ex ante. Managers have no market timing ability. However, a solution to this problem is to use calendar-time approach instead of event-time approach to measure stock returns as calendar time returns are not affected. Post-issue abnormal stock returns of US IPOs which are significantly negative in event-time become close to zero or insignificant when calendar-time approach is used (Schultz, 2003). The support for Schultz’s (2003) hypothesis is found in Butler et al (2005) and Wagner (2007) but Chan et al (2007) and Gregory et al (2010) show the counter evidence. Since, the recent literature has documented the advantages of calendar-time over event-time approach; we intend to measure the long-run performance of IPOs and SEOs using calendar-time approach. If we observe underperformance of IPOs and SEOs using calendar-time approach then we will conclude that the managers can time market.

Another indication of successful market timing by managers is that long-run underperformance is concentrated in hot issue (high volume) markets. However, cold issue markets perform well relative to hot issue markets (Ritter, 1991; Loughran and Ritter, 1995; and
Lowry, 2003). This result is based on event-time study which has been criticized recently. There is need to reexamine the performance of IPOs and SEOs in hot issue markets vs. cold issue market by using calendar approach as hot issue markets provide more windows of opportunities to time the market. Moreover, Schultz’s (2003) simulation results show that firms which issue equity in the periods of heavy issuance experience poor long-run stock returns ex post in calendar-time even when abnormal returns on IPOs are zero ex ante which makes his pseudo market timing argument stronger. Hence, we expect that long-run underperformance (calculated using calendar-time approach) of hot issue markets is greater than that of cold issue markets.

SEOs underperform more than IPOs as Ritter (1991) shows that IPOs underperform at the rate of 7 percent per year whereas SEOs underperform at the rate of 8 percent per year. Scope of market timing is more in SEOs than in IPOs because of two reasons. One, the percentage of secondary shares sold by SEO firms having high market-to-book ratio is more than those sold by IPO firms having high market-to-book ratio. Secondary shares are the shares which are sold by insiders not by the firm and do not bring cash to the firm. This suggests that insiders take advantage of overvalued equity by selling their own shares (Kim and Weisbach, 2008). Second, SEO firms can depend on their internal funds in case of need to finance investments and wait for the right to issue equity to take advantage of overvaluation. Having evidence that SEOs firms have more market timing opportunities than IPOs, we expect that long-run underperformance calculated in calendar-time of SEOs is higher than that of IPOs.

Hypothesis 4a: IPOs and SEOs underperform in the long-run.

Hypothesis 4b: The post-issue long-run underperformance of firms issuing equity in hot issue markets (periods) is higher than that of firms issuing equity in the cold issue markets (periods).
**Hypothesis 4c**: The post-issue long-run underperformance of SEO firms is higher than that of IPOs firms.

### 3.5 Independent effects of mispricing and growth opportunities on equity issuance and long-run performance

Apart from market timing, equity issuance could also be driven by investment purposes. High market-to-book ratio has dual interpretations: overvaluation and greater growth opportunities. If equity issuance is driven by high market-to-book value then three interpretations are possible. First, the firms are taking advantage of mispriced equity and transferring wealth from new shareholders to the existing shareholders. Second, the firms need capital to finance new investments. Third, firms issue equity to finance new investments, to receive the benefit of overvalued equity and to increase liquidity for firm as well as insiders (since all are not mutually exclusive) (Kim and Weisbach, 2008). Most of the literature has used M/B ratio as proxy either for mispricing or for growth. $M/B$ ratio of issuing firms declines after equity issuance (Baker and Wurgler, 2002 and Wagner, 2007). Since, literature has shown that firms condition their equity issuance decision on $M/B$ ratio irrespective of the fact that whether it is a proxy for misvaluation or growth opportunities, we hypothesize that $M/B$ ratio of equity issuing firms is high at the time of equity issuance and decline later in the post-issuer period.

In order to analyze the independent effects of misvaluation and growth opportunities on equity issuance, $M/B$ ratio is decomposed into two components: misvaluation and growth opportunities (for e.g. RKRV, 2005; Elliott et al, 2008; Hertzel and Li, 2010). In this section of hypotheses, we also attempt to separate growth opportunities effects from market timing effects. $M/B$ is decomposed into market-to-value ($M/V$) and value-to-book ($V/B$). $M$ is market value of

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7 RKRV (2005) introduces the methodology of decomposing M/B ratio and use it in the context of stock mergers.

stock, \( B \) is book value of stock and \( V \) is intrinsic or fair value of stock. \( M/V \) captures mispricing and \( V/B \) captures growth opportunities. Both mispricing component \((M/V)\) and growth component \((V/B)\) are higher for the firms which issue equity as compared to firms which issue debt (Elliott et al. 2008). An additional test to examine whether firms issue equity in order to time the market or to finance investments is to analyze the use of proceeds of issuance in post-issue period. If equity issuance is driven by growth opportunities then the firms must use the proceeds in investment activities. On the other hand, if equity issuance is purely driven by market timing then the firms must increase their cash holdings. Firms having high market-to-book ratio increase their cash holdings whereas firms having low market-to-book ratio use the proceeds in investment activities like capital expenditures and acquisitions (Kim and Weisbach, 2008). However, again in order to analyze relation between ex ante mispricing and growth opportunities with use of proceeds to examine the motive of issuing equity, we need to decompose \( M/B \). However, Hertzel and Li (2010) analyze the use of proceeds of SEOs by decomposing \( M/B \) into mispricing and growth components. They find that firms which have more growth opportunities (higher \( V/B \) ratio firms) invest more in investment activities like R&D and capital expenditures in post-issue period whereas firms which have higher mispricing (higher \( M/B \) ratio firms) increase their cash holdings and reduce their long-term debt by repayment through proceeds in the post-issue period.

The hypotheses which are raised from the above discussion to analyze the independent effects of mispricing and growth options on equity issuance are as follows:

**Hypothesis 5a:** The \( M/B \) ratio of firms issuing equity is greater than one.
Firms issuing equity which have greater growth opportunities (which have high $V/B$ ratios) invest more of equity proceeds on investment activities. Thus, we frame the following three hypotheses:

**Hypothesis 5b:** The relationship between pre-issue $V/B$ ratio and post-issue R&D of firms issuing equity is positive.

**Hypothesis 5c:** The relationship between pre-issue $V/B$ ratio and post-issue CAPEX of firms issuing equity is positive.

**Hypothesis 5d:** The relationship between pre-issue $V/B$ ratio and post-issue Total Assets of firms issuing equity is positive.

Firms issuing equity which have higher mispriced equity (which have high $M/V$ ratios) use their proceeds to increase their cash holdings, reduce long-term debt and spend on inventory and assets after issuance. Thus, we frame following three hypotheses:

**Hypothesis 5e:** The relationship between pre-issue $M/V$ ratio and post-issue cash holdings of firms issuing equity is positive.

**Hypothesis 5f:** The relationship between pre-issue $M/V$ ratio and post-issue reduction in long-term debt of firms issuing equity is positive.

**Hypothesis 5g:** The relationship between pre-issue $M/V$ ratio and post-issue inventory of firms issuing equity is positive.

Tests of market timing are incomplete unless we examine the long-run stock returns of IPOs and SEOs. Literature on market timing predicts a negative relation between post-issue long-run stock returns and overvaluation. On the other hand, real investment theory suggests a negative relation between investment and post-issue long-run stock returns because it is considered that after issuance growth opportunities are converted into assets. So, decline in post-
issue returns reflects risk reduction. However, these results may show variation when calendar-time approach is used to measure the abnormal returns. The SEO firms which have high mispricing component have more negative calendar returns than the firms with low mispricing component and the SEO firms which have more growth options do not experience lower calendar returns than the firms with low levels of growth options. The first result is in consistent with the literature and second result is not (Hertzel and Li, 2010). Hence, following the literature on market timing and real investment, we expect a negative relation of post-issue stock returns with mispricing and growth opportunities (investments).

The hypotheses which are raised from the above discussion to analyze the independent effects of mispricing and growth options on equity issuance and long-run returns are as follows:

**Hypothesis 6a:** Long-run underperformance of firms issuing equity which have high mispricing (which have high \( M/V \) ratio) is higher than that of firms issuing equity which have low mispricing (which have low \( M/V \) ratios).

**Hypothesis 6b:** Long-run underperformance of firms issuing equity which have greater growth opportunities (which have high \( V/B \) ratios) is higher than that of firms issuing equity which have less growth opportunities (which have low \( V/B \) ratios).

In the next chapter, we give the data description and explain research methodology to be used and construction of the variables.