Chapter 3

Methodology
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Methodology

3.1 Introduction

The chapter presents the methodological foundation and issues that are pertinent to this study. The objectives and hypotheses are listed in order to draw focus on the major variables considered in the study as seen in the literature review. This is followed by rationale, research design, methodology, ethical considerations and limitations.

3.2 Statement of Problem

This study focuses on behavioural aspects of Indian corporate and capital market. This has been studied through measuring manager’s actions by issuing equity with the underlying pursuit of irrational investor. Are manager’s capable enough to issue equity when the market is overvalued and exploit investors by having no genuine need or investment purpose?

3.3 Research Objectives

1. To identify market timing mechanism for selected Indian firms.

2. To identify impact of equity issuance on valuation of the firm together with other control variables from pre-Initial Public Offering period to six years Post Initial Public Offering periods.

3. To identify impact of debt issuance on valuation of the firm together with other control variables pre-Initial Public Offering period to six years Post Initial Public Offering periods.

4. To identify impact of retained earnings on valuation of the firm together with other control variables pre-Initial Public Offering period to six years Post Initial Public Offering periods.

5. To find whether the primary proceeds raised from Initial Public Offering are utilized for investment projects or not. In other words, to check that investment decisions are based upon primary proceeds or on secondary sources.
3.4 Research Hypothesis

The following are nine hypotheses formulated on the research objectives framed for the study:

**Hypothesis 1 – A – Equity issuance and Valuations of the firm for IPO years**

\[ H_{0,1A} : \text{There is no statistical relationship between equity issuance and valuation of the firm for IPO year.} \]

\[ H_{1,1A} : \text{there is statistical relationship between equity issuance and valuation of the firm for IPO year.} \]

**Hypothesis 1 – B - Book leverage and Valuations of the firm for IPO years**

\[ H_{0,1B} : \text{There is no statistical relationship between Book Leverage and valuation of the firm for IPO year} \]

\[ H_{1,1B} : \text{There is statistical relationship between Book Leverage and valuation of the firm for IPO year} \]

**Hypothesis 1 – C - Changes in Retained earnings and Valuation of the firm for IPO year**

\[ H_{0,1C} : \text{There is no statistical relationship between retained earning and valuation of the firm for IPO year} \]

\[ H_{1,1C} : \text{There is statistical relationship between retained earning and valuation of the firm for IPO year} \]

**Hypothesis 2 – A – Equity issuance and Valuations of the firm for IPO+ 1 year**

\[ H_{0,2A} : \text{There is no statistical relationship between equity issuance and valuation of the firm for IPO + 1 year.} \]

\[ H_{1,2A} : \text{there is statistical relationship between equity issuance and valuation of the firm for IPO+ 2 year.} \]

**Hypothesis 2 – B - Book leverage and Valuations of the firm for IPO + 1 year**

\[ H_{0,2B} : \text{There is no statistical relationship between Book Leverage and valuation of the firm for IPO+ 1 year} \]

\[ H_{1,2B} : \text{There is statistical relationship between Book Leverage and valuation of the firm for IPO + 1 year} \]

**Hypothesis 2 – C - Changes in Retained earnings and Valuation of the firm for IPO year**
H\textsubscript{0,2C}: There is no statistical relationship between retained earning and valuation of the firm for IPO + 1 year

H\textsubscript{1,2C}: There is statistical relationship between retained earning and valuation of the firm for IPO+ 1 year

**Hypothesis 3 – A – Equity issuance and Valuations of the firm for IPO+ 2 years**

H\textsubscript{0,3A} : There is no statistical relationship between equity issuance and valuation of the firm for IPO + 2 year.

H\textsubscript{1,3A} There is statistical relationship between equity issuance and valuation of the firm for IPO+ 2 year.

**Hypothesis 3 – B - Book leverage and Valuations of the firm for IPO + 2 years**

H\textsubscript{0,3B} : There is no statistical relationship between Book Leverage and valuation of the firm for IPO+ 2 year.

H\textsubscript{1,3B} : There is statistical relationship between Book Leverage and valuation of the firm for IPO + 2 year

**Hypothesis 3 – C - Changes in Retained earnings and Valuation of the firm for IPO+2 year**

H\textsubscript{0,3C}: There is no statistical relationship between retained earning and valuation of the firm for IPO + 2 year.

H\textsubscript{1,3C}: There is statistical relationship between retained earning and valuation of the firm for IPO+ 2 year

**Hypothesis 4 – A – Equity issuance and Valuations of the firm for IPO+3 years**

H\textsubscript{0,4A} : There is no statistical relationship between equity issuance and valuation of the firm for IPO + 3 year.

H\textsubscript{1,4A} There is statistical relationship between equity issuance and valuation of the firm for IPO+ 3 year.

**Hypothesis 4 – B - Book leverage and Valuations of the firm for IPO + 2 years**

H\textsubscript{0,3B} : There is no statistical relationship between Book Leverage and valuation of the firm for IPO+ 3 year.

H\textsubscript{1,3B} : There is statistical relationship between Book Leverage and valuation of the firm for IPO + 3 year
Hypothesis 4 – C - Changes in Retained earnings and Valuation of the firm for IPO+2 year

H₀,₄c: There is no statistical relationship between retained earning and valuation of the firm for IPO + 2 year

H₁,₄c: There is statistical relationship between retained earning and valuation of the firm for IPO+ 2 year

Hypothesis 5 – A – Equity issuance and Valuations of the firm for IPO+4 years

H₀,₅A: There is no statistical relationship between equity issuance and valuation of the firm for IPO + 4 year.

H₁,₅A: There is statistical relationship between equity issuance and valuation of the firm for IPO+ 4 year.

Hypothesis 5 – B – Book Leverage and Valuations of the firm for IPO+4 years

H₀,₅B: There is no statistical relationship between Book Leverage and valuation of the firm for IPO + 4 year.

H₁,₅B: There is statistical relationship between Book Leverage and valuation of the firm for IPO+ 4 year.

Hypothesis 5 – C - Changes in Retained earnings and Valuation of the firm for IPO+4 year

H₀,₅c: There is no statistical relationship between retained earning and valuation of the firm for IPO + 4 year.

H₁,₅c: There is statistical relationship between retained earning and valuation of the firm for IPO+ 4 year.

Hypothesis 6 – A – Equity issuance and Valuations of the firm for IPO+5 years

H₀,₆A: There is no statistical relationship between equity issuance and valuation of the firm for IPO + 5 year.

H₁,₆A: There is statistical relationship between equity issuance and valuation of the firm for IPO+ 5 year.

Hypothesis 6 – B – Book Leverage and Valuations of the firm for IPO+5 years

H₀,₆B: There is no statistical relationship between Book Leverage and valuation of the firm for IPO + 5 year.

H₁,₆B: There is statistical relationship between Book Leverage and valuation of the firm for IPO+ 5 year.
The hypothesis for the study is as follows:

**Hypothesis 6** – Changes in Retained earnings and Valuation of the firm for IPO+5 year

- **H0,6C**: There is no statistical relationship between retained earning and valuation of the firm for IPO + 5year
- **H1,6C**: There is statistical relationship between retained earning and valuation of the firm for IPO+5 year

**Hypothesis 7** – Equity issuance and Valuations of the firm for IPO+6 years

- **H0,7A**: There is no statistical relationship between equity issuance and valuation of the firm for IPO + 6 year.
- **H1,7A**: There is statistical relationship between equity issuance and valuation of the firm for IPO+ 6 year.

**Hypothesis 7** – Book Leverage and Valuations of the firm for IPO+6 years

- **H0,7A**: There is no statistical relationship between Book Leverage and valuation of the firm for IPO + 6 year.
- **H1,7A**: There is statistical relationship between Book Leverage and valuation of the firm for IPO+ 6 year.

**Hypothesis 7** – Changes in Retained Earnings and Valuations of the firm for IPO+6 years

- **H0,7A**: There is no statistical relationship between Changes in Retained Earnings and valuation of the firm for IPO + 6 year.
- **H1,7A**: There is statistical relationship between Changes in Retained Earnings and valuation of the firm for IPO+ 6 year.

**Hypothesis 8** – Equity issuance for investment decision

- **H0,8A**: There is no statistical relationship between Equity issuance and investment decision taken by firm.
- **H1,8A**: There is statistical relationship between Equity issuance and investment decision taken by firm.
3.5 Rationale

“I would like to see more behavioral finance research in the field of corporate finance. Most of the research so far has been in the field of asset pricing; much less has been done on corporate finance—at least recently”

Richard Thaler, “The End of Behavioral Finance”

Indian financial system has spread its roots to many different fields and become more complex. Corporate finance one of its major backbones is also influenced by newer and innovative theories of economics and finance. Indian corporate is highly influenced by capital markets and its concepts. Corporate managers are highly motivated to observe and quickly respond to the market signals as when required. These responses are generally viewed in terms of value of the firms. Any actions taken by corporate managers are highly induced from the fluctuations or movements in the capital markets. For example mergers and acquisition are purely driven by market capitalization of firms. Budgeting of capital is also impacted by government rules and policies for interest rates. Restructuring of capital is also driven by available resources in the market and need of resources.

In such volatile and multifaceted financial world, managers are prone to have some of behavioral traits and misunderstood market as well as participants of markets. Investors one of the most important stakeholders is central for the attention of managers. Managers in order to get more benefit as having good repute or liquidity are becoming more rational. This is also assumed by efficient capital market theories. There is no harm in becoming rational and taking decisions but there is problem when manager’s imagine that investors are irrational and are not fully aware about market signals and so the valuations.

This line of thinking leads to many decisions taken by managers. This decision may prove to be good or bed based upon its intensity and the environment it has taken. One of the decisions that corporate managers are usually taking is to exploit deviations in the market price of their shares, prevailing in the market. This phenomenon called as mispricing and managers usually taking benefit through market timing mechanism. Market timing denotes that companies are issuing equity when their shares are overvalued and buying back when their shares are undervalued. Such
rational behavioral with the assumption of irrationality among investor are the basic pillar of behavioral corporate finance.

In Indian context such research has not yet taken place. In other words, behavioral corporate finance has not been studied by single author. My effort is to find out such rational behavior thorough market timing mechanism and its impact on the value of the firm.

### 3.6 Justification for Paradigm and Methodology

#### 3.6.1 Research Design

A research design is a framework or blue print for conducting research project. It details the procedures necessary for obtaining the information need to structure and/or solve the problems. The research design lays the foundation for conducting the
project. The following chart shows the process of research done in order to enhance the study.

Research in the field of finance generally related to descriptive research and involves extensive use of financial figures. This research is major objective of issuing equity and its purpose. Moreover, the research design consists of selection of companies and gathering extensive financial data for selected companies. It also involves converting and processing this data into variables as per the model requirement. This study involves variables as ratios which can be derived by financial statements or annual reports of the firms. My research is totally based upon secondary research and finding impact of equity issuance on the valuation of the firm.

Type of Research – Secondary/Library Research

Nature of Study – Descriptive Study

Nature of Analysis – Regression Analysis

3.6.2 Sampling Element:

The objective of research is to find out impact of valuations on the equity issuance decision of the firm. Population and sample for the study are as follows:

3.6.2.1 Population: The study has the population base as those companies who raised their equities during certain time period from Indian Capital Markets. According to Baker and Wurgler (2002a), IPO is the single most financing event for any firm that has long and persistent impact on the capital structure of the firm.

3.6.2.2 Rationale for Population - Alti (2007) shows that IPO market establishes a usual place to analyze market timing mechanism. Market timing mean of issuing equity when the value of the firm’s stock is high and repurchasing back when the value of the firm’s security is low. There are few reasons to concentrate for IPO related data. First reason is going public is the most important financial resources for a firm. So, the payoff from correctly timing the IPOs potentially very high for the issuers although it might be real or perceived. In the second reason, investor cannot truly value IPO rather the stock of secondary market. So, it provides room to the managers for raising
money for misvalued security. Third and most important, timing efforts are more visible from IPO routes for raising equity rather than issuing bonus shares or right shares or FPO.

3.6.2.3 Sampling Frame

As studied in the literature review and according many papers like Baker and Wurgler (2002), Alti (2006) Guney (2007), Dong at al (2011) the best way to measure mispricing is the issuance of equity as it provides single most financing decision of any firm. Taking these study as base my study, the population comprise of companies who raised IPO during 2002 to 2005. There are 257 companies initially who raised IPOs from the year 2000 to 2005 and 119 companies whose issue amount is minimum 100 million or 10 cr. There are 119 companies with issue amount minimum 100 million or 10 cr. There are 76 companies with issue amount minimum 500 million or 50 cr. – sampling frame is attached in Appendix –I. This data is collected through Indian capital market sites like BSE, and NSE.

3.6.2.4 Samples - Out of 76 company data base, financial firms, banks, merged firms and Government companies are excluded for having their own rules for capital structure and behaviorally driven. Finally there exist 46 companies who raised their money through IPO during 2001 -2005, issued minimum INR 50 cr from the market. All this samples are shown in Appendix II.

3.6.2.4.1 Further I have divided my samples in Pre-IPO, IPO, IPO+1, IPO +2, IPO + 3, IPO+4, IPO + 5, IPO+6 and more years segments. It makes total 528 firm year observations.

3.6.2.5 Rationale for samples:

- Logically - The need to analyze large cap companies as for small companies are having financial constraints which cannot be justified from behavioral view. Large cap companies, according to SEBI are classified as those who raised at least INR 10 crore or more from the capital market.
- From research perspective, the companies have their book value of assets at least 10 crore only if their issued capital is 50 cr. If the company’s
issued amount is at least 50 crore than their book value of assets would at least more than 10 cr.\(^30\)

- **Statistically**

\[
n = \frac{Z^2 p(1 - p)}{d^2}
\]

Here P is the population proportion which in the given study can be defined as proportion of number of companies which raised money more than 50 crore during 2001 to 2005 out of number of companies which raised money more than 10 cr during 2001 to 2005. And Q is the number of companies raised money between 10 cr to 50 cr during 2001 to 2005. There are 119 companies raised at least 10 cr during 2001 to 2005 and 76 companies has issued amount of 50 cr, which gives value of P as 0.30 and Q as 0.70.

3.6.2.6 **Sampling techniques** – non-random purposive sampling techniques are used. Samples are not biased by researcher.

3.6.2.7 **Data Sources** – I have collected all the data from the financial database software like capitaline and Prowess. I also verified data by other authenticated sources like BSE. I also checked and verified from companies annual reports.

3.7 **Ethical Consideration**

The ethical issues considered in the research relate to the researcher. The data collected has not been misrepresented or findings, which requires that data collected has not been misrepresented or findings have not been manipulated with. The researcher has taken due care to ensure that all the ethical consideration have been met.

3.8 **Model Development**

I have analyzed eight different models for study which are discussed in detail under the literature review of model. After deep observation of statistical results and data

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\(^{30}\) According to SEBI’s rule the issue size does not exceed 5 times the pre- issue net worth as per the audited balance sheet of the last financial year. http://www.sebi.gov.in/faq/subsection.pdf
requirements of each model individually, I had finalized two models for my all hypothesis.
The first model developed by Baker and wurgler (2002a) which is highly cited by other researcher and experts of the field.

3.8.1 Model – I

According to Baker and Wurgler (2002), earlier evidence for market timing not much useful where the net effect of market-to-book on changes in leverage is not clear. Authors show that firms with high market-to-book ratios are often growing quickly and may be issuing as much debt as equity.

3.8.1.1 Variables Used – MODEL I

- Leverage - It is defined as assets minus book equity plus market equity all divided by assets. The authors drop firm-year observations where market-to-book is greater than 10.0.
- Book debt as total assets minus book equity.
- Book equity as total assets less total liabilities and preferred stock plus deferred taxes and convertible debt. When preferred stock is missing, it is replaced with the redemption value of preferred stock.
- Book leverage is then defined as book debt to total assets. They drop firm-year observations where the resulting book leverage is above one.
- Market leverage as book debt divided by the result of total assets minus book equity plus market equity.
- Market equity is defined as common shares outstanding times’ price. These definitions follow Fama and French (2000).
- Pre-IPO values - The book leverage in the year prior to the IPO, which they call the pre-IPO value.
- Net equity issues (e/A) is the change in book equity minus the change in balance sheet retained earnings divided by assets.
- Newly retained earnings (RE/A) is the change in retained earnings divided by assets.
- Net debt issues (d/A) is the residual change in assets divided by assets
In the bottom three panels in Table II, They regress each of these three components of changes in leverage on the market-to-book ratio and the other independent variables. This allows us to determine whether market-to-book affects leverage through net equity issues, as market timing implies.

**Equation A-1 Changes in leverage – Baker and Wurgler (2002a)**

\[
\left( \frac{D}{A} \right)_t - \left( \frac{D}{A} \right)_{t-1} = a + b \left( \frac{M}{B} \right)_{t-1} + c \left( \frac{PPE}{A} \right)_{t-1} + d \left( \frac{EBITDA}{A} \right)_{t-1} + e \log(S)_{t-1} + f \left( \frac{D}{A} \right)_{t-1} + u_t
\]

**Equation A-2 Changes in leverage decomposed into other control variable – Baker and Wurgler (2002a)**

Above equation splits the change in leverage into equity issues, retained earnings, and the residual change in leverage, which depends on the total growth in assets from the combination of equity issues, debt issues, and newly retained earnings.

The author regresses each of these three components of changes in leverage on the market-to-book ratio and the other independent variables. This allows us to determine whether market-to-book affects leverage through net equity issues, as market timing implies.

The final Model for measuring market timing and its impact comes from following equation.

**Equation A-3 – Regression equation for Market timing and other variables – Baker and Wurgler (2002a)**

\[
\left( \frac{D}{A} \right)_t - \left( \frac{D}{A} \right)_{t-1} = a + b \left( \frac{e_t}{A_t} \right) - \left( \frac{\Delta r e_t}{A_t} \right) \\
= a + b \left( \frac{M}{B} \right)_{t-1} + c \left( \frac{PPE}{A} \right)_{t-1} + d \left( \frac{EBITDA}{A} \right)_{t-1} + e \log(S)_{t-1}
\]

### 3.8.2 MODEL II

Wagner(2010), in his paper explains and how market timing affects public equity offerings and consequently firm leverage.
3.8.2.1 Variables

- Most of the variables are same as Baker and wurgler (2002a) and also defined as the same way they defined. The variables which are same as of previous study include Book equity $E$, Book debt $D$, Book leverage $D$, Market equity $ME$, Market leverage $M/A$, The market-to-book ratio $MB$, Net debt issued $d=A$, Book equity equals, Net equity issued, Newly retained earnings, Profitability $EBITDA=A$, Firm size is measured by $SIZE$, Tangibility of assets $PPE/A$, Research and development expense $R&D/A$, Dividend payments $Div=E$ are measured by common dividends divided by year-end book equity, $CASH/A$ is defined as cash and short-term investments divided by assets, Hot as same Alti’s paper.

3.8.2. Issuing equity for investment purposes

Firms are able to take advantage of temporarily low diverse selection costs when issuing equity, but that equity is not mispriced when issued. Next, I answer the question of whether firms use the raised equity to finance investment. Under the mispricing view of market timing firms do not subsequently invest. Under the adverse selection view of market timing they do.

The author determines both financing sources and uses by analyzing cash flow statements and following the definitions of sources and uses of funds. His aim was to identify the use of money raised in the offerings that are attributable to investment activity rather than purely financial uses.

The author determined nine different variables, which are the change in assets as a benchmark and eight possible uses of funds {capital expenditure, increase in investments, acquisitions, changes in cash holdings, dividends, debt reductions, equity repurchases or other uses.

Change in assets as a benchmark and nine possible uses of funds
1. Capital expenditure,
2. Increase in investments,
3. Acquisitions,
4. Changes in cash holdings,
5. Dividends,
6. Debt reductions,
7. Equity repurchases or
8. Other uses.

The specification is as follows: where the dependent variable $Y_t$ is the cumulative change in assets from pre-offering to post-offering year $t$ scaled by pre-offering assets, i.e. summarized from year 0 to post-offering year $t$ and scaled by assets,

Residual sources are summarized from year 0 to post-offering year $t$, i.e.

This model is extremely helpful for the second research of this study.

This model particularly focuses on how issued amount is utilized for investment

$$Y_t = c_0 + c_1 \left( \frac{\text{Proceeds}^P}{A_{t-1}} \right) + c_2 (\text{Residual sources} / A_{t-1}) + c_3 \text{SIZE}_{t-1} + \epsilon_t,$$

decision. This entire model indicates security issuance and uses of issued investment.

All model some how different with little changes in variables and the methods used. Although all variables use regression analysis for deriving results. Looking at the above models, I would finalize appropriate model for my research that have been discussed in the methodology section.

### 3.9 Analysis and Interpretations

For analyzing the hypotheses, parametric and non parametric test have been used been applied. The collected data has been flittered and processed for finding various ratios. All collected data first has been verified from other sources than the data was further
processed into different variables. After finding various ratios, the data was divided into different time frame from Pre –IPO, to IPO + 6 years. Than each variable has been sorted into the given time frame and was finally feed in SPSS. As per the reference model and there is one dependant variable and other four independent variable, regression analysis was conducted. Total 21 different regressions conducted for hypothesis 1 to 7. And five different regression analyses were conducted for hypothesis 8. The normality has been checked and all the variables are non-normal. So the non parametric test has been conducted. Apart linearity has also been observed for main variables of the regression. The samples are analyzed and justification for the regression analysis is been shown in the next section.

### 3.10 Limitations

The availability of precise and timely data is essence to good research. There are two major limitations of this research.

First limitation is model building. There are various methods to find out equity market timing for Indian companies, all models uses different data and variables. Out of the eight models studied, I have to choose only first model due to availability of data. Some data like insider trading, buy and hold return of security is very rarely available. So, researcher cannot build up model based upon that data requirement.

Second is data validity. It is very tedious and cumbersome task cross check the collected data. Even the good databases like Capitaline, Prowess are also varied for the same data sets. So it is necessary to check the data from BSE and for the data which are not available (some past data) researcher has to open individual annual reports of the sample firms.

### 3.11 Conclusion

This chapter focuses on the research methodology followed for ht study. The problem statement is identified as to find out relationship between equity
issuance and valuation of the firm. The focus is to check, whether the Indian market are witnessed by market timing purely mispricing driven or not. After issuing money, same is utilized for genuine need or to increase bank balance is the focus for the second part of research. The objectives and hypotheses have framed in accordance with this problem statement. This kind of study is not available for Indian companies till date. To do this study total 46 companies been analyzed who raised money through IPO during 2001 to 2005 and has minimum amount of 50 crore. Further more than six years financial statement has been collected for all this companies from various sources. This makes more than 530 firm year observations. Non parametric tests have been conducted. And regression analysis has been used to identify impact of independent variable into dependant variables. Further the scope and other limitation is described and in detail will be described in the next chapter. The justification for the statistical tools is also mentioned in the next chapter.
Decision Framing and Corporate Behavioral Finance: Study of Selected Indian Companies

Market timing view of corporate Behavioral Finance for 48 selected Indian companies.

Mispricing driven Market timing

Measuring relationship between equity issuance and valuations.

Equity issuance and MB ratio - consistently proportional for all post ipo years, which states that Null hypothesis is rejected. So, market timing is proving for selected Indian companies.

Equity issuance for investment purposes

Neither Investment nor Capital expenditure is highly affected by primary proceeds. Both are also influenced by residual resources. Instead Cash holdings are greatly affected by primary proceeds at 5 years time period.

This suggest that the equity issuance has no relation with investment motive and so accept mispricing based Market timing mechanism for selected Indian companies.

Hypothesis 1 to 7

Hypothesis 8