CHAPTER II

OBJECTIVES AND METHODOLOGY OF STUDY

This chapter consists of methodological approach employed in this study. Particularly, it focuses on the statement of the research problem, scope of the study, significance of the study, objectives and hypothesis, methodology of the study, sample selection, source of data and period of study, methods of data analysis, model specification and limitations of the study and finally, organization of the study.
CHAPTER- II

OBJECTIVES AND METHODOLOGY OF STUDY

The research methodology is important to carry out a research, which describes the entire methodological approaches employed in the study. Mostly, in the case of the empirical studies, the consistencies of the findings are solely based on empirical methodologies it has employed. Therefore, this chapter highlights the statement of the research problem, scope of the study, significance of the study, and limitations of the study, research objectives and hypothesis, methodology of the study, sample selection, source of data and period of study, model specification and methods of data analysis.

2.1 STATEMENT OF THE RESEARCH PROBLEM

One of many objectives of financial manager is to maximize the wealth of shareholders. Shareholders’ wealth depends on some issues like maintaining lower cost of capital, reducing the agency costs, creating tax shield benefits from debt financing, and all these things are managed and determined, then will lead to a particular point i.e., optimal capital structure. Which results, the financial managers make a great effort to do it the optimal debt and equity mix in the firm’s capital structure. What are the factors those affect such optimal capital structure? Whether such an optimal capital structure exists in reality or not?

Mentioned the above questions are to be answered by a researcher. In further words, aim of a researcher is to identify the potential determinants of capital structure in given industrial settings so that the financial managers can benefit from this to make an optimal mix of debt and to maximize wealth of shareholders. Eventhough, the capital structure theories still remain one of the most controversial issues in modern corporate capital structure still continues, since Modigliani and Miller (1958), have given a superfluity research to identify the determinant capital structure. Nonetheless, the concerns of most capital structure studies to date are based on data from developed countries such as Rajan and Zingales (1995) (the G-7 Countries), Burgman (1996) (The U S), Bevan and Danbolt (2002) (the U K), Antonius et al (2002) (the UK, Germany and France), Hall et al (2004) (European SME’s), Akhtar (2005) (Australia), Akhtar and Oliver (2009) (Japan). Not only there is any
universal theory of capital structure, but also the assumptions of several conditional theories that contradict with one another. This is not end of the story.

Empirically results show no strong agreements about desirable features for theories despite several decades of intensive negotiations. In addition, the modern theories and empirical research programs are primarily based on aspects and data from developed economies. Few researchers are carried on the perspective of developing economies such as Wiwattanakantang (1999) (Thailand), Pandey (2001) (Malaysia), Bhaduri (2002) (India), Chen (2004) (China), Omet and Nobanee (2004) (Jordan), Alsakran (2001) (Saudi Arabia) and Buferna et al (2005) (Libya).


Hence, it is hard to say whether conclusions from theoretical and empirical research carried out in developed economies are also applicable for developing economies too; or a different set of factors work in deciding capital structure in developing economies? Like other developing countries, the research area of capital structure is still unexplored in India. Researchers made on the ground of capital structure theories and determinants of capital structure in the context of India are small in number such as: Pandey (1981), Venkatesan (1983), Mittal and Singla (1992), Singh et al (1992), Deb (1995), Rajeswararaao and Sadanandam (1995), Sahu et al (1997), Babu and Jain (1998), Kakani (1999), T.K Suresh Babu (1999), Mohanty (2000), Pal (2001), Garg and Shekhar (2002), Ravinder Vinayak and

As a result, the study of capital structure determinants bears significant importance. This study attempts to reduce the gap by testing and analyzing the influence of various independent factors in the capital structure of Indian firms in thirteen manufacturing industries and one service industry other than financial and the conformity of these factors with the predictions drawn by capital structure theories.

### 2.2 SCOPE OF THE STUDY

This paper tried to encompass the broadest and most interesting branch of finance, financing decision is also known as capital structure decision. From the topics in the capital structure the study selected the area of the determinants of capital structure and assesses their relevance in Indian context.

### 2.3 SIGNIFICANCE OF THE STUDY

The study can be taken as evidence to the determinants of capital structure in developing countries that do not have active secondary market. In addition, the study significantly contributes to other studies to be made in different economic sectors by providing the image of the factors determining capital structure policies in manufacturing sector of economy by serving as a reference point. The researcher hopes that the findings from the study shall be useful to the business community since it will throw more light on the role that capital structure has in determining financial performance.

The study will also enlighten various interest groups such as shareholders (promoters, minority shareholders, financial institutions, venture funds, sovereign funds), managers, suppliers, creditors, debtors, bankers, consumers, competitors, government bodies and
scholars on the importance of the capital structure to any business and will highlight areas for further research.

2.4 OBJECTIVES OF THE STUDY

Before selecting the research method adopted it is important to see the objective and hypothesis of the research. The major objective of this study is to understand the relevance of the theoretical internal (firm level) factors determining capital structure in explaining the differences in the capital structures of Indian industries and to know which of the theories of capital structure are appealing to Indian manufacturing and service Industry. The other objectives are:

✓ To examine the sources of financing and factors influencing the capital structure of selected companies in India.
✓ To analyze the correlation between the capital structure determinants of firm-level characteristics, viz., profitability, size, fixed assets, growth opportunity, risk, non-debt tax shield and liquidity.
✓ To analyze the regression between the capital structure determinants of firm-level characteristics, viz., profitability, size, fixed assets, growth opportunity, risk, non-debt tax shield and liquidity.
✓ To make a comparative analysis of the components of capital structure among selected industries and also suggest the measures for the effective capital structure design so that they can attract more investments.

2.4.1 Hypotheses of the Study

The objective of the researcher in the present study is to test the Pecking Order Theory that provides positive as well as negative relationship between leverage and different factors, so the following hypotheses have been developed according to the above said theory:

\( H_1 \): A negative impact on leverage must have been by profitability.

\( H_2 \): A negative impact on leverage must have been by size.

\( H_3 \): A negative impact on leverage should have been by tangibility.
**H₄**: A positive impact on leverage should have been by growth.

**H₅**: A negative impact on leverage should have been by risk.

**H₆**: A negative impact on leverage should have been by non-debt tax shield

**H₇**: A negative impact on leverage should have been by liquidity.

### 2.5 METHODOLOGY

Past researches on determinants of capital structure mostly based on positivist approach and this paper will be prepared under the positivist paradigm. This paper intends to identify determinants of Indian public sector enterprises, private sector, cooperatives and statutory bodies firms’ capital structure by using regression analysis in SPSS. It also tries to examine the correlations between leverage and possible determinants.

#### 2.5.1. Sample Selection:

To carry out the present study, the selection of the companies is mainly based on the common year of starting, i.e., 1997-98 and also the continuous availability of the data. For this a sample of 3,151 Indian companies are identified thirteen in manufacturing and one in service industries and they are chosen for the study as shown in the table 2.1.

<table>
<thead>
<tr>
<th>Sl.NO</th>
<th>Industry group</th>
<th>No. of Companies in the Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Automobile</td>
<td>58</td>
</tr>
<tr>
<td>2.</td>
<td>Beer and Alcohol</td>
<td>56</td>
</tr>
<tr>
<td>3.</td>
<td>Cement</td>
<td>73</td>
</tr>
<tr>
<td>4.</td>
<td>Computer Software</td>
<td>94</td>
</tr>
<tr>
<td>5.</td>
<td>Construction</td>
<td>137</td>
</tr>
<tr>
<td>6.</td>
<td>Food and Beverage</td>
<td>557</td>
</tr>
<tr>
<td>7.</td>
<td>Paper and Paper products</td>
<td>122</td>
</tr>
<tr>
<td>8.</td>
<td>Pharmaceutical</td>
<td>242</td>
</tr>
<tr>
<td>9.</td>
<td>Plastic Products</td>
<td>199</td>
</tr>
<tr>
<td>10.</td>
<td>Poultry and Meat Products</td>
<td>15</td>
</tr>
<tr>
<td>11.</td>
<td>Sugar</td>
<td>70</td>
</tr>
<tr>
<td>12.</td>
<td>Textile</td>
<td>647</td>
</tr>
<tr>
<td>13.</td>
<td>Tobacco Products</td>
<td>10</td>
</tr>
<tr>
<td>14.</td>
<td>Service (other than financial)</td>
<td>871</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>3,151</strong></td>
</tr>
</tbody>
</table>
The empirical data of the value of the variables are computed for 14 consecutive years (1997-98 to 2010-11). The set of companies selected for this study is based on availability of the audited unabridged annual accounts. The study covers all major manufacturing and service industrial groups includes public sector companies (restricted, not by design but by availability, mostly to the central government public sector enterprises), private sector, cooperatives and statutory bodies that function as listed as well as unlisted companies, these groups, are as per the classification provided in the official directory of the Center for Monitoring Indian Economy (CMIE).

2.5.2 Sources of Data

In the present study, the data was taken from secondary data source named as “Industry; financial aggregates and ratios” as a corporate database (PROWS) maintained by the center for monitoring Indian economy (CMIE). This database contains the detailed information on the financial performance of all public listed companies in all the segments in India, compiled from various sources such as profit and loss accounts and balance sheets, stock price data, the annual reports and then various issues of newspapers, magazines journals and working papers are also accessed for the relevant.

2.5.3 Period of Study

To draw valid conclusions, a period of minimum ten is required for this type of studies. Hence, this study covers a period of 14 years starting from 1997-98 to 2010-2011.

2.6 METHODS OF DATA ANALYSIS

To test the hypothesis, the relationships between the debt equity ratio as a dependent variable and seven explanatory variables representing profitability, size, tangibility, growth, risk, non-debt tax shields, and liquidity, were examined for 3151 companies’ observation for 13 major manufacturing industries and one service industry. Both financial statistical tools and techniques were used by SPSS Version 20 software applications to evaluate the determinants of capital structure of Indian industrial sectors. Financial tools like ratio analysis and statistical tools such as descriptive statistics (mean, maximum, minimum and standard deviation), correlation coefficient, multiple regressions and ANOVA were used.
The statistical results were verified by applying t-test, F-test in appropriate cases. Indeed the study used panel data in ordinary least square (OLS) regression, where time-series and cross-sectional observations were combined and estimated. In other words, in panel data setting several cross-sectional units were observed over a period of time.

2.6.1 Model Specification

The sample of this study is trimmed applying a methodology derived on the basis of previous studies such as Ozkan (2001), Bevan and Danbolt (2000) and Titman and Wessels (1988), Dodd (1986) to test the determinants of capital structure by multiple regression analysis using least square estimation model. The least square estimation method is based on the assumptions as (a) Relationship between dependent and independent variables in linear, (b) Residual term to be normally distributed with zero exception, not correlated with explanatory variables, and has fixed variance. Thus, above the empiricals models showing the impact of explanatory variables on capital structure is shown in Equation 1:

\[
\text{LEV} = \beta_0 + \beta_1 \text{(PRO)} + \beta_2 \text{(SIZ)} + \beta_3 \text{(TANG)} + \beta_4 \text{(GRO)} + \beta_5 \text{(RISK)} + \beta_6 \text{(NDTS)} + \beta_7 \text{(LIQ)} + \varepsilon
\]

Where, Lev = Dependent variable (or) debt-equity ratio (or) financial leverage

\(\beta_1---\beta_7\) = Coefficients of independent variables such as profitability (PRO), firm size (SIZ), tangibility (TANG), growth opportunities (GRO), business risk (RISK), non-debt tax shield (NDTS), and liquidity (LIQ), \(\beta_0\) = Constant term of the Model, \(\varepsilon\) = Error term

2.6.2 Determinants of Variables’ Explanation

In this paper, variables considered for the analysis include; Debt-equity Ratio is used as dependent variable and profitability, size, tangibility, growth, risk, non-debt tax shield, and liquidity as independent variables.

Leverage:- The most commonly used measure of debt-equity ratio is computed as the ratio of long term debt and equity consist of share capital and reserves. Book values figures have been used to measure both debt and equity. The same measurement used by Mohan Raj (2011) in their analysis. It is calculated as: Leverage (LEV) = Long term debts / net worth.
**Profitability** is defined as earnings before interest, taxes and dividend divided by book value of assets. This measure has been used by Titman and Wessels (1988), Ozkan (2001), Mohan Sahoo and Omkarnath (2005), Mallikarjunappa and Carmelite Goveas (2007) and Ali (2011). Profitability is calculated as: Profitability (PRO) = EBDITA/Total Assets.

**Firm size** is measured by the natural logarithm of the total assets. The same measurement used by Marsh (1982), Mohan Sahoo and Omkarnath (2005), and Ali (2011). The size of the firm can be calculated either by log of sale or by log of assets. The researcher in this study measured the firm’s size by log of total assets. So the firm’s size is calculated as: Size (SIZ) = Log of total assets.


**Growth** is measured as the change in total Sales between two consecutive years divided by previous year total Sales. The same measurement used by Titman and Wessels (1988), Mohan Sahoo and Omkarnath (2005). Growth opportunities are viewed as intangible assets of firm. Firms with significant future growth opportunities are likely to face difficulties in raising finance from debt market because intangible assets are not fully collateral stable. It is calculated as: Growth (GRO) = Change in total sales/ Total sales.

**Business Risk** is defined as Absolute variation in profitability. This measure has been used by Marsh (1982), Titman and Wessels (1988), Booth et al (2001). The level of risk is said to be one of the primary determinants of a firm's capital structure. The tax shield, bankruptcy cost theory of capital structure determines a firm's optimal leverage as a function of business risk. It is calculated as: Risk = Absolute variation in profitability.

**Non-debt tax shield** is defined as a ratio of total annual depreciation to total assets. The same measurement used by Titman and Wessels (1988), Ozkan (2001), Inder Sekhar Yadav et al (2010), and Ali (2011). Non-debt tax shields such as tax deduction for
Depreciation and investment tax credits are considered to be the substitutes for tax benefits of debt financing. It is calculated as: Non-debt tax shield (NDTS) = Annual Depreciation / Total assets.

**Liquidity** is defined as current assets divided by current liabilities. The same measurement used by Rajan and Zingales (1995), Ozkan (2001), Mallikarjunappa and Carmeltia Goveas (2007), Mohan Raj (2011). It is calculated as: Liquidity (LIQ) = current assets / current liabilities. Table 2.2 enumerated are the indicator of both dependent and independent variables as shown under.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leverage</td>
<td>Long-term debt / Net worth</td>
</tr>
<tr>
<td>Profitability</td>
<td>EBDITA / Total Assets</td>
</tr>
<tr>
<td>Size</td>
<td>Log of Total Assets</td>
</tr>
<tr>
<td>Tangibility</td>
<td>Net Fixed Assets / Total Assets</td>
</tr>
<tr>
<td>Growth Opportunities</td>
<td>Change in Total Sales / Total Sales (S – St / St)</td>
</tr>
<tr>
<td>Volatility (Risk)</td>
<td>Absolute Variation in Profitability</td>
</tr>
<tr>
<td>Non-debt tax shield</td>
<td>Annual Depreciation / Total Assets</td>
</tr>
<tr>
<td>Liquidity</td>
<td>Current Assets / Current Liabilities</td>
</tr>
</tbody>
</table>

**2.7 LIMITATIONS OF THE STUDY**

This study is based on secondary data taken from (the CMIE Prowess Package) published annual reports and accounts of selected companies and as such it’s findings depend entirely on the accuracy, reliability and quality of such data and there is no primary data is used in this study. There are different methods to measure the financial leverage of an industry. In this connection views of experts differ from one another.

The present study is largely based on ratio analysis which has it’s own limitations. The study does not consider some of the external factors which may affect the capital structure of
a firm. The unavailability of active secondary market limited and forced the researcher to measure of debt-equity ratio as the dependent variable as well as the proxies of the independent variables in terms of book values rather than market values.

2.8 ORGANIZATION OF THE STUDY

Present study can be classified into five chapters as prescribed by the University.

Chapter One, which is introductory, deals with nature and relative importance, sources of financing, factors affecting capital structure, and presents the comprehensive theoretical and empirical literature review including variables over the capital structure theme. This chapter signifies the rational of this study.

Chapter Two consists of methodological approach employed in this study. Particularly, it focuses on the statement of the research problem, scope of the study, significance of the study, research objectives and hypothesis, methodology of the study, sample selection, source of data and period of study, model specification and methods of data analysis, limitations of the study and finally, organization of the study.

Chapter Three deals about; firstly the discussion of the summary of descriptive statistics results of all variables, secondly, the illustration and discussion of the correlation analysis among basic variables.

Chapter Four deals with the detailed discussion on the regression results of various capital structure measures and the presentation of summary of capital structure determinants of different industrial sectors.

Chapter Five aims to present the main conclusions and discuss some of their possible implications for the financing policy. Finally, it ends with suggestions for future research. The chapter is structured as follows: section 5.1 provides the findings of the study. Section 5.2 provides conclusion of the study, Section 5.3 provides some of their possible implications and section 5.4 provides some of the recommendations for further research. This chapter reviewed the general background, theoretical framework and empirical evidence regarding the determinants of the capital structure and finally organization of the study.