DETERMINANTS OF CAPITAL STRUCTURE: AN EMPIRICAL EVALUATION OF INDIAN FIRMS

Ph.D. THESIS

by

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APRIL, 2016

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CANDIDATE'S DECLARATION

I hereby certify that the work which is being presented in the thesis entitled "**DETERMINANTS OF CAPITAL STRUCTURE: AN EMPIRICAL EVALUATION OF INDIAN FIRMS"** in partial fulfilment of the requirements for the award of the Degree of Doctor of Philosophy and submitted in the Department of Management Studies of the Indian Institute of Technology Roorkee, Roorkee, is an authentic record of my own work carried out during a period from January, 2013 to April, 2016 under the supervision of *Dr. Anil K. Sharma*, Associate Professor, Department of Management Studies, Indian Institute of Technology Roorkee, Roorkee.

The matter presented in this thesis has not been submitted by me for the award of any other degree of this or any other Institute.

(SAURABH CHADHA)

This is to certify that the above statement made by the candidate is correct to the best of my knowledge.

(ANIL K. SHARMA)
Supervisor

Date:

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Saurabh Chadha

ABSTRACT

With the globalization of the Indian economy, it has witnessed a tremendous movement of capital from various companies across the globe. As a result, there is a shift of corporate goals from socio – economic front to an increasing shareholder's wealth. The capital structure decision plays a crucial role which decides the success of the firm. For an emerging economy like India, it becomes extremely important to decide the right mix of debt and equity. As, any debt without its earning potential can be hazardous to the financial health of the firm. It has well proven in the past that high debt attracts the risk of bankruptcy.

It is important to understand the complexities of the capital structure. Any wrong financial decision on the part of the firm can shake the trust of the various investors and stakeholders of the firm. The financial manager of the firm should try to achieve that leverage mix which can maximize the value of the firm, keeping, in concern of the overall cost of capital. Hence, it has become necessary to understand all those factors which help in determining the optimal capital mix. Till 1950's, the literature of corporate finance comprises mostly descriptions of approaches and foundations. It was in 1958, when Modigliani and Miller (MM) provide a major breakthrough on the subject, when they argue that capital structure is irrelevant in determining the firm's value under certain assumptions.

Despite, the various numbers of capital structure theories and empirical studies, researchers in corporate finance have not found a benchmark that can provide an optimal capital structure. There is no universal theory of capital structure which can solve the problem of debt-equity mix. The control of various determinants to decide the leverage level is not constant. More than five decades have passed since MM proposition, but there are still many questions that remain unresolved. Also, most of the previous studies have been largely restricted to the United States and a few other developed countries. The significance of capital structure in relevance to the Indian manufacturing sector has yet to be established. Thus, this empirical study tried to examine some of the questions related to the capital structure of the selected firms operating in the Indian manufacturing sector.

The primary objective of the present study is to identify the key determinants of capital structure of the selected Indian manufacturing firms. Then, it validates which theory propositions are more applicable to the Indian manufacturing sector, i.e. trade-off theory or pecking order theory. Further, it will analyze the leverage trends and the impact of leverage mix on the value and performance of the sample firms. Then, it analyzed the effect of ownership structure on the capital structure of the sample firms. Finally, the study examines the relationship between leverage, liquidity and performance of the firm.

The sample size of the present study consists of 422 trading Indian manufacturing firms on the Bombay Stock Exchange (BSE). The data were analyzed for a period of ten years from 2004 to 2013. This study employs panel data regression technique to attain the desired objectives. The panel data regression is an advanced analytical technique which employs both time-series and cross-sectional data. Since the last decade or so, panel data technique has occupied a central stage in the field of quantitative research. It has become popular among various social and behavioral science scholars. It has become one of the most practical and advanced practice of literature in Econometrics.

This study performs a robust analysis of capital structure in the Indian manufacturing sector in terms of determinants, trend analysis and linkage with firm performance indicators. It was found that firm specific factors like size, age, tangibility, growth rate, profitability, non-debt tax shield and uniqueness are the key significant factors that determine the capital structure of the selected 422 Indian manufacturing firms. The large sized and profitable Indian manufacturing firms prefer internal financing over external source of financing. Both trade-off and pecking order theory explains the capital structure of the sample firms. It is observed from the leverage trends that firms prefer debt financing over equity financing. The Modigliani and Miller (MM) proposition of a firm's value is independent of its capital structure doesn't hold true for the firms operating in the Indian manufacturing sector. The financial leverage affects the various financial parameters of the selected firms.

Thus, the present study contributes to the existing literature and provides an insight of the capital structure of Indian manufacturing firms. It will aid the regulators in making better financial policies for the development of the Indian manufacturing sector. Valuable insights and analysis

opportunities given by the study models will help the financial managers, analyst and other stakeholders to better evaluate the firms' leverage structure. The study also helps the managers in understanding the areas of weakness and strengths in financial management and how much extra strength is required in order to become as good as their competitors.

It is therefore recommended that Indian manufacturing firms should follow a balanced and target approach for financing needs, which will maximize the wealth of the shareholders. They should use retained earnings in financing new investments and operational cost. With the past financial crisis in mind, Indian firms should increase their cash generation capacity through efficient asset management, increase competitiveness, establish healthy bank relations and provide highly trained managerial personnel to upgrade technologies with the new global trends.

TABLE OF CONTENTS

Title	Page No.
Candidate's Declaration	i
Acknowledgement	iii
Abstract	v
Table of Contents	ix
List of Tables	xv
List of Figures	xvii
Abbreviations	xix
CHAPTER 1: INTRODUCTION	**1-17**
1.1 Introduction	1
1.2 Overview of the Capital Structure	3
1.3 Debt Financing Vs. Equity Financing	4
1.4 Overview of the Study	5
1.5 Motivation for the Study	8
1.6 Research Questions	9
1.7 Rationale of the Study	9
1.8 Scope of the Study	11
1.9 Objectives of the Study	12
1.10 Overview of the Research Design	13
1.11 Conclusion	14
1.12 Chapter Plan of the Study	15
Notes	16

CHAPTER 2: REVIEW OF LITERATURE **19-71**

2.1 Introduction 19

2.2 Theories of Capital Structure 20

2.2.1 Modigliani and Miller Theory 20

2.2.2 Trade-Off Theory 23

2.2.3 Pecking Order Theory 25

2.2.4 Agency Cost Theory 26

2.2.5 Market Timing Theory 28

2.2.6 Signaling Theory 29

2.3 Review of Empirical Studies 30

2.3.1 Studies Related to Capital Structure – Determinants, Trends And Theory Implications 30

2.3.2 Studies Related to Capital Structure – Miscellaneous Issues 57

2.4 Conclusion and Research Gaps 69

CHAPTER 3: RESEARCH DESIGN **73-98**

3.1 Introduction 73

3.2 Objectives of the Study 74

3.3 Research Questions 75

3.4 Hypotheses 76

3.5 Sample Size and Data Sources 76

3.6 Research Variables 78

3.6.1 Capital Structure Ratio or Financial Leverage Variables 78

3.6.2 Firm Performance Variables 79

3.6.3 Firm Value Variables 81

3.6.4 Ownership Structure Variables 82

3.6.5 Operating Liquidity Variables 83

3.6.6 Other Control Variables 84

3.7 Research Technique 88

3.7.1 Panel Data 89

3.7.1.1 Merits of Panel Data 89

3.7.1.2 Demerits of Panel Data 91

3.7.2 Panel Data Regression 91

3.7.3 Types of Panel Data Regression Models 93

3.7.3.1 Fixed Effect Method or Least Squares Dummy Variable (LSDV) Estimator 93

3.7.3.2 Random Effect Method or Generalized Least Squares (GLS) Estimator 95

3.7.3.3 Fixed Effect or Random Effect Model 96

3.8 Test Specification 97

3.9 Conclusion 97

Notes 98

CHAPTER 4: AN EMPIRICAL ANALYSIS OF CAPITAL STRUCTURE – DETERMINANTS, TRENDS AND THEORY APPLICABILITY **99-129**

4.1 Introduction 99

4.2 Test for Stationarity 100

4.2.1 Levin-Lin-Chu (LLC) Test 100

4.3 Empirical Results 102

4.3.1 Descriptive Statistics 102

4.3.2 Correlation Analysis of Control Variables 104

4.3.3 Hypotheses Testing 105

4.3.3.1 Hypothesis 1 106

4.3.3.2 Hypothesis 2 115

4.3.3.3 Hypothesis 3 122

4.4 Conclusion 128

CHAPTER 5: AN EMPIRICAL ANALYSIS OF CAPITAL STRUCTURE – MISCELLANEOUS ISSUES **131-170**

5.1 Introduction 131

5.2 Test for Stationarity 132

5.3 Empirical Results 133

5.3.1 Descriptive Statistics 134

5.3.2 Correlation Analysis of Control Variables 136

5.3.3 Hypotheses Testing 137

5.3.3.1 Hypothesis 4 137

5.3.3.2 Hypothesis 5 143

5.3.3.3 Hypothesis 6 150

5.3.3.4 Hypothesis 7 157

5.4 Conclusion 169

CHAPTER 6: SUMMARY, CONCLUSIONS AND SUGGESTIONS **171-190**

6.1 Introduction 171

6.2 Summary and Conclusion 171

6.2.1 Whether firm specific or micro-economic variables and macro-economic variables of the country determine the capital structure of the selected Indian manufacturing firms? 172

6.2.2 Whether capital structure theories like Trade off theory (TOT) 175

or Pecking order theory (POT) are applicable to the firms operating in the Indian manufacturing sector?

6.2.3 Do Indian manufacturing firms prefer debt financing or equity financing? What are there past leverage level trends? 177

6.2.4 Does a statistical relationship between leverage level and the value of the firm exist, and if it does, how much of the deviation in the value of the firm can be explained by the leverage? 178

6.2.5 Does the ownership structure of the manufacturing firm determine its capital structure? 180

6.2.6 Does a statistical relationship between leverage level and the financial performance of the firm exist, and if it does, how much of the deviation in the financial performance of the firm can be explained by the leverage? 181

6.2.7 Does a statistical relationship between leverage level and the operating liquidity of the firm exist, and if it does, how much of the deviation in the operating liquidity of the firm can be explained by the leverage? Also, what is the combined effect of operating liquidity and financial leverage on the financial performance of the selected Indian manufacturing firms? 182

6.3 Implications of the Study and Policy Recommendations 184

6.4 Limitations of the Study 188

6.5 Future Research 189

BIBLIOGRAPHY **191-207**

ANNEXURE 1: LIST OF SAMPLE FIRMS **209-215**

LIST OF TABLES

Table No.	Title	Page No.
3.1	Final Sample Industry Classification	77
3.2	Research Variables	87
4.1	Results of LLC Panel Unit Root Test	101
4.2	Descriptive Statistics of Variables	102
4.3	Correlation Matrix of Independent Variables	105
4.4	Empirical Result of Model 1, (Dependent Variable: D/A)	107
4.5	Empirical Result of Model 2, (Dependent Variable: D/C)	110
4.6	Empirical Result of Model 3, (Dependent Variable: D/E)	112
4.7	Trade-off Theory Vs. Pecking Order Theory Predictions	116
4.8	Empirical Result of Model 4, (Dependent Variable: D/A)	118
4.9	Empirical Result of Model 5, (Dependent Variable: D/C)	119
4.10	Empirical Result of Model 6, (Dependent Variable: D/E)	120
4.11	Trade-off Theory Vs. Pecking Order Theory Validation Summary	122
5.1	Results of LLC Panel Unit Root Test	132
5.2	Descriptive Statistics of Variables	134
5.3	Correlation Matrix of Independent Variables	136
5.4	Empirical Result of Model 1, (Dependent Variable: EV)	138
5.5	Empirical Result of Model 2, (Dependent Variable: P)	140
5.6	Empirical Result of Model 3, (Dependent Variable: PE)	141
5.7	Empirical Result of Model 4, (Dependent Variable: D/A)	145
5.8	Empirical Result of Model 5, (Dependent Variable: D/A)	146
5.9	Empirical Result of Model 6, (Dependent Variable: D/A)	148
5.10	Empirical Result of Model 7, (Dependent Variable: ROA)	151
5.11	Empirical Result of Model 8, (Dependent Variable: ROE)	153
5.12	Empirical Result of Model 9, (Dependent Variable: Tobin's Q)	155
5.13	Empirical Result of Model 10, (Dependent Variable: CR)	158
5.14	Empirical Result of Model 11, (Dependent Variable: CCC)	160
5.15	Empirical Result of Model 12, (Dependent Variable: OCFM)	162
5.16	Empirical Result of Model 13, (Dependent Variable: ROA)	164

5.17 Empirical Result of Model 14, (Dependent Variable: ROA) 165
5.18 Empirical Result of Model 15, (Dependent Variable: ROA) 167

LIST OF FIGURES

Figure No.	Title	Page No.
1.1	Capital Structure of the Firm	3
2.1	MM Second Proposition	21
2.2	Relationship between Cost of Capital and Debt	22
2.3	Static Trade-off Theory	23
4.1	Final Determinants of Capital Structure of Indian Manufacturing Firms	114
4.2	Average Total Debt	124
4.3	Average Total Equity	124
4.4	Average Total Assets	125
4.5	Average Total Debt / Total Assets (D/A)	126
4.6	Average Total Debt / Total Capital (D/C)	126
4.7	Average Total Debt / Total Equity (D/E)	127

ABBREVIATIONS

ACT	Agency Cost Theory
ANOVA	Analysis of Variance
BSE	Bombay Stock Exchange
CCC	Cash Conversion Cycle
CFCR	Cash Flow Coverage Ratio
CMIE	Centre for Monitoring Indian Economy
CR	Current Ratio
D/A	Total Debt to Total Assets
D/C	Total Debt to Total Capital
D/E	Total Debt to Total Equity
DEA	Data Envelopment Analysis
DPO	Dividend Payout Ratio
D-W	Durbin Watson Statistic
EBIT	Earnings Before Interest and Taxes
EBTA	EBIT to Total Assets
EPS	Earnings Per Share
EV	Enterprise Value
GDP	Gross Domestic Product
GLS	Generalized Least Squares
GMM	Generalized Method of Moments
ICR	Interest Coverage Ratio
LLC	Levin Lin Chu Test
LSDV	Least Squares Dummy Variable
LSE	Large Scale Enterprises
M/B	Market to Book Ratio
ML	Maximum Likelihood
MM	Modigliani and Miller
MNC	Multinational Corporations
MTT	Market Timing Theory
NDTS	Non Debt Tax Shield

NPISH	Percentage of Non-Promoter Institutional Shareholdings
NPNISH	Percentage of Non-Promoter Non-Institutional Shareholdings including Custodians
NPV	Net Present Value
OCFM	Operating Cash Flow Margin
OLS	Ordinary Least Squares
PE	Price Earnings Ratio
POT	Pecking Order Theory
PSH	Percentage of Promoter Shareholdings
PSU	Public Sector Undertakings
R&D	Research and Development
RBI	Reserve Bank of India
ROA	Return on Assets
ROCE	Return on Capital Employed
ROE	Return on Equity
ROI	Return on Investment
SME	Small and Medium Enterprises
TOT	Trade Off Theory
TSE	Tokyo Stock Exchange
WACC	Weighted Average Cost of Capital
WDI	World Development Indicators
WPI	Wholesale Price Index

CHAPTER 1
INTRODUCTION

1.1 INTRODUCTION

The capital structure decision is one of the significant aspects of the financial management. One of the important concerns during the financial decision making is to deal with the determination of an optimal financing mix or optimal capital structure of the firm. The capital structure decision is to be taken well in advance whenever a company is going for incorporation or needs long term funds to finance its current as well as new projects and operations. The financial manager or chief financial officer of a firm has to analyze the merits and demerits of various sources of long term funds before selecting the best one keeping in mind the optimal capital mix or the one that minimizes the overall cost of capital.

The capital structure is a continuous decision making process to meet firm's requirements of its long term funds. The capital structure is said to be an optimal one when it maximizes the market price of the firm's common stock. Capital Structure comprises of debt, common stock and preferred stock that is used to finance the firm's total assets, operations and financial growth. The firm raises equity by issuing common and preferred stock while debt can be raised in the form of short term debt, long term debt, loans payable, notes payable, bonds, debentures etc.

Equity holders are the owners of the firm and they have a long term commitment to the firm on the basis of the principle of going concern. On the other hand, Debt holders are the creditors of the firm and they have no long term interest with the firm as they are more interested in the timely repayment of their interest and principal amount. If the firm fails to do, it will pass through a liquidation process. The financial manager wants to grow firm by holding cash for future projects, whereas shareholders are more interested in regular dividend payments. Gupta et al., (2011) examined the influence of dividend on the value of the firm. Thus, the decision on the optimal capital structure mix plays a vital role on the part of the financial manager of a firm.

CHAPTER 1: INTRODUCTION

Financial leverage or leverage is the ratio of debt upon equity, which states the relationship between the borrowed funds and owner's funds in the capital structure of a firm. It varies within firms and different Industries. Firms with only equity capital in their capital structure are called as unlevered firms or pure equity firms, while firms with both debt and equity capital in their capital structure are termed as levered firms. The financial manager of a firm should decide an optimum capital mix as it has a direct effect on the wealth of the shareholder's and also, an unnecessary high debt level in the capital structure can increase the chances of the firm to become bankrupt in the near future. Any imbalance in the leverage can lead to the dissolution of the firm as proved earlier that excessive debt results in financial distress (Kraus and Litzenberger 1973). Hence, an optimum capital structure plays a significant role in the management of a firm's financial stability and also, it is one of the significant factors of a firm's success.

The capital structure of the firm has been explained by the various traditional and modern theories in the past. In spite of past theories and research, scholars in corporate finance have not found the optimum capital mix. The concept of determinants of capital structure and its impact on firm value; and the cost of capital occupy an important place in modern financial management. The question of using debt capital in the capital structure and its impact on the firm value remains unresolved. Also, empirical evidence on leverage research remains unsettled and contradictory on factors which determine the capital structure of the firm. The capital structure is one of the significant determinants of a firm's financial performance. This research aims to analyze the capital structure of the selected Indian manufacturing companies and what are their key capital structure determinants. This study has gathered financial information on selected Indian manufacturing companies and tried to provide an understanding of the capital structure of the Indian manufacturing sector.

Modigliani and Miller (1958) state that the firm's value is independent of its capital structure under perfect capital markets with no corporate taxes, no transaction and agency cost and there is a perfect disclosure of all the credible information. Later on in 1963, when they considered the tax effect and found that leverage have a positive impact on the value of a firm; it has become an area of research for many scholars in corporate finance. Kraus and Litzenberger (1973) state the trade-off theory (TOT), where a firm can attain an optimal capital structure by developing a balance or trade-off between the tax-shield benefit of debt and the distress cost of debt.

Myers & Majluf (1984) state the pecking order theory which explains that a firm prioritizes their funding source starting from internal financing or retained earnings to debt issuance and finally equity as a last resort to meet their capital requirements. Jensen and Meckling (1976) explained the agency cost that includes monitoring expenditures by principal, bonding expenditure by the agent and residual loss. This theory is based on the assumption that agents may not always act in the interest of the principals and it will lead to conflict of interest between agents with those of principals and results in loss in return to the principals. As per market timing theory (MTT) theory, the choice of leverage level is dependent upon the mispricing of these instruments in the financial markets along with the time when the fund is required by the firms. In other words, the company issues the equity when there is an increase in the stock prices or there is an overvaluation of the stock price.

1.2 OVERVIEW OF THE CAPITAL STRUCTURE

According to James C. Van Horne, the capital mix of a firm's permanent long-term financing is represented by debt, preferred stock and common stock. In other words, the permanent long term financing is primarily represented by Total debt and Total Equity. Optimum leverage level aims at two important concerns, first is to maximize the value of the firm and the second is to minimize the overall cost of capital. Capital Structure varies from company to company and differs from industry to industry. Some of the capital structure type includes equity shares only, equity and debentures only, equity and preference shares only; and equity, preference and debentures. Hence, a capital structure decision is primarily a choice between debt and equity capital.

Figure 1.1 Capital Structure of the Firm

Figure 1.1.a Capital Structure

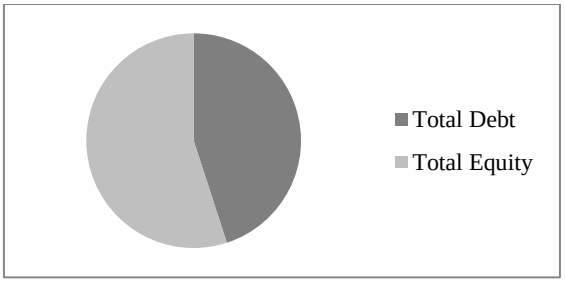
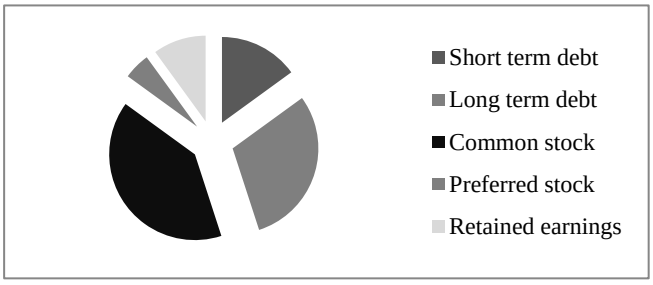


Figure 1.1.b Capital Structure



Source: Gupta 2004

Figure 1.1.a shows that the capital structure of a firm is primarily a mix of total debt and total equity. Figure 1.1.b further shows the components of total debt and total equity capital. We will stick with the figure 1.1.a covering total debt and total equity throughout the period of the study rather than concentrating on the individual components of each source of the capital. Retained earnings is the internal source of finance and provide the cheapest funding source as it does not attract any explicit cost as compared to the funds obtained from external sources like debt or equity. Common stock is a major source of total equity capital and does not have any maturity. They have the voting rights and control the management of the firm. At the time of winding up of the company, they can claim only on the residual value after paying to the debt holders and preferred stockholders of the firm.

On the contrary, preferred stockholders enjoy the preference over common stockholders in the dividend payment and in the residual value claim during the time of the liquidation process of the firm. Gupta et al., (2012) examined the influence of dividend on the financial policy of the firm. Debt involves fixed payment of interest and principal amount and they have the fixed maturity value. They are the one who has first claim on the residual value of the firm during the liquidation process of the firm as compared to other sources of capital. Debt can be classified on the basis of term period and assets pledged. Debt with one or less than one year of maturity is considered as short term debt and long term debt signifies the debt with a maturity value of more than one year. When the debt is secured by some asset pledge of the firm, it is termed as secured debt. On the other hand, unsecured debt does not involve any pledge of the firm assets as collateral. Moreover, interest paid on debt capital can be treated as a tax deductible expense, but dividend paid on common stock and preferred stock are not tax deductible.

1.3 DEBT FINANCING VS. EQUITY FINANCING

Debt financing is the financing of the firm's operations and projects by issuing coupon debt in the form of short term debt, long term debt, loans payable, notes payable, bonds, debentures, etc. Benefits of debt financing include tax deductible interest expense and it can be availed for both short term and long term period. A debt holder has no voting rights and no ownership control. Principal and interest payments are generally fixed and thus help with the financial planning and budgeting.

Limitations of debt financing include principal and interest payments are to be paid within a fixed period of time and it makes difficult for the business to grow because of high debt repayment cost. If there is a high debt level and the firm has a low cash flow, there is a high probability that the firm can become bankrupt in the near future. In other words, there is a cost of financial distress associated with the debt capital. Also, high debt levels limit the ability of the firm to raise capital from equity capital.

Equity financing is the financing of the firm's operations and projects by issuing stock in the form of common and preferred shares. Advantages of equity financing include no fixed commitment of paying dividend and principal payments. Hence, it's less risky than a debt as there is no associated cost of bankruptcy. Add more credibility to the business by raising the ability of the firm to raise capital from equity financing. Provide more cash flow to the firm to invest in business growth. Also, equity investors have a long term commitment to the firm, and thus there is no immediate pressure of paying a return on their investment.

Drawbacks of equity financing include high cost of equity capital as compared to the cost of the debt capital. An equity holder enjoys a voting right and ownership control which affects the decision making of the company. Thus, Debt and Equity financing has its own merits and demerits. The company has to make an appropriate choice between debt and equity financing, keeping in mind the concerns of higher firm value and low cost of capital. Chan et al., (2014) studied the impact of risk on cost and profit efficiencies.

1.4 OVERVIEW OF THE STUDY

Till 1950's, the literature of corporate finance comprises mostly descriptions of approaches and foundations. It was in 1958, when Modigliani and Miller (MM) presented their irrelevance theory of capital structure. Almost at the same time, James Tobin (Nobel Prize 1981) and others were working on the theory of portfolio selection. Thus, the modern theory has evolved considering the relationship between the financial market features and the financing sources. These theory bases witnessed rapid improvements and provide the platform to others for rational investment analysis.

The major breakthrough on the subject was established by Modigliani and Miller (1958), when they argue that capital structure is irrelevant in determining the firm's value under certain assumptions. Thus, the theorem gave a clear solution to the proposition that level of debt in the capital structure of the firm does not affect the value of the firm, provided the conditions of perfect capital markets, there are no taxes and no transaction costs.

In 1963, Modigliani and Miller introduced the effect of taxes in their previous studies and found that in the presence of corporate taxes, but in the absence of financial distress risk, there is a direct relationship between the firm value and that of its leverage level. This indicates that a firm should maximize the leverage level in their capital structure in order to gain the tax benefits on its interest payments.

Boquist and Moore's (1984) argue that the tax benefit theory does not hold true at the firm level; however, they found little evidence in the backing of the theory at the industry level and like other researchers, found that leverage level varies among the different industry groups. However, many researchers have tried to prove in the past that there exist a relationship between firm value and leverage level. Kraus and Litzenberger (1973) state that the optimal capital structure reveals a trade-off between the tax benefits of debt and the cost of financial distress associated with the debt.

Then, there is another side of the research which states that there is no optimal capital structure that maximizes the firm's value. The financial managers issue debt or equity purely according to the costs of capital. Myers & Majluf (1984) explained the pecking order that firms prioritize their sources of funding starting from retained earnings to debt issuance and finally equity as a last resort to meet their funding needs. It is based on the concept of information asymmetries between the firms' managers, shareholders and debt-holders. Dixit et al., (2010) examined the significance of information in context of the Indian securities market. Agency cost concept by Jensen and Meckling (1976) stating that agents may not always act in the interest of the principals and it will lead to conflict of interest between agents with those of principals due to their individual profits.

Empirical evidences show that firm specific characteristics as well as macro level factors play an important role in determining the capital structure of a firm. Harris & Raviv (1991) and Rajan & Zingales (1995) summarized several studies and suggest that most studies are sharing the

following variables for determination of capital structure like the tangibility of assets, non-debt tax shields, firm size, age, profitability, uniqueness, etc. Nair and Thenmozhi (2012) examined the effect of macroeconomic factors on the emerging bond markets. Narayan and Thenmozhi (2014) investigated the effect of acquisitions on the value of the firm. Rani et al., (2015) studied the impact of mergers on the performance of the firm.

However, most of the study has been largely restricted to the United States and a few other developed countries. There is no universal theory of capital structure which can solve the problem of debt-equity mix. The control of various determinants to decide the leverage level is not constant. Overall, the development in recent years has highlighted the relevance and importance of companies' capital structure. More than five decades have passed since MM proposition, but there are still many questions remain unresolved to explain the capital structures of companies and inconsistent views exist on its relationship with various financial parameters. This empirical study tried to examine some of the questions related to the capital structure of the selected firms operating in the Indian manufacturing sector.

A manufacturing sector of the country helps the economy to grow and remain competitive. Almost every country has been focusing their policies to improve their manufacturing sector and thereby increase the global market share. Growth of manufacturing sector pushes both industry and the service sector by bringing multiplier effects through several linkages. Burton et al., (2003) studied the values of growth indicators among different firms. Manufacturing is required for a sustainable growth of the country and it creates employment opportunities.

Competitiveness is an important aspect to differentiate between the countries with high end technology and economic leadership. In a growing economy like India, manufacturing sector plays a significant role in the development and growth of the country. The manufacturing sector of India has emerged and transformed over a period of time since the 1991 reforms of India's liberalization. It has gained a significant presence and become a center stage of global manufacturing sector. Babu and Jain (1997) examined the significance of industry for determining the capital structure of the firm. This empirical study concentrates on the selected companies operating in the Indian manufacturing sector.

1.5 MOTIVATION FOR THE STUDY

The selection of capital structure mix has been one of the complex issues in the area of corporate finance. Ever since Modigliani and Miller (1958) have made their irrelevance proposition stating that the value of the firm is independent of its capital structure and later in 1963, when they introduced tax effect into their previous work and found that capital structure has a direct impact on the value of a firm, it has become an important area of research for many scholars in the field of corporate finance. However, most of the study has been largely restricted to the United States and a few other developed nations.

The issue of capital structure choice has acknowledged little consideration in emerging economies like India. The continued focus on the company's capital structure by researchers reveals the importance of this area for new possible directions and views to implement in future research. The recent global financial crisis of 2008 has once again reveals the importance of capital structure mix for various firms across the industries. Without the optimal capital structure, firms are exposed to economic up-downs as it has been proved by the collapse or bankruptcies of many big firms during the global financial crisis of 2008.

The literature on determinants of capital structure is well known of the existence of various theories that includes trade off, pecking order, agency costs etc. Each theory provides a different explanation of corporate financing. However, there is no single theory of capital structure which can solve the complexity of debt-equity mix. The impact of various determinants of capital structure on the firm value, performance and leverage level of the firm is not constant.

Overall, the development in recent years has highlighted the relevance and importance of companies' capital structure. Which factors affect companies' choice of capital structure? Do companies prefer debt financing to equity financing? What is the effect of leverage on the firm's value and performance? All these questions still remain unanswered and contemporary views exist on some of the questions to explain the capital structures of the firms. There is a lack of research related to all the above questions in the Indian manufacturing sector. This empirical study attempts to fill this gap and further investigates the various aspects of capital structure concerns of the selected Indian manufacturing companies.

1.6 RESEARCH QUESTIONS

This study is primarily intended to examine empirically the determinants of capital structure in the selected Indian manufacturing firms. It further aims to study the suitability of capital structure theories for the Indian manufacturing sector. Globalization leads to the opening of the Indian economy and results in improved micro-economic and macro-economic factors of the country. Saad and Idris (2014) studied the significance of globalization for economies. These factors, along with the firm leverage are empirically examined and analyzed to answer following research questions in the Indian manufacturing sector:-

1. Whether firm specific or micro-economic variables and macro-economic variables of the country determine the capital structure of the selected Indian manufacturing firms?
2. Whether capital structure theories like Trade off theory (TOT) or Pecking order theory (POT) are applicable to the firms operating in the Indian manufacturing sector?
3. Do Indian manufacturing firms prefer debt financing or equity financing? What are there past leverage level trends?
4. Does a statistical relationship between leverage level and the value of the firm exist, and if it does, how much of the deviation in the value of the firm can be explained by the leverage?
5. Does the ownership structure of the manufacturing firm determine its capital structure?
6. Does a statistical relationship between leverage level and the financial performance of the firm exist, and if it does, how much of the deviation in the financial performance of the firm can be explained by the leverage?
7. Does a statistical relationship between leverage level and the operating liquidity of the firm exist, and if it does, how much of the deviation in the operating liquidity of the firm can be explained by the leverage? Also, what is the combined effect of operating liquidity and financial leverage on the financial performance of the selected Indian manufacturing firms?

1.7 RATIONALE OF THE STUDY

One of the significant aspects of corporate finance is to deal with the capital structure decisions. A large number of firms become bankrupt due to the overburden of their debt or improper capital mix

as high level of debt leads to the higher risk of distress cost. Cerra et al., (2008) examined the significance of debt in relation to the capital flight. Also, Chipalkatti and Rishi (2001) studied the correlation between the debt and capital flight in the context of the Indian economy. For an emerging economy like India it becomes necessary for the Indian firms have an optimal capital structure. A firm with optimal capital mix can minimize the cost of capital and thereby maximizes the shareholder's wealth or the value of the firm. For this reason it becomes significant to determine all those factors which help in the attainment of the optimal capital mix.

Furthermore, all the factors are not in the control of the firm as they may be macroeconomic in nature. Alam (2013) considered macroeconomic variables to study the returns. Further, Alam and Chain (2012) considered both the macroeconomic and firm specific variables to study the returns. Thenmozhi and Nair (2014) examined the impact of macroeconomic factors on different bond markets. Thus, there is a need of comprehensively studying the both firm level and macro level factors which helps in determining the optimal capital structure of the Indian manufacturing firms.

The theories of capital structure help in understanding the nature of corporate financing and thus, it's become important to know which theory implications are more authenticating in the Indian manufacturing sector scenario, i.e. pecking order or trade-off theory. It will help the managers in the financial decision making. Mukherjee and Mahakud (2012) argue that the trade-off and pecking order theory goes side by side to determine the capital structure.

Another rationale is to know how Indian firms fund their long term projects and assets. In other words, it will be important to know whether Indian firms rely more on debt financing or equity financing for their capital needs. For this purpose, it's become necessary to study the trends of the capital structure of the Indian manufacturing firms. Singh et al., (2012) studied the trends of capital budgeting decisions in India. Several studies have been conducted regarding the effect of capital structure on the value of the firm. To evaluate this effect in the context of the Indian manufacturing sector, the present study will contribute to the existing literature.

The agency cost theory argues that there is a conflict of interest between shareholders and the debt holders of the firm. To test this conflict, it becomes significant to empirically evaluate the relationship between the ownership structures of the firm with its capital structure. The present

study will make a significant contribution to the existing literature in the perspective of the Indian manufacturing sector.

Further, most researchers in the developed countries have evaluated the relationship between the financial leverage and the financial performance or profitability of the firm. Every firm wants to be profitable so that it can grow and meets its capital obligation. Idris and Seng Tey (2011) studied the performance improvement measures of the developing countries. The present study will add to the existing literature with the longer time frame to empirically investigate this relationship between the leverage and firm's financial performance. Similarly, every firm wants operating liquidity, so that it can meet its day to day obligations and expenses. So, it becomes important to check that capital structure affects the operating liquidity of the firm or not.

The present study will empirically test the relationship between operating liquidity and financial leverage of the firm. It will further empirically test the combined effect of operating liquidity and financial leverage on the financial performance of the selected Indian manufacturing firms.

1.8 SCOPE OF THE STUDY

The scope of this study is defined to limit the boundary of investigation and maintain a structured approach throughout the study. Following are the broad areas of investigation that constitute the scope of study:

1. The investigation in the present study is limited to the selected trading Indian manufacturing firms on Bombay Stock Exchange (BSE). All the selected firms are in operation throughout the analysis period.
2. The study covers a period of ten years from the year 2004 to 2013 and adopts a balanced panel data approach which considers an equal number of firms across the study period.
3. The study analyses the key determinants of capital structure in the Indian manufacturing firms covering both firm specific as well as macroeconomic factors. The study will validate which theory implications are more applicable in the Indian manufacturing sector scenario, i.e. trade-off or pecking order theory.

4. The study will examine the trend of leverage levels in the Indian manufacturing firms. The study will analyze the impact of leverage level on the value of the Indian manufacturing firms.
5. The study will investigate whether the ownership structure determines the capital structure of the firm.
6. The study will examine the impact of capital structure mix on the financial performance of the firm. Further, it will examine the effect of leverage on the operating liquidity of the firm.
7. Finally, the study will evaluate the combined effect of leverage and operating liquidity on the financial performance of the firm.

1.9 OBJECTIVES OF THE STUDY

The title of the present study is **"Determinants of Capital Structure: An Empirical Evaluation of Indian Firms"**. The primary objective of the study is to identify the key determinants of capital structure in the selected Indian manufacturing firms and provide empirical evidence. As such, it requires studying various conventional measures and establishing its relationship with the leverage value of the Indian manufacturing firms. Further, it's become important to make a clear statement of the various objectives of the study. This is particularly important to ensure that focus on the study is not lost at any stage of the research. Following are the broad objectives of the present study:

1. To empirically analyze the key determinants of capital structure in the selected Indian manufacturing firms covering both micro-economic or firm specific factors as well as macro-economic factors.
2. To validate which theory propositions are more applicable in the Indian manufacturing sector scenario, i.e. trade-off theory or pecking order theory.
3. To analyze the trends of capital structure in the selected Indian manufacturing firms.
4. To examine empirically the impact of capital structure mix on the firm value of the selected Indian manufacturing firms.
5. To empirically analyze the effect of ownership structure on the capital structure of the selected Indian manufacturing firms.

6. To examine empirically the impact of capital structure mix on the financial performance of the selected Indian manufacturing firms.
7. To empirically analyze the effect of capital structure mix on the operating liquidity of the firm; and the combined effect of capital structure mix and operating liquidity on the financial performance of the selected Indian manufacturing firms.

1.10 OVERVIEW OF THE RESEARCH DESIGN

Even though the detailed research design used in the present study is described in the Chapter 3. A brief overview of the research design is presented in this section.

1. **Sample Size**: The final selected sample consists of 422 trading Indian manufacturing firms on the Bombay Stock Exchange (BSE) for the period 2004 – 2013. The sample size is finalized on the basis of two criteria: i) The firms must be listed and are in operation throughout the period of the study. ii) Full data should be available for all the variables of the sample companies for complete 10 years.
2. **Data Source**: The present study is entirely based on secondary data source only. The data pertaining to study has been collected from **Prowess – CMIE database**, annual reports of the companies, directories of stock exchanges, websites of Bombay Stock Exchange (BSE), Reserve Bank of India (RBI) and World Bank.
3. **Research variables**: Debt-Equity ratio, Debt-Capital ratio and Debt-Total Assets ratio has been commonly used as the proxies for financial leverage or capital structure mix. Other variables used for research include EBIT-total assets ratio, Net fixed assets-total assets ratio, dividend payout ratio (DPO), current ratio, interest coverage ratio (ICR) etc.
4. **Research Tools and Techniques**: This study employs **panel data regression** models to test the research hypothesis. The panel data regression is an advanced analytical technique which employs both time-series and cross-sectional data. Since the last decade or so, panel data technique has occupied a central stage in the field of quantitative research. It has become popular among various social and behavioral science scholars. It has become one of the most practical and advanced practice of literature in Econometrics. The main flaw in the simple regression model is that it is based on the condition that the parameters do not vary across the sample observations. On the other hand, panel data model allows parameters to vary in some fixed or random way through the patterns of the sample data or

even from observation to observation basis. In the present study, various models, test and techniques have been applied and they are based on the past work of the various researchers. Econometric and statistical tool like E-Views version 8 is used for data analysis and interpretation.

1.11 CONCLUSION

With the globalization of the Indian economy, it has witnessed a tremendous movement of capital from various companies from across the globe. It has resulted in a shift of the corporate goals from socio – economic front to an increasing shareholder's wealth. Idris (2012) examined the impact of globalization on businesses. The capital structure decision plays a crucial role which decides the success of the firm. For an emerging economy like India, it becomes extremely important to decide the right mix of debt and equity. As, any debt without its earning potential can be hazardous to the financial health of the firm. It has well proven in the past that high debt attracts the risk of bankruptcy.

It is important to understand the complexities of the capital structure. Any wrong financial decision on the part of the firm can shake the trust of the various investors and stakeholders of the firm. Vashisht et al., (2011) studied the effect of financial decisions on the performance of the firm. The financial manager of the firm should try to achieve that leverage mix which can maximize the value of the firm, keeping, in concern of the overall cost of capital. Hence, it has become necessary to understand all those factors which help in determining the optimal capital mix.

It can be concluded from the present study that it focuses on all those factors which helps in the attainment of the optimal mix. Also, it tests various relationships of capital structure with the other financial parameters of the firm. It tries to provide the answers to the research questions of the present study. Several studies have been undertaken in the past to solve the above issues, but very little empirical evidence is available for an emerging market like India. The results of such studies are quite mixed and contradictory. It is expected that the findings of the study will make a significant contribution to the existing literature by providing the empirical evidence of the investigation done in the context of the Indian manufacturing firms.

1.12 CHAPTER PLAN OF THE STUDY

The chapter plan of the present study is a sequential arrangement of its broad components and sub-components. It is an organization of the present study in an orderly and logical manner. It is useful for a systematic and focused analysis of the problem. It is to be designed in a careful manner as it results in the attainment of the research objectives. The chapter plan of the study is presented to provide a blueprint of the present study and attainment of its desired goals in a progressive manner. The entire study has been covered under six chapters and the chapter plan was as follows:

Chapter 1 – Introduction: The first chapter starts with the introduction of the various aspects of the present study; i.e., Introduction of the capital structure covering importance of capital structure for the financial managers and theories of capital structures, overview of the capital structure and its components, comparison of debt and equity financing, overview of the study, motivation for the present study, research questions, rationale of the study, scope of the study, objectives of the study and a brief overview of the research design. The chapter ends with a brief discussion at the conclusion of the study.

Chapter 2 – Review of Literature: The second chapter reviews the available literature on capital structure. It includes review of important capital structure theories; and literature review of empirical studies on capital structure – determinants, trends and theory implications; and review of empirical studies on miscellaneous issues of capital structure which covers the relationship between capital structure and firm value, the relationship between capital structure and ownership structure, the relationship between capital structure and performance of the firm, the relationship between capital structure and operating liquidity, and the relationship between operating liquidity, capital structure and performance of the firm. This literature review of capital structure will help to develop the understanding of the issue and to identify the research gap that needs consideration and further investigation.

Chapter 3 – Research Design: This chapter contains the research framework used in the present study. It includes the research objectives, hypothesis and research variables used in the present study. Furthermore, it covers the research methodology, data selection and source, empirical

framework; and statistical tool and research models that are applied to test the research hypothesis and achieve research objectives.

Chapter 4 and Chapter 5 – An Empirical Analysis: These two chapters constitute the core of the study as they present the empirical findings and interpretation of the research objectives using various models and tools mentioned in the third chapter. Using the results obtained from the tools used, these chapters help to solve the various research questions related to the present study.

Chapter 6 – Summary, Conclusions and Suggestions: The last chapter of the thesis provides the summary of the major empirical findings and concludes the research by providing the solution to the research questions of the present study. It discusses the management implications and policy recommendation that can be drawn from the present study. It also highlights the limitations of the study that provide the platform for future research work in the area of corporate finance. **Bibliography** and **Annexure** are exhibited at the end.

End Notes:

1. Financial leverage or Leverage level or Capital structure mix or gearing is the ratio of borrowed capital to the owners' equity. Higher the ratio higher will be the level of debt in the capital structure of the firm. In the present study, Total Debt – Total Equity ratio, Total Debt – Total Capital ratio and Total Debt – Total Assets will be used alternatively or simultaneously in different tests and models to represent as a proxy of the capital structure.

2. Operating Liquidity is the ability of the firm to meet its short-term obligations in day to day operations of the firm. In other words, it's the ability of the firm to meet its debts as and when they fall due. It refers to the balance between the cash assets and cash liabilities. In the present study, current ratio (current assets / current liabilities), cash conversion cycle or cash operating cycle (Stock days + Debtor days – Creditor days) and operating cash flow margin (operating cash flow / sales) will be used as the proxies of operating liquidity.

3. Prowess – CMIE database is a financial database of the Indian companies provided by the Centre for Monitoring Indian Economy Pvt. Ltd.

4. E-Views software version 8 is statistical software provided by IHS Global Inc.

CHAPTER 2

REVIEW OF LITERATURE

2.1 INTRODUCTION

The issue of capital structure concerned towards the attainment of optimal capital mix. This optimal mix helps in reducing the overall cost of capital and thereby maximizes the shareholder's wealth. Ever since MM (1958) irrelevance proposition, a large number of capital structure theories and empirical studies have been emerged in the field of corporate finance. Thus, financial decision making and the selection of capital structure is an important area of research for many academic scholars and practitioners. Since MM theory, many researchers have involved in this field of research, and, now, some 50 years later, it's become significant to review the literature on this research and its future scope. The results from such studies are found to be contradictory and no complete solution is available to solve the issues related to the capital structure mix.

The effective research on the capital structure cannot be undertaken without studying its already existing general literature and specific studies. This helps in the formulation of hypothesis and an effective framework for future investigation. In the present study, the review of literature can be classified into two parts:

1. Theories of Capital Structure
2. Review of Empirical Studies related to the capital structure - determinants, trends and theory implications; and miscellaneous issues of capital structure which covers the relationship between capital structure and firm value, the relationship between capital structure and ownership structure, the relationship between capital structure and performance of the firm, the relationship between capital structure and operating liquidity, and the relationship between operating liquidity, capital structure and performance of the firm.

CHAPTER 2: REVIEW OF LITERATURE

The literature review on the capital structure will help to develop the understanding of the issue and to identify the research gap that needs consideration and further investigation. This chapter is the presentation of the most significant research work in the area of capital structure.

2.2 THEORIES OF CAPITAL STRUCTURE

This section presents the key capital structure theories. The depth of research on capital structure is huge and it is therefore not feasible within the scope of this thesis to do a detailed review of all the theories of capital structure. However, the most significant and influential theories will be included in the review.

2.2.1 MODIGLIANI AND MILLER THEORY (MM THEORY)

Modigliani and Miller (1958) state that capital structures decisions are irrelevant in the perfect capital markets. They propose that in a perfect capital world, where there are no taxes, perfect and credible disclosure of all information and no transaction and agency costs, the level of debt in the firm's leverage had no impact on the value of the firm. The conditions of a perfect capital market include:

1. The markets have no transaction costs, no corporate taxes, no regulatory constraints and all assets must be traded on an equal platform.
2. Firms can borrow and lend at the same risk-free rate.
3. There is a perfect disclosure of all information to all firms at no cost.
4. Firms are rational utility maximizers.
5. Firms in the security market are price takers where there is no bankruptcy.

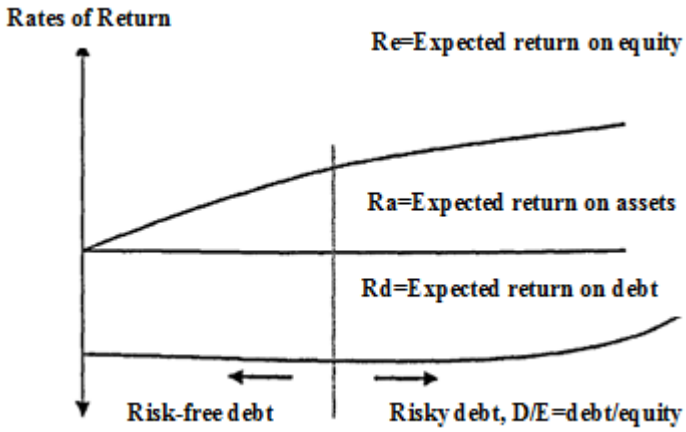
The following are the propositions made by the MM model in the perfect capital markets:

1. The first proposition of MM theory assumes that the market value of any firm is free of its leverage level and is determined by capitalizing its expected return at the rate appropriate to its class. This model is based on two keys, arbitrage and home-made alternative (borrowing on personal account). Arbitrage is the process that confirms that two firms must have the

same performance and differs only in their capital structure. On the other hand, home-made alternative ensures that an investor holding an equity stake in a levered firm can sell his stake, raise a personal loan equal to the share in the levered firm and spends the proceeds in an unlevered firm. They assume that shares of both firms within a given class have the same expected return and therefore can be considered as perfect substitutes for each other.

2. The second proposition is based on the first one and it proposes that the expected return of a share of the stock is equal to the capitalization rate of the pure equity stream in the same risk class and a financial risk premium is equal to the leverage ratio times the difference between the capitalization rate and the cost of debt. It explains that the firm's assets will earn a stream of profits and the firm value will be derived by the discount this stream with a suitable discount rate. In other words, the value of the firm is entirely based on the stream of profits generated by its assets.

Figure 2.1 MM Second Proposition



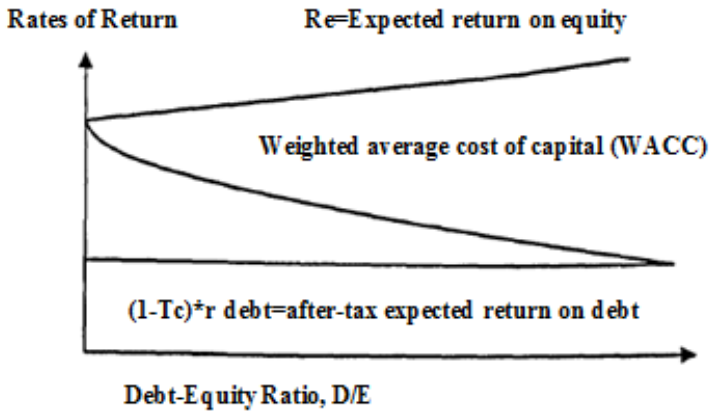
Source: Brealey and Myers (2000)

As shown in the figure 2.1, with the increase of leverage or debt-equity ratio, the expected return on equity increases given that the debt is risk free. However, leverage increases the risk and cost of debt which reduces the rate of return on equity.

In 1963, MM has expanded their work and introduced the effect of corporate taxes on the valuation of the firm. They define that the value of the levered firm as the value of the unlevered firm plus a

savings derived from the stream of discounting values of the tax savings from the interest expenses. As interest expenses are tax deductible, thus encourages the firm to use more debt. In other words, the firm value is equal to the unlevered firm value plus the discounted value of the tax shields provided by the debt. Further, Miller (1977) revises their theory by introducing the effect of both corporate and personal taxes. He argues that the firm will continue to use debt until its high dependence on debt will raise the interest cost to the point where tax benefits are completely neutralized by the high interest cost. This will be the point where marginal investor's tax equals the corporate tax rate. The benefits of using debt will become zero if the income tax rates for stocks and bonds are equal. Hence, the value of the firm will become independent of its leverage level.

Figure 2.2 Relationships between Cost of Capital and Debt



Source: Brealey et al. (1999)

Figure 2.2 depicts that the expected return on equity of the levered firm is equal to the expected return on equity of the unlevered firm plus financial risk premium associated with the leverage ratio and the corporate taxes. Also, the optimal debt level is attained where the marginal cost of additional debt equals the average cost of capital of the firm.

Thus, the MM model was based on the analysis of two financial actions: (a) the arbitrage action of investors proves that the values of levered and unlevered firms are same. (b) The risk-averse action of investors proves that the cost of equity increases with the increase in leverage ratio. The significant contribution of MM approach is that it has triggered a research area for the determinants of capital structure and the impact of leverage on the value of the firm under

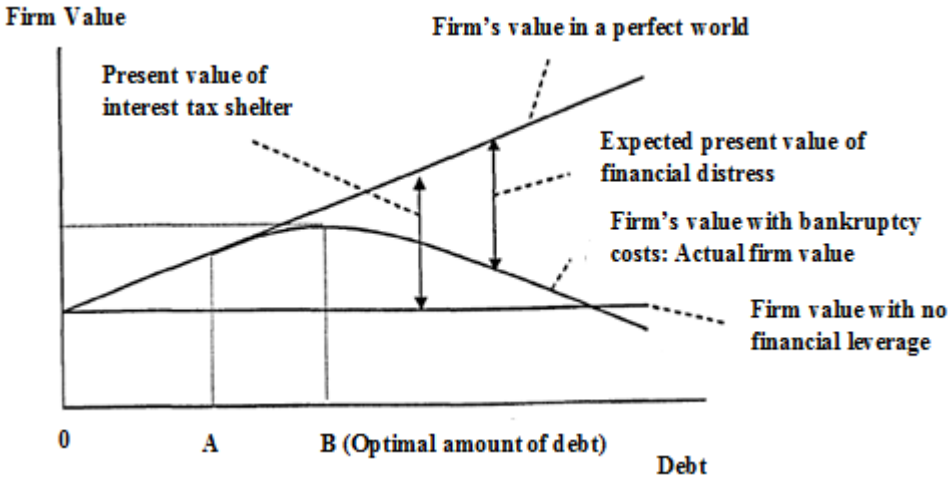
imperfect market conditions. Although financial markets, of the developed countries are efficient enough in terms of prices and values. Also, institutional and market conditions vary greatly between countries and economies. Thus, for a country like India, it becomes extremely important to focus on capital structure research as Indian markets are imperfect and distorted in nature.

2.2.2 TRADE-OFF THEORY (TOT THEORY)

The trade-off theory states that an optimum capital structure can be achieved by balancing the tax shield benefits of debt with the associated cost of financial distress. In other words, it is the trade-off between the benefits and costs of debt. Trade-off theory can be divided into two parts:

1. **Static trade-off theory:** The static trade-off theory or the basic idea of the trade-off theory was taken from Kraus and Litzenberger (1973) single period company valuation model. The model takes into consideration the both tax advantages of debt and the potential cost of bankruptcy. According to Kraus and Litzenberger (1973), the value of levered company is equal to the value of the unlevered company plus the trade-off between the benefits of tax shields of the debt and the after tax costs of bankruptcy. This suggests that for a firm with an optimal capital mix, the firm value can be maximized by high level of debt up to a point where the tax benefit of issuing more debt is neutralized by an increasing bankruptcy costs.

Figure 2.3 Static Trade-off Theory



Source: Brigham and Houston (2004)

From the figure 2.3, the straight line represents the value of the firm with no bankruptcy costs, and the curved line represents the firm value with bankruptcy costs. Till point A, the firm value (curved line) increases at a higher rate with the increase in the level of debt. At this point, the expected discounted value of bankruptcy costs is low and its probability is irrelevant. After point A, the bankruptcy cost become significant as its starts rising at a higher rate and reduces the tax benefits of debt.

Between point A and B, the firm value (curved line) increases with the increase in the level of debt but with a decreasing rate. Between these points, the bankruptcy cost reduces the tax advantages of debt causes the rate of firm value to get slowdown as leverage increases. Point B represents the optimum level of capital mix as it results in the maximization of the firm value. After point B, the value of the firm starts falling as the tax advantages of debt is offset by the expected costs of bankruptcy. Thus, as per static trade-off theory, the value of the levered firm is the sum of the value of the unlevered firm and the value of the tax advantages of debt minus the discounted value of the expected costs of bankruptcy. Since interests paid on debt are tax deductible, the debt provides the benefits of tax shield and is cheaper than the cost of equity capital. Hence, it encourages the firms to use debt for higher firm value.

2. **Dynamic trade-off theory:** The dynamic trade-off theory was based on the model of Fischer, Heinkel and Zechner (1989). This was the first model in which firms can move from their optimal capital structure. The limitations of the static trade-off theory have led to the development of the dynamic trade-off theory model. Under the dynamic trade-off theory, the firm's decision on capital structure is a continuous process and it involves concerns not only for a trade-off between the tax benefits of debt and the potential cost of bankruptcy, but, also for investment decisions and restructuring costs. These restructuring costs lead to the movement of firms from their optimal capital mix for a longer period of time.

   Further, the model suggested that firms can have an optimal capital structure range within which they can operate with their capital mix. The explanation behind the capital structure range concept is that firms are reluctant to adjust their capital mix due to any sudden changes in the value of their assets. So, they allow their leverage level to move within the suitable range

as the adjusted cost of new leverage level exceeds its implementation benefits. The benefits of adjustment in their capital structure are fixed at very high and low level of the firm's leverage.

Thus, both static trade-off theory and dynamic trade-off theory have made a significant contribution in the field of capital structure research. Their results and interpretations have laid the foundation for many future empirical studies. As a result, there is an upward trend in the empirical studies related to the speed and adjustment of capital structure; and the impact of capital structure on the value of the levered firm.

2.2.3 PECKING ORDER THEORY (POT THEORY)

The pecking order theory was developed by Myers (1984) and Myers and Majluf (1984). It is based on the following propositions:

1. The firms prefer internal finance (retained earnings) over external finance (debt or equity). There is an information gap between the existing equity shareholders and the new equity shareholders related to the information about the quality of the firm and its investment plans. As a result, the new equity shareholders will demand a higher rate of return on their invested capital, which will make the funding more expensive as compared to the internal funds. So, the firms will look for different possible funding alternatives, which is the basic reason behind the existence of pecking order theory.

2. If external funds are required, the firm will first fund its requirements by issuing of debt, then will issue hybrid securities like convertible bonds and finally, will issue equity as a last choice. Thus, pecking order theory defines the order of priority in which the firms will source their funding needs, starting from retained earnings to debt, then convertible bond and finally the equity. It is based on the logic that firms will choose the cheapest source of finance to meet their funding requirements.

The pecking order of firms is based on the conditions of information asymmetry and the flotation cost of issuing either debt or equity capital. If these flotation costs are too high, the existing equity

shareholders will reject the positive net present value (NPV) investments due to their present interest. This indicates that firms can increase their value by funding their investment needs through internal funds like retained earnings. Also, Retained earnings are the cheapest source of the capital finance. The information asymmetry assumption is based on the condition that the existing shareholders or managers are better informed about the company's returns and future investment projects than debt-holders or new equity shareholders. As a result, the manager will act in the favor of the existing equity shareholders, which could give rise to the problem of underinvestment i.e. rejecting the investments of high net present values as discussed above.

In contradiction to the trade-off theory, the pecking order theory disagrees with the existence of the optimal capital structure or there is any attainment of the target optimal capital structure. The firms rely on debt and equity capital purely in accordance with its funding requirements of the investments. They follow the pecking order model for their funding requirements. Further, the pecking order theory differs from the trade-off theory in the explanation of the relationship between the capital structure and the firm specific variables.

The trade-off theory correlates the positive relationship due to the proposition of the trade-off between the tax benefits from the debt and the associated costs of the bankruptcy. On the other hand, the pecking order theory correlates the negative relationship between the capital structure and the firm specific variables due to the assumption of information asymmetry. Thus, pecking order theory has made a significant contribution in explaining the capital structure of the firm at the same time it ignores the problem of the agency.

2.2.4 AGENCY COST THEORY (ACT THEORY)

The theory of agency cost was developed by Jensen and Meckling (1976) and it describes the agency cost as monitoring costs by principal, cost of management time, bonding costs by agents and the residual loss incurred. The agency cost helps the management to achieve the organizational goals. It is based on two conceptions:

1. There is a conflict of interest between the shareholders and the managers which divides the ownership of the firm from the management of the firm. This conflict is based on the

assumption that managers will utilize the organization resources for their own benefits instead of the maximization of the wealth of the shareholders.

2. There is an associated cost of using agents by the principals. These associated costs are nothing but the agency costs, which includes the monitoring expenditures, accounting and auditing costs, etc. The firms can also rely on the leverage to control the above conflict, but the inclusion of debt will create another conflict of interest between the managers, debt-holders and the shareholders. This new conflict arises because of the different objectives and interests of the each stakeholder.

The presence of leverage in the capital structure of the firm can create a conflict of interest between debt-holders and shareholders. The agency cost associated with this conflict is termed as the agency cost of debt. This conflict arises because the debt-holders assumed that the shareholders will influence the managers to take a biased decision in favor of shareholders at the cost of debt-holders. This act of influence managers will give rise to the problem of Underinvestment and Overinvestment. Underinvestment is defined as the tendency of the managers to avoid the low risky investments that have a positive net present value (NPV) as less risk will generate low returns to the shareholders.

The shareholders encourage the managers to invest in high risky investments that have a negative NPV as high risk will generate the higher returns to the shareholders. In case, there is any heavy loss arises under high risk projects and the firm turns to be bankrupt that loss will be shared with the debt-holders of the firm. The debt-holders are more interested in the safe projects to secure their investments. The above situation gives rise to the conflict of interest between shareholders and debt-holders.

Thus, underinvestment affects all those levered firms that primarily involve in huge investments. On the other hand, Overinvestment is the propensity of managers to invest in high risk projects with a negative net present value. If there is any loss in the value of the firm, it will decrease the value of the debt and if there are high returns from the project, it will increase the value of the

equity shareholders. Thus, overinvestment is more crucial than the underinvestment problem as there are high chances of the firm to become bankrupt under the situation of overinvestment.

In case, there is a conflict of interest between managers and shareholders of the firm, the agency cost associated with this conflict is termed as the agency cost of equity. This conflict is based on the assumption that managers will utilize the organization resources for their own benefits instead of the maximization of the wealth of the shareholders. This gives rise to the problem of free cash flow. Free cash flow is defined as the cash flows that are available to the managers after meeting the requirements of all projects that have positive net present values. This gives rise to the problem of misappropriation of cash flows by the managers for their own benefits, ignoring the objective of wealth maximization of the shareholders.

The problem of free cash flow can be controlled with the inclusion of debt in the capital structure of the firm. The debt acts as a controlling device, because debt capital is associated with the payment of interest and principal amount as and when it becomes due. This forces the managers to control the cash flows of the firm because non-payment of debt interest and principal amount will result in the bankruptcy of the firm. The pressure of payment of interest on debt will not only reduce the misuse of free cash flow, but also restraint the managers in investing high risk projects.

Thus, the theory of agency cost makes a significant contribution in the field of capital structure research. It provides the platform for analyzing the relationship between the capital structure and ownership structure of the firm. The concept of corporate governance approach is based on agency cost theory. It helps in deciding the target level of the capital structure by maintaining a balance between the agency cost of debt and equity. The firm uses more debt when its agency cost is lower than the agency cost of equity. When more debt is used, the debt agency cost rises and offset the agency cost of equity. This is the same case with the equity and its agency cost. These adjustments of agency costs between debt and equity determine the capital structure of the firm.

2.2.5 MARKET TIMING THEORY (MTT THEORY)

The market timing theory was advanced by Baker and Wurgler (2002). As per this theory, the level of debt and equity capital in the capital structure mix is dependent upon two conditions:

1. The mispricing of debt and equity securities exists in the capital markets.
2. There is a funding requirement by the firm for investment purpose.

In other words, market timing theory is a matching of funding timing and mispricing of capital securities in the financial market by choosing that security which is most mispriced and results in maximum benefit for the firm. This theory directly contradicts with the trade-off and pecking order theory. As per this theory, there is no target capital structure and firms simply choose any source of finance that appears to be mispriced in the capital market at that point of time. For example, the firm goes for equity issue when stock prices are high or overvalued.

Similarly, the company opts for debt capital when there is a high credit rating for the firm's debt. Sometimes, firms also buy-back their stock when they perceived as undervalued to resell again when their prices will rise. Likewise, firms will call back their callable bonds when the interest rate is falling to re-issue the bond at a lower rate. Thus, the market timing theory takes the benefit of pricing timing of the capital securities.

2.2.6 SIGNALING THEORY

Signaling theory was advanced by Ross (1977). As per this theory, the issue of debt and equity send signals of the financial health of the firm in the capital market. When the firm issue debt, it is considered as a positive signal of the sound financial health of the firm because it shows the confidence of the firm to generate sufficient cash flows to meet interest expense and principal repayment of the debt. It also generates the confidence of investors in the firm business and as a result, the price of the stock rises in the market.

Similarly, when the firm issue equity, it is considered as a negative signal of the financial health of the firm because it reflects lack of confidence and overvaluation of the equity stock, which results in the fall of stock prices. Thus, the firms with high level of debt in their capital structure reflect higher quality as per signaling theory.

2.3 REVIEW OF EMPIRICAL STUDIES

The effective research on capital structure cannot be undertaken without studying the literature review of various existing empirical studies. This helps to frame hypotheses and a structure for further research. Various studies have been undertaken in the developed countries and later on in developing countries related to the capital structure. An attempt has been made to cover the various issues related to the capital structure research. The brief presentation of relevant literature is presented as follows:

2.3.1 STUDIES RELATED TO CAPITAL STRUCTURE - DETERMINANTS, TRENDS AND THEORY IMPLICATIONS

Gupta (1969) examined the effect of size, growth and industry on the financial structure of 1073 American manufacturing companies for the period from 1961-62. The study was conducted by applying cross-sectional data analysis technique. The study integrates the characteristics of industry, size of firms and its growth rate with capital productivity, leverage, liquidity and asset utilization rate. It also, studies; inter industry variations and effects of differential growth rates on the capital structure of the firms. It was found that leverage is positively related to the firm's growth rate and negatively related to the size of the firm. Further, it was found that there is a significant impact of industry on the firm's leverage. This study also provides an understanding of the investment planning policy of corporate and government organizations.

Marsh (1982) investigated an empirical study on UK firms about their selection criteria for debt and equity finance. The study was conducted for a period from 1959 – 1974. He developed a descriptive model for making a choice between debt and equity. The model provides an understanding of the firm's decisions which are largely influenced by the market conditions and past pricing trends of the debt and equity security. The study states that the firms design their capital structure on the basis of some predetermined target debt level. This target debt level is defined as a function of firm size, bankruptcy cost and asset composition. Thus, the descriptive model helps the management of the firm in deciding their capital mix. Also, it helps the managers to forecast the financial policy of the firm.

Venkatesan (1983) studied the determinants of capital structure by testing the relationship between the different variables and the leverage of the firm. The determining variables include industry group, firm size, operating leverage, debt coverage ratio, cash flow coverage ratio, growth and business risk. The multiple regression technique was followed to test the above relationship. The impact of industry was examined for the group of firms under different leverage classes, but no significant relationship has been found between leverage and industry class. Further, it was found that there is no significant relationship between the remaining variables and the leverage of the firm, except debt coverage ratio. Hence, debt coverage ratio is the only variable which determines the capital structure of the firm in the above study.

Titman and Wessels (1988) studied the determinants of capital structure of 469 firms for the period from 1974 – 1982. The study also concentrates on some of the latest theories of optimal capital structure. The paper contributes to the existing empirical research on capital structure in three ways. First, it studies extensively the various capital structure theories which have not been done in the past. Second, it considers different components of debt like short-term, long-term and convertible debt as a measure of leverage rather than an aggregate measure of total debt for analysis. Third, the study implements factor-analytic technique to minimize the measurement problem of proxy variables. It was found that firms with exclusive or concentrated products have low level of leverage in their capital structures. Also, it was found that there is no significant relationship between the debt ratio and independent variables like growth; non-debt tax shields (NDTS) and the collateral value of assets. However, the study found the negative relationship between the profitability and the leverage of the firm. In other words, profitable firms maintain a lower level of debt ratio.

Harris and Raviv (1991) studied the theories of capital structure and variables that determine the leverage of the firm. The findings of the study reveal that the capital structure of the firm is positively and significantly related to the variables like fixed assets, non-debt tax shield (NDTS), investment opportunities and size of the firm. On the other hand, the leverage is negatively and significantly related to the variables like volatility, advertisement expenditure, and probability of bankruptcy, uniqueness and profitability of the firm. These determining variables of capital structure help the firms to set their target leverage ratios. Further, the asset risk, asset type and asset structure are significant factors which affect the capital structure of the firm. Firms with huge

asset base raise more debt capital because of the collateral value of assets. Similarly, big firms finance more debt than small firms. Also, it was found that there is no impact of industry classification on the capital structure of the firm.

Holmes and Kent (1991) investigated the financing pattern of the capital structure of small and large Australian manufacturing firms. Data regarding financing pattern was collected through a mail survey. It was found that for small manufacturing firms, the most preferred sources of finance were bank loans and supplier credit. Similarly, small and medium enterprises (SME) restrict themselves from external funding and the problem of information asymmetry is more applicable to them. In other words, the pecking order theory is more applicable to these small sized firms as the owners of the small firm don't want to share their returns by taking an additional equity capital. Even if, they borrow debt, they only consider the short term debt as it is less restrictive in nature. They referred the difference in the capital structure of small and large firms as finance gap. The results provide the capital structure comparison of small and large firms which are largely influenced by Myers' pecking order theory.

Chung (1993) examined the empirical relationship between the firm's asset characteristics and financial leverage on the basis of agency cost theory. In other words, it tests the determinants of capital structure in the context of agency theory which bring new dimensions to the theory of capital structure by addressing agency problems in the context of the firm. It was found that there is a positive relationship between financial leverage and asset diversification. Also, leverage is positively related to the fixed assets ratio. The firm's growth opportunity and operating risk are negatively related to the leverage level of the firm. The regulatory firms tend to use more debt. The risk aversion attitude, underinvestment and asset substitution are some of the significant determinants of capital structure under the agency cost theory.

Homaifar *et al.,* **(1994)** assessed the determinants of the capital structure which helps in achieving long-run steady state equilibrium estimates for a period from 1979 – 1988. The cross-section regression technique was employed to do the analysis. The study reveals that, in the long run, the corporate tax rate and firm size are positively related to the debt ratio. On the other hand, variables like growth opportunity and stock returns are significant factors and they are negatively related to the leverage ratio. The negative relationship between growth opportunity and leverage is in line

with the Myer's hypothesis. The inverse relationship between stock returns and leverage depicts that firms replace equity for debt when their returns are high. Also, it was found that there is no correlation between leverage and the unlevered tax rate.

Hatfield *et al.,* **(1994)** investigated the determinants of capital structure of 55 firms for the period from 1982 – 1986. It also examined the effect of firm and industry leverage on the market value. The study categorizes the firm's leverage as below or above industry average before any issue of new debt. It was found that there is no significant relationship between the leverage and market value for both firm and industry as a whole. The average debt samples of the firm are higher for highly leveraged firms as compared to the low leveraged firms. The firms do not consider an optimum debt mix and can increase or decrease their value by changing their leverage as per the industry average. The market does not consider the relationship between a firm's leverage ratio and the industry leverage ratio. Hence, the findings are consistent with the proposition of MM approach.

Demirguc-Kunt and Maksimovic (1994) studied the capital structure and factors which determine the leverage of the firm. The sample size consists of large public firms from ten developing countries like India, Thailand, Pakistan, Malaysia, Zimbabwe, Mexico, Turkey, Jordan, Brazil and Korea. It was found that in spite of differences in the institutional structure of the countries, the factors which determine the leverage of the developed countries also impact the leverage of the developing countries. The agency cost theory variables better explain the leverage of the firm than trade-off theory. The leverage in the developing countries is strongly affected by the variables like tangibility, liquidity and industry effects, when compared to other variables like size, growth and tax effects. There is an inverse leverage-tangibility relationship which suggests that debt is not effectively utilized in the developing countries.

Rajan and Zingales (1995) investigated the capital structure and its determinants for a sample size of 8,000 firms. The study was conducted for the period from 1987 to 1991. The main purpose of the study is to examine the factors which affect the capital structure of the US firms also affect the capital structure of the other countries. The study also analyses the differences in the institutional setting of the countries and its impact on the leverage decision. It was found that firm leverage across G-7 countries behaves in a similar pattern and some variations found in the leverages are

not explained by the institutional differences. Thus, the variables identified by the previous cross-sectional studies in the US also determine the leverage of the other countries.

Chittenden *et al.,* **(1996) found** that there is a difference between the capital structure of small and medium enterprises (SME) and large scale enterprises (LSE). They studied around 3000 small UK firms and support the theory of pecking order. They suggest that leverage is a function of some firm specific factors like size, profitability, asset structure, collateral, liquidity, age, risk and growth. It was found that there is a negative relationship between profitability and capital gearing, which supports the pecking order as profitable firms use more of retained earnings in comparison to debt to finance their projects. The study also discovered that SME's have a low liquidity problem when compared to LSE's.

Leland and Toft (1996) investigated the relationship between capital structure and debt maturity. It was found that there is a significant positive relationship between leverage level and debt maturity. The optimal capital structure can be attained by using more of long-term debt as compared to short-term debt. The short-term debt does not provide much advantage of debt and it acts as a moderator between debt and equity holders. In other words, it reduces the agency costs of asset replacement. Thus, the findings of the study are in line with the implications of the trade-off theory model.

Michaelas *et al.,* **(1998)** studied the capital structure decision making of 30 small U.S. based firms. It was found that the firms prefer internal financing over external financing, when they do not want to dilute their control. In other words, the firm's findings are consistent with the suggestions of the pecking order theory. The firms prefer retained earnings as the most ideal source of finance, followed by trade credit and bank loans. On the other hand, it was found that the growth oriented firms prefer external debt as they have utilized all their internal source of finance. There is a positive relationship between growth opportunity and debt ratio. The study further reveals that, there is a negative relationship between profitability and leverage ratio because of major use of retained earnings. Finally, the study concludes with a positive relationship between risk and leverage ratio.

Graham (2000) examined the impact of tax on the capital structure decision of the firm. The study provides the evidence of tax significance in selecting the level of debt and equity. It was found that changes in the marginal tax rate affect the financing decision of the firm with loss carry forwards. In other words, loss suffering firm with high tax shield is less expected to finance with debt as tax shields lower the effective marginal tax rate on interest rate deduction. Thus, the empirical research supports the impact of tax either positively or negatively on the financial leverage decisions of the firm.

Booth *et al.,* **(2001)** investigated the applicability of capital structure theory in different countries with different institutional structures. The study constructed a new data set which comprises the data of 10 developing countries namely India, Pakistan, Thailand, Malaysia, Turkey, Zimbabwe, Mexico, Brazil, Jordan and Korea. The study was conducted for a period from 1980 – 1990 and pooled regression method was applied. The study reveals that financing decisions in developing countries are affected by the same variables which affect the decisions of the developed countries. The asset tangibility plays an important role in determining the capital structure of the firm. There is a negative relationship between profitability and debt ratio, which supports the propositions of the pecking order theory. The country specific factors are significant and their impact on leverage varies with the countries because of different institutional structures. Thus, there are some common variables which determine the leverage of both developed and developing countries.

Miguel and Pindado (2001) studied the determinants of capital structure from Spanish panel data. They propose a target adjustment model which explains the financial leverage of the firm in relation to previous leverage ratio and the target leverage ratio. Also, the target leverage ratio is defined as a function of firm specific factors such as profitability, growth and asset tangibility. It was found that there is a negative relationship between non-debt tax shield (NDTS) and debt ratio. They set up a parameter for the target leverage ratio, which identifies the determinants of the optimal capital mix. In other words, it is the development of dynamic adjustment model with predefined variables and model. They also point that debt-holders have priority in residuals over shareholders, which develops a problem in the credit markets.

Graham and Harvey (2001) conducted a completed survey of 392 chief financial officers (CFO) from different firms and industries. The objective of the survey is to find out how CFO's make

capital budgeting and capital structure decisions. The survey will help to understand the financing decisions of the firms by examining the survey response of CFO's in relation to the various firms' characteristics like size, price-earnings ratio (PE), leverage, credit rating, dividend policy and industry. It will also help to find out whether firms decisions are consistent with leverage theories or not; and is there any relationship with managerial factors. The findings reveal that firm size, financial flexibility and credit ratings plays an important role in determining the debt ratio level of the firm. Further, the firms avoid the equity issue to avoid the dilution of earnings per share (EPS). The study concludes with the evidence that firms follow the propositions of the trade-off theory and they adjust their leverage according to their target debt ratios.

Fama and French (2002) investigated the implications of trade-off and pecking order theories of the capital structure. It was found that there is a negative and significant relationship between leverage and profitability of the firm, which supports the prediction of the pecking order theory. Also, any short-term variation in the earnings of the firm is absorbed by its leverage. On the other hand, there is a significant negative relationship between leverage and growth opportunities, which follow the implications of the trade-off theory model. Further, the findings reveal that firms with few growth opportunities have high dividend payout ratios.

Bhaduri (2002) studied the determinants of capital structure of the 363 Indian manufacturing firms for a period from 1989 to 1994. The study examined the various measures of debt on the basis of its maturity structure. The study also considers restructuring costs as an important determinant of leverage. It focuses on dimension problem that arises sometimes due to the characteristics of certain unobservable events. Also, many leverage theories have different repercussions for different types of debt. The partial adjustment model and factor analytic technique was adopted to analyze the variations. It was found that the leverage of the Indian manufacturing firms is affected by the variables like growth, cash low, size, and product and industry characteristics. The restructuring costs also determine the leverage of the Indian firms. The study confirms that firms borrow debt to bridge the gap between the target leverage ratio and current leverage ratio. Also, cash flow deficit is an important reason that explains the borrowing nature of the Indian manufacturing firms.

Hovakimian *et al.,* **(2002)** examined the changes in the capital mix of the large set of U.S. publicly traded companies. The study was conducted for a long period of 19 years from 1979 – 1997. The study estimates the optimal capital mix and then calculates the range of deviations from the target leverage level. Also, the study put emphasis on making a clear choice between the debt and equity capital. The regression model was applied to develop a framework for the determinants of the optimal capital structure. The findings suggest that past year profits are an important indicator of observed debt ratios. The firms restructure their capital structure to nullify the effect of earning driven deviations from the target capital mix, which backs the proposition of dynamic trade-off theory.

Cassar and Holmes (2003) investigated the determinants of capital structure in small and medium enterprises (SME's) of Australia. The multiple regression models were employed to analyze the data. The variables considered for the study include size, profitability, growth, risk and tangibility of the firm. It was found that the leverage of the small Australian firms is significantly affected by the factors like tangibility, profitability and growth of the firm. Further, there is no strong indication regarding the impact of size and risk on the capital structure of the small and medium firms in Australia.

Baral (2004) studied the determinants of capital structure of 108 Nepalese firms listed on the Nepal stock exchange. The multiple regression method was employed to analyze the data. The factors considered for the study include size, risk, growth, profitability, dividend payout, debt-service ratio and operating leverage. It was found that there is a significant relationship between leverage and variables like size, growth and profitability. The variations in these significant factors cause a 72% variation in the leverage of the Nepalese firms. Thus, the results of the study are in line with the implications of the trade-off theory.

Bhole and Mahakud (2004) investigated the trends and determinants of capital structure of joint stock companies operating in India. The sample size consists of both public and private limited companies and the study was conducted for the period from 1966 to 2000. The panel data regression and ratio analysis technique was adopted to analyze the determinants and trends. It was found that there is a significant increase in the leverage ratios of both public and private firms under the period of the study. Also, the dependency on debt is more in case of public firms as

compared to private firms. The study reveals that the shipping industry is the most highly levered sectors in India. Further, the variables like cost of debt, cost of equity, size, tangibility, liquidity and NDTS are the significant determinants of capital structure in India for both public and private limited companies. The size and liquidity are the only two variables that affect the leverage of the firms throughout the period of the study.

Gupta (2004) examined the determinants of capital structure of 210 Indian firms from 1992 – 2000. The firms represent seventeen industries of the Indian industrial sector. The study helps to understand the financing pattern and the capital structure determinants of these firms. The study also throws a light on the significance of capital structure theories and its relevance for the Indian firms. The study investigates the determinants of capital structure and the differences in the leverage ratio of the firms under the same macro-economic conditions of taxation and interest rate. The findings of the study reveal that the Indian firms follow the proposition of the pecking order theory, where profitable firms prefer retained earnings over external debt or equity to meet their funding requirements.

Nishioka and Baba (2004) studied the determinants of capital structure of 700 Japanese firms listed on the Tokyo Stock Exchange (TSE). The panel data methodology was adopted to analyze the data. The trade-off theory was considered as the base of this study. It was found that the trade-off theory provides an appropriate explanation of various concerns of the capital structure problem. The pecking order theory was also significant as represented by the profitability variable. The governance structure influences the speed of adaptability of leverage ratios towards the target optimal max, particularly with respect to the share of overseas investors. The study also reveals the interrelationship between the leverage level and credit rating of the firm, where highly rated firms focus to decrease their extra debt.

Voulgaris *et al.,* **(2004)** investigated the size and determinants of capital structure in the Greek manufacturing firms. The study was conducted for a period between 1988 – 1996 with a sample size of 143 SME's and 75 LSE's. The panel data approach and ratio analysis was applied for the regression analysis. It was found that profitability is a key determinant of the capital structure for both size groups. The size of the firm is positively related to the leverage of the firm. Small firms rely more on short-term debt as the problem of information asymmetry causes the lenders to

demand more collateral of assets. On the other hand, large firms depend more on long term debt because of their ability to provide more asset collateral on the borrowed debt. The growth and total assets turnover ratio found to be significant in determining the leverage of the firm. Further, it examined the policy framework which would improve the financial performance of the firms.

Deesomsak *et al.,* **(2004)** studied the determinants of the capital structure in the Asia Pacific region for a period from 1993 – 2001. The region covers the study of capital structure determinants in four countries, i.e., Thailand, Singapore, Malaysia and Australia. All the countries under study operate in different legal, financial and institutional framework. The finding reveals that leverage decisions of the firms are influenced by geographic differentiation and the firm specific factors. The size of the firm is positively related to the leverage of the firm. The other variables like growth opportunity, NDTS, liquidity and share price performance are inversely correlated with the capital structure of the firm. The study further shows the significant differences in the country specific determinants and its impact on the managerial decisions of the firm.

Pandey (2004) examined the relationship between the capital structure and market structure for a period from 1994 – 2000. The sample size consists of 208 Malaysian firms. The generalized method of moments (GMM) estimators was used for panel data technique. The capital structure is represented by total debt to assets ratio and market structure is measured by Tobin's Q value. It was found that there is a cubic relationship between capital structure and market structure, which represents that at lower and higher ranges of Tobin's Q, the firms prefer high levels of debt. On the other hand, at the middle range, the firms prefer low level of debt due to the interrelated complexities of market conditions, agency costs and bankruptcy costs. Also, it was found that there is a saucer shaped relationship between capital structure and profitability of the firm because of the interaction of agency costs, cost of capital and the tax benefits of debt. In addition to this, the study found that size and tangibility are positively related, whereas, the growth, risk and ownership are negatively correlated with the capital structure of the firm.

Low and Chen (2004) studied the effects of international and product diversification on the capital structure of the firms. The sample consists of 232 firms from 30 countries. It was found that international diversification is inversely related to the capital structure of the U.S. firms. For non U.S. firms, the results found no significant relationship between the capital structure and

international diversification. This confirms the results of prior studies on U.S. firms. Further, it was found that product diversification is positively correlated with the financial leverage of the firm. Product diversification helps in minimizing the business risk, thereby increases the firm capacity to carry a high level of debt. Thus, the study reveals that, both international and product diversification affects the capital structure of the firm.

Fattouh *et al.,* **(2004)** assessed capital structure as a non-linear function of a vector of costs. The function covers the cost of information asymmetry and restricted to the ceiling of debt. The study covers the period from 1988 – 1998. The conditional quantile regression method was applied to study this non – linearity in a sample of UK firms. This method shows that the estimated effect of the independent variables varies at different quantile of the distribution. It was found that the coefficient of the variable changes from low leveraged to high leveraged firms. The quantile regression estimates are in line with the assumption of non-linearity and debt ceiling. Hence, this model defines the new scope of studying the leverage ratio.

Bevan and Danbolt (2004) studied the determinants of capital structure of 1,054 UK firms for a period from 1991 to 1997. The study also considers the effect of time-invariant and firm-specific heterogeneity on the determinants of the leverage. It was found that there is a significant difference in the results, obtained from the pooled and panel data regression analysis, which suggest that there is a significant impact of time-invariant and firm-specific heterogeneity on the determinants of capital structure. The market to book ratio, size, profitability and tangibility are the factors which determine the leverage of the UK firms. Further, there is a positive relationship between leverage and both size and tangibility. On the other hand, the profitability is negatively related to the leverage of the firm. The larger firms use both short-term and long-term debt and the profitable firm uses more of the short-term debt.

Munyo (2004) analyzed the determinants of the sources of funding of the Uruguayan firms that operates without the existence of stock markets. The cross-sectional econometric model was adopted to analyze the data. The factors that determine the leverage of the Uruguayan firms are size, tangibility and profitability. There is a negative relationship between leverage and profitability. On the other hand, there is a positive relationship between leverage and both size and tangibility of the firm. The larger and more tangible firms uses more of long-term debt as

compared to the smaller and less tangible firms who financed their assets mainly from short-term debt and trade credit.

Akhtar (2005) examined the determinants of capital structure of Australian multinational and domestic firms for the period from 1992 to 2001. The cross-sectional tobit regression model was adopted to analyze the leverage determinants. It was found that factors like growth, profitability and size are significant determinants of leverage for both types of Australian firms. Further, the tangibility is a significant factor of leverage for domestic firms. On the other hand, bankruptcy costs and the level of geographical diversification are significant determinants of leverage for multinational firms. There is not much difference in the leverage level of multinational and domestic Australian firms. However, it varied throughout the period of the study.

Chen and Strange (2005) studied the determinants of capital structure of 972 Chinese firms listed on the Shanghai stock exchange and Shenzhen stock exchange. The study examined the implications of trade-off, pecking order and agency cost theory in the context of China. It also investigates the factors like state agency, state owned and privately owned shareholdings as agency factors to test their relationship with the leverage of the firm. It was found that profitability is the most significant factor that determines the capital structure of the Chinese firms. Also, there is no relationship between leverage and growth rate. There are variations in the debt ratios of the firms across the industries.

Miao (2005) developed a competitive equilibrium model of optimal capital structure and industry dynamics. This model tries to fill the theoretical gap by providing an industry equilibrium model in which the decisions regarding the leverage ratio and production processes are affected by the same set of control variables. It also shows the effect of interrelation between the leverage and production on the turnover of the firm. The financial decisions of the firm are subject to the changes in individual technologies. It was found that the leverage ratio is based on the implications of trade-off theory. The equilibrium model influences the firms supply chain and survival chances, which provides an important response outcome for future test and analysis. For example, the firms in the high growth industries have comparatively low debt ratio and turnover rates. Thus, the present study adds to the existing literature by showing the influence of financial and production interactions.

Buferna *et al.,* **(2005)** investigated the determinants of capital structure of 55 Libyan firms for a period from 1995 to 1999. The sample size consists of both public and private companies and their differences in the leverage are analyzed. The cross-sectional regression method was adopted to analyze the data. It was found that the implications of both static trade-off and agency cost theory are applicable to the Libyan firms. The positive coefficient of size and negative coefficient of growth variable supports the applicability of agency cost theory. On the other hand, the positive coefficient of profitability supports the validity of both static trade-off and agency cost theory. The negative coefficient of tangibility further supports the implications of agency cost theory. The findings also confirm that there is an absence of a secondary market, which would affect the agency cost of equity.

Abor and Biekpe (2005) studied the determinants of capital structure of the firms in Ghana. It was found that there is a significant and positive relationship between leverage and tangibility of the firm. There is also a significant and negative correlation between leverage and profitability of the firm, which supports the proposition of the pecking order theory. Further, the findings reveal that there is a positive and significant relationship between leverage and growth of the firm as firms with high growth opportunities faces an internal fund deficit and tend to maintain higher debt ratios to finance their future assets. There is also an inverse relationship between earnings volatility and leverage ratio, which means that lower the operating risk and higher will be the debt ratio of the firm.

De Johannes (2006) studied the determinants of capital structure of three South African firms listed on the Johannesburg Stock Exchange (JSE). The study investigates the financing pattern of the firms and capital structure used in different countries and industries. It aims to develop a model to attain an optimal capital structure based on the trade-off theory proposition, which consider the impact of corporate taxes and the bankruptcy costs. The findings of the model are in line with the propositions of the trade-off theory. The study suggests that the value of the shareholders can be maximized by moving closer to the optimal capital mix.

Kim *et al.,* **(2006)** examined the determinants of capital structure of Korean listed manufacturing companies for a period from 1985 – 2002. The unbalanced panel data were employed to conduct the study. The study is based on dynamic leverage model, which determines the optimal leverage

mix of the Korean manufacturing companies. Besides firm specific determinants, the study considers country specific factors like structural breakup before and after the financial crisis, and firm's affiliation to chaebol conglomerate. The results reveal that the leverage of the Korean firms is affected by the financial crisis and chaebol affiliation. In case of firm specific factors, it was found that the leverage is affected by size, profitability and growth opportunity.

Coleman (2006) studied the determinants of capital structure of small manufacturing firms. The sample size consists of 389 manufacturing firms and 3,172 non-manufacturing firms. It was found that industry sector is not a significant factor to determine the capital mix. On the other hand, the firms leverage is affected by the size, age, organizational status, profitability and asset structure of the firm. The sample firms were larger in terms of asset, sales and employees. These firms are capital-intensive in nature because of the high fixed asset ratio and have a low margin of profits. The firms with high level of assets depends more on debt because of the collateral value of fixed assets. On the other hand, the profitable firms use more of retained earnings and less of debt, which is consistent with the implications of the pecking order theory.

Sayilgan *et al.,* **(2006)** assessed the firm specific determinants of capital structure of 123 manufacturing Turkish firms for a period from 1993 – 2002. The panel data methodology was employed to conduct the study. It was found that size and growth opportunity in total assets are positively correlated with the leverage ratio. On the other hand, the firm specific factors like profitability, growth opportunity in fixed assets, non-debt tax shield (NDTS) and asset tangibility are negatively related to the capital structure of the firm. The findings of the study are in line with the implications of trade-off and pecking order theory. Trade-off supports that large sized firms maintain high debt ratio, whereas, pecking order supports that profitable firms use more retained earnings and maintain a low debt ratio.

Nguyen and Ramachandran (2006) studied the determinants of capital structure of 558 Vietnamese SME's for a period from 1998 to 2001. It was found that SME's prefer short-term debt and the firm's ownership plays a significant role in determining the leverage of the firm. There is a positive and significant relationship between leverage of the Vietnamese firms and variables like growth, risk, size, networking and banks relationships. On the other hand, Vietnamese leverage is negatively related to the tangibility of the firm. There is no impact of profitability on the capital

structure of Vietnamese SME's. The influence of factors like ownership, size, bank relationships and networking supports the information asymmetry and applicability of agency cost theory.

Huang (2006) investigated the determinants of capital structure of 1,200 Chinese firms for a period from 1994 to 2003. It was found that there is a positive correlation between leverage and both size and tangibility. On the other hand, there is a negative relationship between leverage and variables like NDTS, profitability, growth opportunity, managerial ownership and industrial classification. Also, there is no impact of state ownership and institutional ownership shareholdings on the leverage of the Chinese firms. The firms consider the effect of tax while procuring the long-term debt and they generally maintain a low long-term debt ratio when compared to the leverage of the firms in other countries. The results of the study are consistent with the implications of the static trade-off theory and there are not enough evidences to support pecking order theory propositions.

Biger *et al.,* **(2007)** examined the determinants of capital structure of Vietnamese firms for a period from 2002 – 2003. The study examined the leverage decision of these firms and compared their results with firms operating in economies governed by market mechanisms and property rights. It was found that there is a positive relationship between leverage and variables like size, managerial ownership and growth opportunities. On the other hand, there is a negative relationship between leverage and variables like profitability, NDTS, tangibility and corporate tax. The industry classification is also an important factor affecting the leverage of the firms. Thus, the results of variable coefficients are opposite to the findings in other countries.

Delcoure (2007) investigated the determinants of capital structure of central and eastern European countries. The countries considered for the study include Poland, Russia, Slovakia and Czech Republic. It was found that these countries finance their assets majorly by equity capital and the banks in these countries provide short term debt instead of long-term debt. There is a positive relationship between leverage and variables like size, tangibility, tax rate and NDTS. On the other hand, there is an inverse relationship between leverage and profitability. This shows that the determinants of these countries are some of that of developed countries. Further, the theories of capital structure, i.e. trade-off, pecking order and agency cost are not applicable to these transitional economies. However, they have developed a modified pecking order, starting from

retained earnings, equity, short-term debt and long-term debt as a last resort to finance their assets. The findings also reveal that the leverage decisions of these firms are affected by banking system constraints, legal system disparity, complexities of stock markets and corporate governance.

Abor (2007) studied the impact of industry classification on the capital structure of 150 Ghanaian SME's for a period from 1998 – 2003. The regression analysis and analysis of variance (ANOVA) technique was employed to do the analysis. The various measures of leverage were employed as dependent variable and industry classification is considered as the independent variable. The ANOVA helps to understand the differences in leverages across the various industries. It was found that debt ratio and fixed assets ratio were highest in the agricultural sector, whereas, the wholesale and retail trade sectors has the lowest leverage and fixed assets ratio. Further, the agriculture, hospitality, pharma and medical industries depend more on long-term debt as compared to information technology, construction, mining, wholesale and retail trade industries which depends more on short-term debt. Thus, the industry classification is a significant leverage determinant of Ghanaian SME's and there is a variation in debt ratios across the different industries.

Eriotis *et al.,* **(2007)** examined the effect of firm specific factors on the capital structure of 129 Greek firms listed on the Athens stock exchange for a period from 1997 – 2001. The panel data methodology was adapted to analyze the data. It was found that there is an inverse relationship of leverage ratio of the firm with growth, quick ratio and interest coverage ratio (ICR). The firms with a high ICR usually maintain a low leverage ratio. Also, the leverage ratio is positively related to the size of the firm, which means that large firms maintain high debt ratio in comparison to small firms. The results are consistent with the implications of pecking order theory and also throw some light on the relationship between leverage and firm value.

Daskalakis and Psillaki (2007) investigated a study on the determinants of capital structure covering both firm and country specific factors. The study was conducted for a period from 1998 to 2002. The sample size contains SME's of France and Greece. The panel data methodology was adopted to do the analysis. The study considers the size and structure of each country financial market to find out the existence of any cross-country variations in SME capital structure. Debt to asset ratio is used to define the capital structure mix. It was found that asset structure and

profitability are negatively related to the capital structure of the firm. On the other hand, the size of the firm is positively related to the leverage level. The growth is also a significant factor only for France and it is positively related to the leverage ratio. The reason for variations in the capital structure of firms in both the countries is due to the differences in their firm specific factors, rather than country factors.

Mazur (2007) examined the determinants of capital structure in 238 non-financial polish companies listed on Warsaw Stock Exchange (WSE). The study was conducted for a period from 2000 – 2004 and try to find out which theory of capital structure, i.e., Trade-off or pecking order better describes the capital structure of the Polish firms. The multiple regression approach was adopted to find out the determinants. The control variables considered for the study include asset structure, profitability, growth opportunities, liquidity, size, product uniqueness, earnings volatility, NDTS, dividend policy and the effective tax rate. It was found that the pecking order theory was more suitable in explaining the capital structure of the Polish firms.

Das and Roy (2007) investigated the impact of industry differences on the capital structure of 12 different Indian industries set for a period from 1979 – 1998. The cross-sectional regression analysis was adopted to analyze the data. The period of the study has been divided into two parts, i.e., Pre-liberalization period 1979 – 1991 and Post-liberalization period 1992 – 1998 to examine the effect of 1991 policy reforms on the capital structure of the firms. The objective is to find out the differences in the leverage ratios of the firms between these two time frames and what the possible causes of such variations are. It was found that there is no relationship between the leverage ratio and industry classification.

Woodruff (2007) examined the factors which affect the debt capacity of 3,707 firms for a period from 2001 – 2005. The purpose of the study is to develop a model which analyzes the factors affecting the debt capacity of the firms seeking to reduce their credit risk and the cost of debt. These factors were identified as the fixed assets ratio, industry classification, sales variation and the method of depreciation. It was found that there is a significant relationship between leverage and fixed assets ratio. The findings reveal significant implications for the firms to assess their debt capacity. This debt capacity will help both the firms and creditors during the lending process. Thus, this model will help to understand the variations in the debt capacity of different firms.

De Jong *et al.,* **(2008)** studied the significance of firm specific and country specific factors in determining the capital structure of the firms from 42 countries around the world. It was found that firm specific determinants of leverage vary across countries and there is an indirect impact of country specific factors in the leverage ratio as the country specific factors also affect the factors of the firm. The study reveals that firm specific factors which are significant and affects the leverage of the firm across the countries include tangibility, size, risk, growth and profitability. Also, in each country, there are some firm specific determinants which are not significant for the leverage of the firm. Most of the findings are in line with the predictions of capital structure theories, except for a very small number of countries whose results are not consistent.

Cotei and Farhat (2008) studied the models of trade-off and pecking order theory for a period from 1980 – 2001. The purpose of the study is to examine the assumption of symmetric behavior and homogenous coefficient. The sample size consists of 89,591 observations and spline regression model was applied to test the above assumptions. It was found that symmetric behavior assumption of the trade-off theory is rejected across all industries. The firms tend to adjust their leverage faster when they are above the target ratio compared to when they are below. The pecking order theory also rejects the symmetric behavior of firms, irrespective of the coefficient of leverage variable. The firms reduce their debt capacity when they have a surplus debt capacity and vice-versa. Thus, adjustment rate and the debt deficit coefficient differ with the different industries.

Shanmugasundaram (2008) examined the variables which determine the capital structure of firms operating in the Indian pharmaceutical sector. The study was conducted for the period from 1988 to 2003. It has been divided into two parts, i.e. patent period and transition period. There is a significant and positive relationship between tangibility and leverage. On the other hand, profitability is negatively correlated with the leverage of the firm. Further, the asset growth rate is positively related to the leverage of Indian pharma firms and negatively to MNC's operating in the Indian pharma sector. There are variations in the leverage ratios of Indian and MNC's pharma firms under both patent and transition study period. Thus, the implications of both pecking order and static trade-off theory are applicable to the Indian pharmaceutical sector.

Ebel Ezeoha (2008) studied the factors which affect the capital structure of 71 listed Nigerian firms for a period from 1990 to 2006. The panel data fixed effects regression model was adopted to

analyze the data. The factors considered for the study include firm size, tangibility and profitability of the firm. It was found that there is a significant and negative relationship between leverage and both firm size and profitability. On the other hand, there is a significant and positive relationship between leverage and tangibility of the firm. Thus, the implications of the pecking order theory influences the leverage of the selected Nigerian firms.

Mittoo and Zhang (2008) investigated a study on the capital structure of multinational corporations (MNC) operating in Canada and U.S. The study was conducted on 1,821 firms for a period from 1998 to 2002. The study examines the impact of country specific factors on the leverage of Canadian MNC's. The findings suggest that, Canadian MNC's maintain high leverage level when compared to the domestic firms in Canada. The reasons for high leverage are existence of lower agency costs associated with the MNC's operations in the U.S. and an effective access to the international bond market. The study also reveals that the sensitivity of the MNC's leverage differs in both the two countries because of the differences in the factors of both home and host country. The Canadian MNC's share common environment with their U.S. peers and the agency cost of debt and business risk increases when it expands its business in non-U.S. region. However, the agency cost of debt has a higher influence on the leverage of the firm.

Seifert and Gonenc (2008) studied the validity of the pecking order hypothesis in international economies like US, UK, Japan and Germany for a period from 1980 – 2004. There is an empirical evidence support for pecking order hypothesis in countries like US, Germany and Japan, not for the UK. It was found that tangibility is negatively and profitability is positively related to the leverage of the UK firms. The market to book ratio is positively related to the leverage of Japanese firms. The tangibility is more referred to asset collateral and not an indicator of information asymmetry. The firms in Japan and Germany have high information asymmetry. Overall, the Japanese firms show that it funds its deficit from debt finance and the hypothesis is favorable for these firms as per the predictions of pecking order theory.

Dragota and Semenescu (2008) investigated the determinants of capital structure and whether Romanian firms prefer debt or equity capital to finance their assets. The study was conducted for a period from 1997 – 2007 and for publicly traded Romanian firms. The cross sectional ordinary least squares (OLS) regression method was employed to analyze the data. The control variables

considered for the study include asset structure, size, profitability and market to book ratio (M/B). It was found that the Romanian firms finance their projects through equity, commercial debt and other financial debt. The variables are significant and determine the leverage of the firm. The proposition of the pecking order theory is applicable in respect to the Romanian capital market and signaling theory is not completely excluded.

Rajagopal (2009) examined the determinants of capital structure of 1,163 Indian manufacturing firms for the period from 1998 to 2002. The purpose of the study is to investigate that factors affecting the leverage of the developed economies are portable and can explain the capital structure of firms operating in the Indian manufacturing sector. It was found that variables like tangibility, size, profitability, market to book ratio, NDTS and earnings volatility plays an important role in explaining the capital structure of the Indian manufacturing firms. Thus, the capital structure theories are transferable between developed and developing countries. The study also reveals about the behavior of capital financing in the Indian manufacturing sector.

Frank and Goyal (2009) investigated the factors which determine the capital structure of the publicly traded American firms for a period from 1950 – 2003. The factors considered for the study include industry leverage, market to book ratio, profitability and size of the firm. The descriptive statistics depict sufficient time-series variation in the balance sheet and cash flow variables. It was found that market to book ratio and firm size affects the future leverage decisions of the firms. Also, the asset structure and size of the firm do not go with the implications of pecking order theory. The market timings offer cross-sectional effects with no significant explanation for the leverage pattern of the firm. Finally, the results are in line with the proposition of the trade-off theory of the capital structure.

Abor and Biekpe (2009) examine the determinants of capital structure of firms operating in Ghana. The sample size consists of small and medium enterprises (SME's) as these firms play an important role in the development of the Ghanaian economy. The regression method was adopted to test the relationship between leverage and firm specific factors. The findings reveal that the key determinants that affect the leverage of the Ghanaian firms include firm size, firm age, tangibility, profitability, and growth rate of the firm. The short-term debt is a significant source of finance for

Ghanaian SME's. Thus, the results of the study provide important information to the policy makers and entrepreneurs of SME's in Ghana.

Silva Serrasqueiro and Rego Rogao (2009) investigated the determinants of capital structure of firms operating in Portugal. The determinants considered for the study include tangibility, size, profitability and market to book ratio. The study also examines the implications of trade-off, pecking order and market timing theory in the context of Portuguese firms. The panel data regression model was adopted to analyze the data. It was found that firm size and asset tangibility are significant factors that determine the optimal capital mix. On the other hand, profitability and market to book ratio are insignificant in determining the leverage of the firms. The transaction cost is another significant factor that is considered by the Portuguese firms. Thus, the propositions of trade-off and pecking order theory are relevant for the Portuguese firms in determining their leverages. The market timing theory implication is not relevant for these firms.

Ravi *et al.,* **(2009)** studied the determinants of capital structure of the 78 non-financial Ethiopian firms for a period from 2005 to 2007. The study is conducted for the firms who face difficulties in procuring the long-term finance. The analysis of data is done with the help of linear regression model to find out the variations in variables and which factors affect the leverage of the firm. It was found that macro-economic variables and micro-economic variables like Industry classification, age and ownership are significant determinants of capital structure of the Ethiopian firms. Further, the finding reveals that the leverage activities of the Ethiopian firms are in line with the implications of the pecking order theory.

Seelanatha (2010) investigated the determinants of capital structure of the Chinese firms operating in 24 different industries for a period from 1999 to 2005. The study also examined the effect of firm's comparative market share efficiency and industry concentration on the leverage decision of the firm. The non-parametric data envelopment analysis (DEA) technique was adopted to measure the comparative efficiency. It was found that there is a negative relationship between leverage and the firm's comparative efficiency. Also, there is a negative relationship between size and the leverage of the firm as large firms maintain a low level of debt ratio. The variables used for representing the firm's relative market share are negatively correlated with the capital structure of the firm. Thus, the findings are in line with the pecking order theory.

Cook and Tang (2010) examined the impact of macro-economic factors on the leverage adjustment speed of US firms towards its target leverage ratio. The study was conducted for the period from 1976 to 2005. The two dynamic partial adjustment leverage models were employed to determine the effect of macro-economic factors on the capital structure adjustment speed. It was found that the macro-economic factors like term spread, default spread, GDP growth rate and market dividend yield affects the adjustment speed of leverage towards its target debt ratio in the better economic conditions. Also, the firms with a low debt ratio tend to adjust at a higher rate, when compared to the adjustment speed of firms with high debt ratio under good economic conditions. Further, the firms are not affected by factors like size, target variation and leverage boundary. Thus, the findings are consistent with the implications of pecking order theory and market timing theory.

Mukherjee and Mahakud (2010) examined the impact of growth opportunity i.e. market to book ratio on the capital structure of the Indian manufacturing firms. The other firm specific factors considered for the study include size, profitability, NDTS and tangibility of the firm. The study was conducted for the period from 1993 to 2007 and it develops a partial adjustment model to test the capital structure determinants. The generalized method of moments (GMM) was adopted to analyze the data. It was found that there is a significant statistical relationship between leverage and determinants like market to book ratio, size, profitability, non-debt tax shield (NDTS) and tangibility of the firm. The variation in the target optimal mix ranges from 12 to 39 percent at different levels of the leverages. Thus, the study helps the managers in taking financing decisions of the firm.

Sinha and Ghosh (2010) investigated the impact of firm specific and macro-economic variables on the optimal capital structure and the target adjustment speed, under the conditions of the firm's recapitalization policy. The sample size consists of 268 Indian manufacturing firms and the study was conducted for the period from 1995 to 2006. The dynamic partial adjustment model was adopted to analyze the relationship. It was found that term spread, default spread, inflation, growth, size and profitability are significant determinants of leverage and affects the target adjustment speed of leverage under the firm's recapitalization policy. The dynamic model explains about 35 percent of the variations in the leverage at different levels.

Momani *et al.,* **(2010)** studied the impact of firm specific factors in determining the capital structure of 25 Jordanian insurance firms for a period from 2000 to 2007. The firm specific factors considered for the study include firm size, tangibility, profitability and growth rate. The simple and multiple regression analysis were adopted to test the significance of the above factors. It was found that the factors that are significant in determining the leverage of the Jordanian insurance firms include size, asset structure, return on assets (ROA) and growth rate. Thus, the above factors help in attaining the optimal leverage mix, which minimizes the overall cost of capital and maximizes the value of the firm.

Zhang (2010) investigated the determinants of capital structure of 220 small and medium enterprises (SME's) operating in the UK manufacturing sector. The cross-sectional regression analysis was adopted to analyze the relationship between leverage and determinants. The data are collected from the fame database. It was found that there is a positive relationship between leverage and determinants like size, profitability and tangibility of the firm. On the other hand, there is negative correlation between leverage and growth rate of the firm. The age of the firm is insignificant in determining the leverage of the firm. Further, the product category is also an important factor that affects the leverage of the firm with the help of the profitability variable of each product.

Al-Shubiri (2010) examined the determinants of capital structure of the Jordanian industrial companies listed on an Amman stock exchange for a period from 2004 – 2007. The simple and multiple regression tests were applied to find out the determinants. The study focuses on key theories of capital structure, and how it affects the leverage of the Jordanian firms. It was found that there is a positive relationship between leverage level and size, tangibility, growth rate and NDTS. On the other hand, there is a negative relationship between leverage level and profitability of the firm. Other control variables like age, liability and business risk are found to be statistically insignificant for the leverage of the firm.

Odit and Gobardhun (2011) studied the determinants of capital structure of the 25 Mauritian SME's for a period from 2002 to 2008. The panel data analysis method was adopted to examine the data and capital structure theory which explain the leverage of the Mauritian firms. It was found that there is a positive relationship between the leverage and both tangibility and growth of

the firm. Also, the short-term debt constitutes the bigger proportion of total debt of the firm. The Mauritian firms follow the principle of asset maturity matching. Finally, the results are consistent with the implications of the pecking order theory, agency cost theory, liquidity and cash flow patterns of the firm.

Al-Najjar (2011) examined the factors that affect the capital structure of the 86 non-financial Jordanian firms for a period from 1999 to 2003. The panel data method and pooled regression analysis method were employed to analyze the data. The factors considered for the analysis include profitability, ownership, risk, tangibility, liquidity, size and market to book ratio. It was found that there is a significant negative relationship between the leverage and both profitability and business risk. On the other hand, the findings reveal that there is a significant positive relationship between the leverage and variables like size, tangibility, liquidity and market to book ratio. The Jordanian firms adapt to their target debt ratio and both disequilibrium and adjusted costs are significant for them. Thus, the capital structure of the Jordanian firms is affected by the same factors which determine the capital structure of the developed countries.

Mittal (2011) studied the determinants of capital structure of 472 Indian firms for the period from 2001 to 2008. The pooled cross-sectional regression analysis method was employed to analyze the leverage determinants. It was found that there is a significant negative relationship between leverage and determinants like risk, debt service ratio, growth, NDTS and firm size. On the other hand, there is an insignificant positive relationship between leverage and profitability. Also, the factors like agency cost and tangibility affects the capital structure decision of the Indian firms. Thus, the implications of the capital structure theories are relevant in the context of the firms operating in India.

Ahmed Sheikh and Wang (2011) examined the determinants of capital structure of 160 Pakistani manufacturing firms listed on the Karachi stock exchange for a period from 2003 to 2007. The objective of the study is to investigate that leverage determinants of the developed countries also affect the leverage of the selected Pakistani manufacturing firms. The panel data regression method was adopted to analyze the capital structure determinants. It was found that there is a significant negative relationship between leverage and determinants like profitability, liquidity, earnings volatility and tangibility of the firm. On the other hand, there is a significant positive correlation

between leverage and size of the firm. Thus, the results are in line with the propositions of the trade-off theory, pecking order theory and agency cost theory.

Mishra (2011) studied the determinants of capital structure of 48 Indian public sector undertakings (PSU's) for a period from 2006 to 2010. The multiple regression method was adopted to test the capital structure determinants. It was found that the leverage decisions of Indian PSU's are affected by variables like tangibility, profitability and tax. There is a positive relationship between leverage and both growth and tangibility. On the other hand, there is negative relationship between leverage and both profitability and tax. Other factors like NDTS, volatility and size are found to be insignificant in determining the leverage of the Indian PSU's.

Gill and Mathur (2011) examined the determinants of capital structure of 166 Canadian firms for a period from 2008 to 2010. The regression and non-experimental method was adopted to identify the determinants. It was found that the financial leverage of the sample firms was affected by the factors like tangibility, profitability, tax rate, size, growth and industry.

Rasoolpur (2012) investigated the determinants of capital structure of 298 Indian manufacturing firms for a period from 1995 to 2005. The panel data method was adopted to test the relationship between capital structure and its determinants. It was found that there is a significant statistical relationship between leverage and both uniqueness and liquidity of the firm. Further, the results reveal that there is no significant relationship between leverage and variables like profitability, cash flow coverage ratio (CFCR), size, asset growth rate, NDTS, dividend payout ratio (DPO) and operating leverage of the firm.

Adhegaonkar and Indi (2012) studied the determinants of capital structure of the firms operating in the Indian chemical sector. The study was conducted for the period from 2006 to 2011. The variables considered for the study include size, profitability, tangibility, NDTS, asset growth rate, liquidity and interest coverage ratio (ICR). The multiple regression method was adopted to test the capital structure determinants. It was found that there is a significant positive relationship between leverage and variables like tangibility, NDTS and ICR of the firm. On the other hand, there is significant negative relationship leverage and variables like size, profitability, asset growth rate

and liquidity of the firm. Thus, the implications of capital structure theories are relevant for the firms operating in the Indian chemical industry.

Purohit and Khanna (2012) examined the determinants of capital structure of 265 Indian manufacturing firms for the period from 2000 to 2010. The multiple regression method was adopted to analyze the capital structure determinants. It was found that there is a significant positive relationship between leverage and tangibility of the firm. On the other hand, there is a significant negative relationship between leverage and both asset growth rate and research and development (R&D) expenditure of the firm. Further, the study reveals that business risk is not a significant determinant of leverage in the Indian manufacturing sector.

Majumdar (2012) investigated the determinants of secured and unsecured debt of 619 Indian manufacturing firms listed on the Bombay stock exchange (BSE). The study was conducted for the period from 2003 to 2008. The panel data regression model was employed to analyze the capital structure determinants. It was found that, there is a significant positive relationship between secured debt and both tangibility and growth opportunity. On the other hand, there is a significant negative relationship between unsecured debt and both tangibility and growth opportunity. Further, there is no effect of profitability and risk on secured or unsecured debt of the firms operating in the Indian manufacturing sector.

Lim (2012) examined the determinants of capital structure of 36 A-share financial listed Chinese firms for the period from 2005 to 2009. The regression model was adopted to analyze the capital structure determinants. It was found that there is a significant positive relationship between leverage and firm size. On the other hand, there is a significant negative relationship between leverage and variables like profitability, NDTS, earnings volatility and non-circulating shares. Further, the institutional characteristics and the percentage of state ownership shareholdings affect the leverage decision of the Chinese firms. Thus, the leverage determinants of developed countries also influence the leverage structure of the Chinese financial listed firms.

Cortez and Susanto (2012) studied the determinants of capital structure of 21 Japanese firms listed on Tokyo stock exchange for the period from 2001 to 2010. The panel data method was employed to analyze the data. It was found that there is a significant positive relationship between

leverage and tangibility. On the other hand, there is a significant negative relationship between leverage and both profitability and NDTS. Further, the size, growth in fixed assets and growth in total assets are not significant factors that determine the capital structure of the Japanese listed manufacturing firms.

Kouki and Said (2012) examined the determinants of capital structure of 244 French listed firms for the period from 1997 to 2007. The regression method was adopted to analyze the leverage determinants. It was found that size, profitability, growth opportunities and NDTS are significant determinants of capital structure of French listed firms. Further, the level of corporate debt is in line with the implications of the trade-off theory model. Similarly, the financial behavior of French firms is consistent with the predictions of the pecking order theory model. The market timing theory does not apply to these firms. The market complexities like taxes, bankruptcy costs and information lag have a significant effect on the financial decisions of the firms. The French firms adapts to dynamic adjustment model to achieve the target optimal mix.

Bayrakdaroglu *et al.,* **(2013)** studied the determinants of capital structure of 242 Turkish firms listed on the Istanbul stock exchange for the period from 2000 to 2009. The panel data method was employed to analyze the capital structure determinants. It was found that the variables like size, profitability, tangibility, growth opportunity, NDTS, gross domestic product (GDP) growth rate, inflation and taxes are significant determinants of capital structure of Turkish firms. Further, the study reveals that there is no target debt ratio for Turkish firms and the results are consistent with the predictions of pecking-order theory.

Moyo *et al.,* **(2013)** investigated the implications of trade-off theory and pecking order theory of capital structure. The study also examines the speed of adjustment towards target optimal leverage. The sample size consists of 42 manufacturing, 24 mining and 21 retail South African firms listed on the Johannesburg stock exchange for the period from 2000 to 2010. The analysis of data was done with the help of generalized least squares (GLS) random effects, maximum likelihood (ML) random effects, fixed effects and time series regression methods. It was found that there is a positive correlation between leverage and profitability; and negative correlation between leverage and NDTS, which supports the implications of the trade-off theory model. On the other hand, there is a positive correlation between leverage and growth rate; and negative correlation between

leverage and tangibility, which supports the implications of the pecking order theory model. Further, the findings reveal that there is no target optimal leverage mix for the South African firms and the real speed of adjustment is applied. Thus, the implications of both trade-off and pecking order theories are applicable to the leverage decisions of the South African firms.

Chen *et al.,* **(2014)** studied the determinants of capital structure of 1,481 non-financial Chinese firms in 2011. The cross-section regression method was adopted to analyze the capital structure determinants. The study reveals that there is a significant positive relationship between leverage and variables like size, intangibility and risk. On the other hand, there is a significant negative relationship between leverage and profitability. Further, it was found that state owned firms are more levered as compared to firms with foreign ownership.

Uddin (2015) examined the determinants of capital structure of 14 pharmaceuticals companies listed at Dhaka stock exchange for the period from 2006 to 2012. The ordinary least squares method was adopted to analyze the capital structure determinants. It was found that there is a significant positive relationship between leverage and variables like industry average, non-debt tax shield and uniqueness. On the other hand, there is a significant negative relationship between leverage and variables like size, tangibility, tax rate, dividend payout, agency cost, risk, GDP and money growth. Further, human capital cost variable is insignificant in determining the capital structure of the firm.

2.3.2 STUDIES RELATED TO CAPITAL STRUCTURE – MISCELLANEOUS ISSUES

Miscellaneous issues of capital structure include the studies related to the relationship between capital structure and firm value, the relationship between capital structure and ownership structure, the relationship between capital structure and performance of the firm, the relationship between capital structure and operating liquidity, and the relationship between operating liquidity, capital structure and performance of the firm.

Schmalensee (1989) examined the variations in the intra-industry profitability of the US manufacturing firms for a period from 1953 to 1983. The twelve accounting profitability measures were used to find out how variations in the profitability are related and it represents the

profitability scenario of the US manufacturing cartel. It was found that all measures changes in a counter-cyclically pattern and move towards the pro-cyclical industry changes in relation to the industry classification-profitability relationship. Also, the study provides the path for future research related to the research variations in inter and intra industry network, and cyclical demand.

Dhankar and Boora (1996) investigated the effect of leverage on the value of the Indian firms. The sample size consists of 26 Indian private sector firms from 15 different industries and the study is conducted for the period from 1981 to 1990. The Karl Pearson's correlation coefficient method was adopted to test the above relationship. The study is based on both primary and secondary data. It was found that there is no significant relationship between variations in financial leverage and the value of the firm, at the micro-economic level. Further, the study reveals that there is an insignificant negative relationship between leverage and the overall cost of capital. The dividend payout ratio is also found to be insignificant.

Gangadhar and Begum (2003) studied the impact of leverage on the profitability of three Indian firms, namely Hindustan Unilever Ltd, Tata Tea and Reliance Industries for a period from 1994 – 2001. Earnings before interest and taxes (EBIT) and earnings per share (EPS) are considered as a measure of profitability. It was found that the profit margins of all three companies are higher than their asset turnover ratios. The study shows the financing pattern of these companies. It shows the conditions under which the profitability of the firm and its shareholder value can be maximized. It also, presents the variability pattern of operating, financial and combined leverages.

Wang (2003) investigated the relationship between ownership structure and profitability of listed manufacturing firms in Taiwan. The ownership structure is represented by managerial, institutional and control group shareholdings. The profitability is measured by Tobin's Q. It was found that there is a significant positive relationship between profitability and both institutional and control group shareholdings. On the other hand, there is a significant negative relationship between Tobin's Q and managerial shareholdings of the firms.

Welch (2003) studied the relationship between ownership structure and financial performance of the Australian listed firms. The ordinary least squares (OLS) method was applied to test the above relationship. It was found that there is a significant relationship between ownership structure and

profitability of the Australian firms. Thus, the financial performance of the Australian firms is affected by its ownership structure.

De Wet (2006) examined the capital structure of 3 South African firms listed on the Johannesburg stock exchange. The purpose of the study is to investigate the effect of optimal capital structure using the leverage trade-off theory model. It was found that there is a significant impact of optimal leverage on the value of the firm, under the conditions of the trade-off theory model. The findings suggest that the firms should try to maintain some suitable target optimal capital structure range, rather than focusing on a particular optimal target level. Thus, the findings are in line with the implications of the dynamic trade-off theory model.

Sharma (2006) investigated the impact of financial leverage on the value of 12 selected Indian manufacturing firms from 4 different industries. The study was conducted for the period from 2000 to 2005. The ratio analysis and correlation coefficient method was adopted to analyze the data. It was found that there is a significant positive relationship between leverage and value of the firm, when the capitalization level is at optimum level. In case, there is an overcapitalization, the firm has to bear an extra financial cost and in turn will negatively affect its profitability.

Gowda *et al.*, **(2006)** studied the capital structure and EPS trends of diversified firms of four different industries, namely Pharmaceuticals, Cement, Consumer goods and Fabric. The study also examines the impact of leverage on the EPS of the diversified firm. The regression analysis method was adopted for a period from 2001 – 2004. The study assumed that there is not much difference in the leverage of the diversified firms. It was found that there is no significant relationship between leverage and EPS of the diversified firm. However, other control variables like risk, income, flexibility and timings affects the earnings per share (EPS) of the firm. The result indicates that debt is not properly utilized to maximize the value of the diversified firm.

Carpentier (2006) investigated the relationship between the firm value and leverage of 243 French firms for a period from 1987 to 1996. The main objective of the study is to test the irrelevance proposition of the MM theory. It was found that the leverage of the firm does not affect the value of the firm. The study also analyzed the control for the return towards target leverage ratio made by the static trade-off theory. There is no relationship is found between the leverage

changes and its impact on the value of the firm. In other words, there is no change in the firm's value when direction of change in leverage is considered. Hence, the findings are in line with the MM theory proposition and also, with the timing leverage theory.

Aggarwal and Zhao (2007) examined the relationship between leverage and firm value of publicly traded non-financial US firms for a period from 1980 – 2003. The panel data method was adopted to test the above relationship. It was found that there is a negative relationship between the leverage and firm value. This result suggests that there is no effect of industry on the leverage value relationship. The study reveals that the tax advantage of debt is offset by the agency cost of debt, when there is a high level of debt. Also, it was found that the impact of leverage on the firm's value is dependent upon the growth opportunities of the firm.

Madan (2007) examined the capital structure of 8 Indian hospitality firms and its impact on the overall performance of these firms. The study investigates the leverage pattern, industry benchmark and the impact of leverage on the future growth policies. The study is based on secondary data and consolidated financials of the firms are considered to analyze the data. The findings reveal the financial implications from the industry perspective and growth strategy which has a managerial implication. Further, the firms are required to improve their debt ratio and financial performance, i.e. return on equity (ROE) by adjusting their leverages. The aim is to maximize the returns of shareholders by achieving an optimal capital mix.

Abor (2008) examined the agency factors which affect the capital structure of 120 Ghanaian SME's for a period from 1998 – 2003. The agency factors considered for the study include percentage of shares closely held, number of shareholders and family ownership ratio. It was found that managerial ownership is negatively related to leverage ratio, which means that existing shareholders prefer a low leverage ratio to minimize the risk of bankruptcy. In other words, equity dominating firms prefer a low debt ratio. Also, the shareholders will not worry about the loss of control as these firms are family-owned. Thus, the agency theory and managerial ownership factor help to understand the capital structure of the Ghanaian SME's.

King and Santor (2008) analyzed the impact of family ownership on the profitability and capital structure of 613 Canadian firms for the period from 1998 to 2005. The correlation analysis was

used to test the above relationship. The profitability is represented by ROA and Tobin's Q. It was found that there is a significant positive relationship between profitability and family ownership. On the other hand, there is a significant negative relationship between leverage and family ownership.

Bhayani (2009) studied the impact of leverage ratio on the cost of capital and market value of the Indian cement industry firms for a period from 2001 – 2008. The study also examined the trends of financing pattern and correlation of leverage, cost of capital, price-earnings ratio and firm value. The average eight years ratios of each variable are considered to analyze the data. It was found that there is a positive coefficient of correlation in the case of both low and high levered firms. The levered firms have a higher value as compared to the unlevered firms and the implications of MM proposition stands true in case of leverage value relationship. Also, it was noticed that there is a high instability of leverage ratios in the Indian cement industry.

El-Sayed Ebaid (2009) examined the effect of leverage on the profitability of 64 non-financial firms listed on the Egyptian stock exchange for the period from 1997 to 2005. The profitability is represented by ROA, ROE and gross profit margin. The multiple regression models were adopted to test the above relationship. It was found that there is no significant relationship between leverage and profitability of the Egyptian firms.

Salehi and Biglar (2009) studied the impact of leverage on the profitability of 117 Iranian firms listed on the Tehran stock exchange for the period from 2002 to 2007. The profitability is measured by ROE, ROI, operating margin and profit margin before tax. The correlation analysis was adopted to test the above relationship. The leverage ratio is measured in terms of the book, market and adjusted value. It was found that there is a significant negative relationship between leverage and profitability of the Iranian firms.

Nazir and Afza (2009) examined the determinants of operating liquidity of 132 Pakistani manufacturing firms listed on the Karachi stock exchange for the period from 2004 to 2007. The panel data regression method was adopted to analyze the liquidity determinants. It was found that there is a significant relationship between leverage and operating liquidity of the firm. Other

determining factors include operating cycle, growth rate, size, ROA, Tobin's Q and industry classification of the firm.

Olufunso *et al.,* **(2010)** investigated the impact of debt usage on the profitability of 119 SME's firms in South Africa for a period between 2005 -2006. It was found that the profitability of the SME's is negatively related to the usage of the debt. Also, the study reveals that the access of debt is difficult for the SME's from commercial banks. Some measures have been given to improve the debt accessibility and to minimize the cost of capital, which includes low interest rates and awareness and training programs by the banks for the owners of SME's. These SME's are mainly in the business of food processing, metal fabrication and clothing.

Obert and Olawale (2010) studied the impact of debt usage on the profitability of 400 small manufacturing firms in Zimbabwe. A regression approach was employed to study the above relationship. It was found that usage of debt has a negative impact on the profitability of small manufacturing firms in Zimbabwe. The study further gives certain measures like tax incentives and equity financing to improve the financial performance of the firm. Finally, the results contradict with the MM approach which is the base of this analysis.

Vyas (2010) examined the impact of leverage on the profitability of MRF Ltd for a period from 1999 to 2008. The study also examined the source of raising long-term finance and the leverage practices of the firm. The Pearson's coefficient of correlation method was used to measure the degree of association between the leverage and profitability i.e. earnings per share of the firm. It was found that leverage is not utilized effectively for improving the profitability of the firm. Also, the finding reveals that the firm is using a conservative approach in utilizing the debt of the firm.

Slim and Fathi (2010) studied the impact of capital structure on the value of 403 non-financial US firms for the period from 1995 to 1999. The study also examines the effect of operating leverage and business risk on the value of the firm. The panel data method was employed to test the above relationship. It was found that there is a significant relationship between firm value and financial leverage, when sales of the firm are positively associated with the market portfolio. On the other hand, there is a significant relationship between firm value and both degree of operating leverage

and business risk, when sales of the firm are negatively associated with the market portfolio of the firm.

Chowdhury and Chowdhury (2010) examined the impact of leverage on the value of 77 Bangladeshi firms from four different industries listed on Dhaka stock exchange and Chittangong stock exchange. The study was conducted for the period from 1999 to 2003. The cross-sectional regression analysis and ratio analysis method was adopted to test the above relationship. It was found that there is a significant positive relationship between leverage and firm value. Also, variations in the capital structure affect the wealth of the shareholder's. The value of the firm is also affected by the qualitative factors like management planning, good governance, market reputation, investors' belief, business cycle, etc.

Cheng *et al.,* **(2010)** examined the impact of leverage on the value of 650 A-share Chinese firms listed on the Shenzhen and Shanghai stock exchanges for the period from 2001 to 2006. An advanced panel threshold regression model was adopted to test the above relationship. It was found that there is an inverted-U shaped relationship between leverage and firm value. Initially, the value increases with the increase in debt ratios at a certain point, then it increases at a slower rate and finally, the value starts falling with further increase in the leverage level. The leverage ratio has both positive and negative relationships with the firm value depending upon the percentage of debt levels in the capital structure of the firm. Thus, the finding confirms the existence of a triple threshold effect between leverage and firm value.

Taleb *et al.,* **(2010)** studied the determinants of operating liquidity of 82 Jordanian firms listed on the Amman stock exchange for the period from 2005 to 2007. The multiple regression method was adopted to analyze the data. It was found that there is a significant effect of leverage on the operating liquidity of the firm. The other factors that determine the liquidity of the Jordanian firms include sales growth, ROA and Tobin's Q.

Lin and Chang (2011) investigated the impact of leverage on the value of 196 Taiwanese firms listed on the Taiwan stock exchange for the period from 1993 to 2005. An advanced panel threshold regression model was adopted to test the above relationship. It was found that the firm value increases with an increasing rate when the leverage level is less than 9.86 percent, then it

increases at a slower rate when the leverage level is between 9.86 and 33.3 percentage level and finally, the value starts falling when the leverage level crosses the threshold of 33.3 percent. There is no relationship between leverage ratio and firm value, when debt level crosses the mark of 33.3 percent. Thus, the finding confirms the implications of the trade-off theory model.

Cheng and Tzeng (2011) studied the impact of financial leverage on the value of 645 Taiwanese firms listed on the Taiwan stock exchange for the period from 2000 to 2009. The generalized method of moment (GMM) was adopted to test the leverage-value relationship. It was found that there is a significant positive relationship between financial leverage and firm value. The value of the levered firm is more than the value of the unlevered firm, when there is no probability of bankruptcy costs. Also, the positive impact of leverage on the firm's value is affected by the financial quality or credit rating of the firms.

Gill *et al.,* **(2011)** examined the impact of leverage on the profitability of 272 American manufacturing and service firms listed on the New York stock exchange for the period from 2005 to 2007. The regression method was adopted to test the above relationship. It was found that there is a significant positive relationship between leverage and profitability in both the US service and manufacturing industries. The leverage is denoted by short-term debt ratio, long-term debt ratio and the total debt ratio of the firm.

Azhagaiah and Gavoury (2011) studied the impact of leverage on the profitability of 102 Indian information technology (IT) firms for the period from 1999 to 2006. The regression analysis and ratio analysis method was employed to test the above relationship. It was found that there is a significant negative relationship between leverage and profitability of the firm. The profitability is represented by return on assets (ROA) and return on capital employed (ROCE). Thus, any rise in the debt usage will reduce the net profits of the Indian IT firms.

Huang *et al.,* **(2011)** examined the effect of ownership structure on the capital structure of Chinese listed firms. The factors considered for the study include state ownership, institutional ownership and default risk. It was found that there is no significant relationship between leverage and both state and institutional ownerships. However, the default risk affects the leverage of the Chinese

firms. Further, the study reveals that there is a positive effect of the state and institutional ownerships on the leverage of the high-levered Chinese firms.

Gill (2011) studied the determinants of operating liquidity of 166 Canadian manufacturing firms listed on the Toronto stock exchange for the period from 2008 to 2011. The panel data method was adopted to analyze the data. It was found that there is a significant relationship between leverage and operating liquidity of the Canadian firms. Other factors that affect the liquidity include operating cycle, ROA, growth rate and firm size.

Zubairi (2011) examined the impact of leverage and operating liquidity on the profitability of Automobile firms operating in the Pakistan. The operating liquidity is measured by the current ratio of the firm. The pooled data regression method was adopted to test the above relationship. It was found that there is a significant positive relationship between profitability and both leverage and operating liquidity of the firm. The firm size is positively and business risk is negatively correlated with the profitability of the Pakistani firms.

Ogbulu and Emeni (2012) investigated the impact of leverage on the value of 124 Nigerian firms listed on the Nigerian stock exchange. The ordinary least squares (OLS) method was employed to test the above relationship. It was found that there is a significant positive relationship between long-term debt and firm value. On the other hand, there is no relationship between equity and the value of the firm. Thus, the study proposes a greater proportion of long-term debt in the total capital of the firm, as it increases the value of the firm.

Pouraghajan *et al.,* **(2012)** studied the impact of leverage on the profitability of 400 Tehranian firms listed on the Tehran stock exchange for the period from 2006 to 2010. The sample size consists of 400 firms from 12 different industries. The profitability is denoted by ROE and ROA. The multiple regression models were adopted to test the above relationship. It was found that there is a significant negative relationship between leverage and profitability of the Tehranian firms.

Muritala (2012) investigated the relationship between leverage and profitability of 10 Nigerian firms for the period from 2006 to 2010. The profitability is denoted by ROA and ROE. The panel least square regression method was adopted to test the above relationship. It was found that there is

a significant negative relationship between leverage and ROE. On the other hand, there is a significant positive relationship between leverage and ROA of the Nigerian firms.

Salim and Yadav (2012) studied the impact of leverage on the profitability of 237 Malaysian firms listed on the Bursa stock exchange for the period from 1995 to 2011. The profitability is measured by ROA, ROE, Tobin' Q and EPS. The panel data regression method was adopted to analyze the leverage-profitability relationship. It was found that there is a significant negative relationship between leverage and profitability measures like ROA, ROE and EPS. On the other hand, there is a significant positive relationship between leverage and Tobin's Q score of the Malaysian firms.

Chinaemerem and Anthony (2012) investigated the impact of leverage on the financial performance parameters of the firms like ROA and ROE. The sample size consists of 30 non-financial Nigerian firms listed on the Nigerian stock exchange for the period from 2004 to 2010. The panel data regression model was adopted to test the above relationship. It was found that there is a significant negative relationship between leverage and both ROA and ROE of the Nigerian firms. The results support the agency cost theory model.

Saarani and Shahadan (2012) studied the determinants of operating liquidity of 50 Malaysian firms for the period from 2006 to 2008. The partial least square method was adopted to analyze the data. It was found that the factors like growth, profitability, debt, size and industry affect the operating liquidity of the firm. Thus, leverage determines the working capital requirements of the Malaysian firms.

Palombini and Nakamura (2012) investigated the determinants of operating liquidity of 2,976 Brazilian firms for the period from 2001 to 2008. The panel data method was adopted to analyze the working capital determinants. It was found that there is a significant negative relationship between leverage and operating liquidity of the firm. The other factors like growth rate and size also affect the working capital requirements of the Brazilian firms.

Mahesh and Daddikar (2013) examined the impact of capital gearing on the value of five Indian firms operating in the Indian transport and logistics sector. The study was conducted for the period

from 2001 to 2012. The firms were listed on the Bombay stock exchange (BSE) and the study uses secondary data for the research. The correlation analysis and regression method was adopted to test the above relationship. It was found that there is no significant correlation between capital gearing and the value of the firm. However, the qualitative factors like recession, competition, industry and government policies do affect the firm's leverage.

Goyal (2013) studied the impact of leverage on the profitability of Indian public sector banks listed on the national stock exchange for the period from 2008 to 2012. The regression analysis method was adopted to test the above relationship. The profitability is represented by ROA, ROE and EPS. It was found that there is a positive correlation between the short-term debt ratio and profitability. On the other hand, there is a negative correlation between profitability and both long-term and total debt ratio.

Olokoyo (2013) examined the impact of leverage on the profitability of 101 Nigerian firms for the period from 2003 to 2007. The profitability is represented by ROA and Tobin's Q. The panel data fixed effects regression method was adopted to test the above relationship. It was found that there is a significant positive relationship between leverage and Tobin' Q. On the other hand, there is a significant negative relationship between leverage and ROA of the Nigerian firms.

Ahmed Sheikh and Wang (2013) investigated the impact of leverage on the profitability of non-financial firms operating in Pakistan for the period from 2004 to 2009. The profitability is represented by ROA and market to book ratio. The panel data fixed effects regression method was adopted to test the above relationship. It was found that there is a significant negative relationship between leverage and profitability. However, the relationship between short-term debt ratio and market to book ratio is not significant.

Ganguli (2013) examined the relationship between leverage and ownership structure of 81 non-financial Indian firms from different industries listed on the national stock exchange for the period from 2004 to 2009. The regression method was employed to test the above relationship. It was found that there is a significant positive relationship between leverage and concentrated shareholding. On the other hand, there is a significant negative relationship between leverage and

diffuseness of shareholding. Thus, ownership structure determines the capital structure of the Indian firms.

Naser *et al.,* **(2013)** investigated the determinants of operating liquidity of firms listed on the Abu Dhabi stock exchange. The operating liquidity is measured by cash conversion cycle. It was found that there is a significant relationship between leverage and cash conversion cycle. Other factors that determine the operating liquidity of the firms include sales growth and size of the firm.

Twairesh (2014) studied the impact of leverage on the profitability of 74 non-financial firms operating in Saudi Arabia for the period from 2004 to 2012. The profitability is denoted by ROA and ROE. The panel data method was adopted to test the above relationship. It was found that there is a significant negative relationship between leverage and ROA. On the other hand, ROE is only affected by the long-term debt ratio of the firms.

Quang and Xin (2014) examined the impact of capital structure and ownership structure on the profitability of 134 non-financial Vietnamese firms for the period from 2009 to 2012. The profitability is measured by ROA and ROE. The multiple regression method was adopted to test the above relationship. It was found that there is a significant negative relationship between leverage and profitability. On the other hand, there is no significant relationship between ownership structure and profitability of the Vietnamese firms.

Mireku *et al.,* **(2014)** studied the impact of leverage on the profitability of 15 non-financial firms listed on the Ghana stock exchange for the period from 2002 to 2007. The leverage ratio is calculated on both book value and market value basis. The profitability is represented by ROE, ROI, operating margin and net profit margin. The correlation analysis was adopted to test the above relationship. It was found that there is a significant negative relationship between leverage and profitability. Also, the study reveals that there is a strong association of leverage calculated on market value basis with the profitability as compared to leverage calculated on a book value basis. Thus, Ghanaian firms should use less debt in order to maximize their profits.

Ramadan and Ramadan (2015) examined the impact of leverage on the profitability of 72 industrial firms listed on Amman stock exchange for the period from 2005 to 2013. The

profitability is measured by return on asset ratio (ROA). The unbalanced cross sectional pooled ordinary least square (OLS) regression model was adopted to test the above relationship. It was found that there is a significant negative relationship between leverage and ROA. Thus, the results are consistent with the implications of the pecking order theory.

2.4 CONCLUSION AND RESEARCH GAPS

This chapter studied the literature available on capital structure theories and empirical studies pertaining to the capital structure issues. The key capital structure theories that were studied in the past include Modigliani and miller theory, trade-off theory, pecking order theory and the agency cost theory. The empirical studies related to the capital structure cover the various researches that have been conducted in the past in different parts of the world. The majority of empirical evidences include studies on capital structure determinants, the impact of leverage on the firm's value, the effect of leverage on the financial performance of the firm and other concerns. The researchers from across the globe have made their significant contributions to the literature of the capital structure.

The current review of the empirical studies provides various useful evidences. The key determinants of capital structure that are studied in the past include firm specific factors like size, tangibility, growth rate, non-debt tax shield and profitability. The large firms prefer long-term debt, whereas small firms prefer short-term debt. The macro-economic factors of the country like GDP, inflation also affect the leverage decisions of the firm. The implications of Trade-off, pecking order and agency cost theory are clearly evident from different studies conducted across the globe. Some studies support a particular theory, while few are in favor of other theories. There is no universal applicability of single capital structure theory. The panel data regression method and ratio analysis was the most used techniques in determining the variables that affect the capital structure of the firm. The advantage of panel data method is that it considers both the time series and cross-sectional data.

The area of capital structure research has been enlarged in the past. There are various factors that are considered, while taking capital structure decisions. The various studies conducted in the past defined capital structure mix as a function of cost minimization, source of fund and value

maximization of the firm. The empirical framework assumed firm value as the summation of equity market value and book value of its debt. Anand et al., (1999) examined the various measures of the firm value. The leverage decisions are also affected by the cross-country factors like institutional and legal framework of the country. The corporate governance variables like ownership shareholding, number of shareholders affect the capital structure of the firm. Garg (2007 and 2008) examined the significance of corporate governance factors on the performance of the firm. The differences in the leverage measurement impact the results of the analysis because of the differences in accounting practice and time horizon. However, total debt to total assets ratio is the most common replica of the financial leverage.

The speed of adjustment towards target debt ratio is also given due consideration in the past studies. The adjustment rate depends upon the market perfections. The markets in developed countries are better as compared to the markets in developing countries like India. The capital market in India is governed by the imperfections of the unorganized sector and institutions. The qualitative factors like market reputation, competition, business cycles also affect the capital structure decisions of the firm. The empirical studies provide the directions for the future research. The recent global financial crisis of 2008 has once again reveals the significance of leverage mix for firms across the different industries.

Despite, the various numbers of capital structure theories and empirical studies, researchers in corporate finance have not found a benchmark that can provide an optimal capital structure. In other words, there is no universal combination of debt and equity that can maximize the value of the firm. The various efforts made since MM proposition has provided an insight on the capital structure across the world. However, the significance of capital structure in relevance to the Indian manufacturing sector has yet to be established.

The theoretical framework and empirical evidence on the determinants of capital structure are extensively investigated in the developed countries, while little evidences are available from developing countries like India. The present study tries to fill these research gaps by examining the traditional micro and macro variables that affect the capital structure decisions of the firm in the context of the Indian manufacturing sector. Similarly, the most significant theories of capital structure, i.e. trade-off theory and pecking order theory are extensively tested in the developed

countries, while few studies are available from developing countries like India. The present study will further fill these gaps by testing the implications of trade-off and pecking order theory in the Indian manufacturing sector. The present study will also fill the research gaps that are related to the relationship of capital structure with the firm value, financial performance, ownership structure and operating liquidity of the firm. The study related to these relationships is confined to the developed countries like US, UK and other major economies of the world. The present study will make an effort to investigate these relationships in the Indian manufacturing sector.

To sum up, empirical evidence provides mixed and contradictory results regarding the determinants of capital structure and its relationship with other financial parameters of the firm. There are very limited studies of capital structure in the Indian manufacturing sector. So, the lack of studies along with the conflicting results acts as motivation to conduct a research along the same lines.

CHAPTER 3

RESEARCH DESIGN

3.1 INTRODUCTION

The capital structure decision is one of the significant aspects of the financial management. One of the important concerns during the financial decision making is to deal with the determination of an optimal capital structure of the firm. The chief financial officer (CFO) of a firm has to analyze the merits and demerits of various sources of long term funds before selecting the best one, keeping in mind that optimal capital mix which minimizes the overall cost of capital and maximizes the value of the firm.

The main purpose of this study is to empirically examine the determinants of capital structure of the selected Indian manufacturing firms. The study investigates whether firm specific variables and macro-economic variables affect the capital structure of the selected Indian manufacturing firms. The study also examines the relationship of leverage mix with the other financial parameters of the firm. A number of studies have been conducted in the past related to this issue and as presented in the previous chapter of the literature review. However, ample work has been done in the past, but there are not sufficient studies related to capital structure of the Indian manufacturing sector. Also, the results of empirical studies are mixed and contradictory in explaining the leverage determinants and their relationship behaviors. Thus, the research related to capital structure of the Indian manufacturing firms demands more attention and exploration.

The role of developing economies like India has become significant in the world economy as India is one of the fastest growing markets of the world. It has generated the research interest of many practitioners and academicians of the world. So, it becomes necessary to study all those factors which affect the financial decision making of the firms operating in the Indian manufacturing sector. As, previous results are conflicting, it is essential to accept or reject all those factors which affects the leverage decision of the developed countries. The recent financial crisis of 2008 has once again reveals the significance of capital structure and its impact on the firm. Any misbalance

in the leverage mix can lead to the dissolution of the firm. Thus, this study will contribute to the existing literature and will provide a platform that will be useful for the researchers in the field of corporate finance. Further, it will help the managers in developing effective leverage management policies.

3.2 OBJECTIVES OF THE STUDY

The title of the present study is **"Determinants of Capital Structure: An Empirical Evaluation of Indian Firms"**. The primary objective of the study is to identify the key determinants of capital structure in the selected Indian manufacturing firms and provide empirical evidence. As such, it requires studying various conventional measures and establishing its relationship with the leverage value of the Indian manufacturing firms. Further, it's become important to make a clear statement of the various objectives of the study. This is particularly important to ensure that focus on the study is not lost at any stage of the research. Following are the broad objectives of the present study:

1. To empirically analyze the key determinants of capital structure in the selected Indian manufacturing firms covering both micro-economic or firm specific factors as well as macro-economic factors.
2. To validate which theory propositions are more applicable in the Indian manufacturing sector scenario, i.e. trade-off theory or pecking order theory.
3. To analyze the trends of capital structure in the selected Indian manufacturing firms.
4. To examine empirically the impact of capital structure mix on the firm value of the selected Indian manufacturing firms.
5. To empirically analyze the effect of ownership structure on the capital structure of the selected Indian manufacturing firms.
6. To examine empirically the impact of capital structure mix on the financial performance of the selected Indian manufacturing firms.
7. To empirically analyze the effect of capital structure mix on the operating liquidity of the firm; and the combined effect of capital structure mix and operating liquidity on the financial performance of the selected Indian manufacturing firms.

3.3 RESEARCH QUESTIONS

This study is primarily intended to examine empirically the determinants of capital structure in the selected Indian manufacturing firms. It further aims to study the suitability of capital structure theories for the Indian manufacturing sector. Globalization leads to the opening of the Indian economy and results in improved micro-economic and macro-economic factors of the country. Alam and Lee (2014) considered both firm specific and country specific variables to study the determinants. These factors, along with the firm leverage are empirically examined and analyzed to answer following research questions in the Indian manufacturing sector:-

1. Whether firm specific or micro-economic variables and macro-economic variables of the country determine the capital structure of the selected Indian manufacturing firms?
2. Whether capital structure theories like Trade off theory (TOT) or Pecking order theory (POT) are applicable to the firms operating in the Indian manufacturing sector?
3. Do Indian manufacturing firms prefer debt financing or equity financing? What are there past leverage level trends?
4. Does a statistical relationship between leverage level and the value of the firm exist, and if it does, how much of the deviation in the value of the firm can be explained by the leverage?
5. Does the ownership structure of the manufacturing firm determine its capital structure?
6. Does a statistical relationship between leverage level and the financial performance of the firm exist, and if it does, how much of the deviation in the financial performance of the firm can be explained by the leverage?
7. Does a statistical relationship between leverage level and the operating liquidity of the firm exist, and if it does, how much of the deviation in the operating liquidity of the firm can be explained by the leverage? Also, what is the combined effect of operating liquidity and financial leverage on the financial performance of the selected Indian manufacturing firms?

3.4 HYPOTHESES

Based on the research questions, following are the basic assumptions that are developed to carry on the research work based on the topic undertaken:

H_{01} = There is no significant relationship between leverage and both firm specific and macro-economic variables of the selected Indian manufacturing firms.

H_{02} = The propositions of both Trade-off theory and Pecking order theory are not applicable to the selected firms that are operating in the Indian manufacturing sector.

H_{03} = There is no debt in the capital structure of the selected Indian manufacturing firms.

H_{04} = There is no significant relationship between leverage and firm value of the selected Indian manufacturing firms.

H_{05} = There is no significant relationship between ownership structure and leverage of the selected Indian manufacturing firms.

H_{06} = There is no significant relationship between leverage and financial performance of the selected Indian manufacturing firms.

H_{07} = There is no significant relationship between leverage, operating liquidity and financial performance of the selected Indian manufacturing firms.

3.5 SAMPLE SIZE AND DATA SOURCES

The hypotheses have been tested for the period from March 2004 (2003-04 financial year) to March 2013 (2012-13 financial year). The sample size consists of Indian manufacturing firms listed on the Bombay Stock Exchange (BSE). The rationale for choosing this stock exchange was to gather data of the maximum possible number of firms as BSE is the largest stock exchange of India in terms of listings of the firms. In order to finalize the sample size, Prowess database of CMIE (Centre for Monitoring Indian Economy) was used and the following criteria were applied:

1. The sample firms must belong to the Indian manufacturing sector as defined by Prowess database.
2. The firms must be in operation during the period of the study, i.e. 2003-04 to 2012-13.
3. The firms must be listed on BSE throughout the period of ten years, i.e. April 1, 2003 to March 31, 2013.
4. Complete information should be available for all the variables used in this study for a study period of ten years.

The initial size of sample firms was around 3,800 firms. After applying the above filters, with information availability limitation, a sample size of remaining 422 listed Indian manufacturing firms on BSE has been considered as the final sample to be used in this empirical study. The objective of using large sample and a longer study period is to do a meaningful panel data regression analysis and to minimize the measurement error.

Table 3.1 Final Sample Industry Classification

Indian Manufacturing Industry Classification		
Manufacturing Industry	**No. of Firms**	**% of Total Sample**
Chemicals	60	14
Heavy Equipment	53	13
Drugs & pharmaceuticals	38	9
Cement	10	2
Textile	54	13
Machinery	88	21
Automobile & Ancillaries	36	9
Food, Sugar and Beverage	42	10
Paper and Plastics	41	10
Total Sample	**422**	**100**

Source: CMIE Prowess

Table 3.1 presents the industry classification of the selected 422 Indian manufacturing firms. The Machinery industry signifies the major portion of the entire sample with 21% of the total sample followed by Chemicals, Heavy Equipment and Textile industry.

The present study is based entirely on secondary data only. The annual financial standalone results of the firms for the year ended 31 March 2004 to 31 March 2013 have been considered to do this empirical study. The data pertaining to this study has been mainly collected from **Prowess – CMIE database.** The other sources were also considered like annual reports of the companies, directories of stock exchanges, websites of Bombay Stock Exchange (BSE), Reserve Bank of India (RBI) and World Bank. Data for India's macro-economic factors like GDP has been taken from World Development Indicators and for Inflation (WPI Index) from the Office of the Economic Adviser, Ministry of Commerce and Industry, Government of India. The quality of the study depends purely upon the accuracy and reliability of data obtained from the Prowess CMIE database and other information sources.

To analyze the capital structure determinants of selected Indian manufacturing firms and the relationship of leverage with other financial parameters of the firm, E-Views version eight statistical software is used for data analysis and interpretation. This software helps in running various data tests and useful technique like a panel data regression model, which is the research technique of the present study.

3.6 RESEARCH VARIABLES

3.6.1 Capital Structure Ratio or Financial Leverage Variables

The capital structure ratio of the firm is also known as financial leverage or leverage or Capital gearing. It is used as a dependent variable in investigating the determinants of capital structure of the selected Indian manufacturing firms. Various researchers like Venkatesan (1983), Titman and Wessels (1988), Harris and Raviv (1991), Rajan and Zingales (1995), Bhaduri (2002), Bhole and Mahakud (2004), Huang (2006), Rajagopal (2009), Mittal (2011), Mishra (2011), Majumdar (2012), Moyo et al., (2013) have used financial leverage variables in their respective studies. The

financial leverage will be represented with the help of the following variables used in the above studies:

1. **Total Debt to Total Assets (D/A)**: A measure of leverage calculated by dividing Total Debt by Total Assets. It indicates the percentage of total assets that are financed by the total debt. Higher percentage indicates high probability of financial risk and a high level of dependence on debt.

   [D/A = Total Debt ÷ Total Assets]

   Where,

   Total Debt = Short-term debt + Long-term debt.

   Total Assets = Current Assets + Non-current Assets.

2. **Total Debt to Total Capital (D/C)**: A measure of leverage calculated by dividing Total Debt by Total Capital. It indicates that company is more inclined towards debt financing or equity financing. Higher percentage indicates aggressive financing and high level of dependence on debt.

   [D/C = Total Debt ÷ Total Capital]

   Where,

   Total Capital = Total Debt + Total Equity.

   Total Equity = Common Equity + Preferred Equity + Reserves and Surplus + Others, including share warrants and application money.

3. **Total Debt to Total Equity (D/E)**: A measure of leverage calculated by dividing Total Debt by Total Equity. It indicates the proportion of debt and equity in financing company's assets. The higher ratio indicates aggressive financing and high level of dependence on debt.

   [D/E = Total Debt ÷ Total Equity]

3.6.2 Firm Performance Variables

The financial performance of the firm represents various profitability ratios of the firm. It also signifies the growth in the financial performance of the firm. It reveals about the growth prospects

of the firms. Various researchers like Harris and Raviv (1991), Rajan and Zingales (1995), Bhaduri (2002), Wang (2003), Bhole and Mahakud (2004), Pandey (2004), King and Santor (2008), EI-Sayed Ebaid (2009), Nazir and Afza (2009), Momani et al., (2010), Mukherjee and Mahakud (2010), Azhagaiah and Gavoury (2011), Gill (2011), Pouraghajan et al., (2012), Salim and Yadav (2012), Goyal (2013), Olokoyo (2013), Ahmed Sheikh and Wang (2013), Twairesh (2014), Quang and Xin (2014) have used firm performance variables in their respective studies. The financial performance will be represented by the following variables used in the above studies:

1. **EBIT to Total Assets Ratio (EBTA)**: This ratio depicts the efficiency of the firm in earning its operating profit. It is calculated as the ratio of operating profit to total assets of the firm.

   [EBTA = EBIT or Operating Profit ÷ Total Assets]

   Where,

   Earnings before interest and tax (EBIT) or Operating Profit = Total Operating Revenue – Total Operating Expenses.

2. **Return on Assets (ROA)**: This ratio shows that how efficiently the firms use its total assets in generating its net profit. It is calculated by dividing the net income of the firm by its total assets and it is expressed in percentage.

   [ROA = Net Income ÷ Total Assets]

   Where,

   Net Income or Net Profit = Profit after tax (PAT) or Total Income – Total Expenses.

3. **Return on Equity (ROE)**: It reveals how much return a firm is providing to its equity shareholders. It is calculated by dividing the net income of the firm by its total equity and it is expressed in percentage.

   [ROE = Net Income ÷ Total Equity]

4. **Tobin's Q**: It shows the position of the firm market value to its replacement cost. The higher the position better will be the firm performance. It is the ratio of the market value of the firm divided by its total assets.

   [Tobin's Q = Market Value of the Firm ÷ Total Assets]

Where,

Market Value of the Firm = Market Value of Total Equity Capital or Market Capitalization + Market or Book value of total debt, whichever is available.

5. **Market to Book Ratio (M/B)**: It helps the investors to make an investment decision by reflecting the growth prospects of the firm. It helps them to know whether the firm is undervalued or overvalued. It is calculated as the ratio of the market value of equity to its book value.

[M/B = Market Value of Equity ÷ Book Value of Equity or Share Price ÷ Book value per share]

Where,

Market Value of Equity = (Share Price) × (Number of equity shares outstanding).

Book Value of Equity = (Book value per share) × (Number of equity shares outstanding).

3.6.3 Firm Value Variables

The maximization of the firm's value or shareholder's wealth is a long-term objective of the financial management. It is calculated on a particular point of time and represents the aggregate value of the firm. Various researchers like Dhankar and Boora (1996), De Wet (2006), Sharma (2006), Gowda et al., (2006), Carpentier (2006), Aggarwal and Zhao (2007), Bhayani (2009), Slim and Fathi (2010), Chowdhury and Chowdhury (2010), Cheng et al., (2010), Lin and Chang (2011), Cheng and Tzeng (2011), Ogbulu and Emeni (2012), Mahesh and Daddikar (2013) have used firm value variables in their respective studies. The firm value will be represented by the following variables used in the above studies:

1. **Enterprise Value of the Firm (EV)**: It provides a more realistic valuation of the firm as it includes debt in its value calculation and therefore provides the value of the assets of the enterprise. It is more comprehensive than market capitalization approach. It is calculated as follows:

[EV = Market Value of Equity + Total Debt + Preferred Stock – Cash and Cash Equivalents]

2. **Equity Share Price (P)**: The equity share price of the firm listed on the Bombay Stock Exchange (BSE) as a proxy for the firm's value. It provides a signal of the overall strength and condition of the company.

[P = BSE Share Price]

3. **Price to Earnings Ratio (PE)**: It provides an indication of the stock market valuation of the firm in relation to its earning potential. It is calculated as a ratio of equity share price to earnings per share (EPS).

[PE = Equity Share Price ÷ EPS]

Where,

Earnings per share (EPS) = Net Income ÷ Number of equity shares outstanding.

3.6.4 Ownership Structure Variables

The ownership structure plays a significant role in the financial decision making of the firm. The theory of agency cost is based on the ownership structure of the firm, which states that there is a conflict of interest between the different stakeholders of the firm. Various researchers like Wang (2003), Welch (2003), Pandey (2004), Nguyen and Ramachandran (2006), Huang (2006), Biger et al., (2007), Abor (2008), King and Santor (2008), Ravi et al., (2009), Al-Najjar (2011), Huang et al., (2011), Ganguli (2013), Quang and Xin (2014) have used ownership structure variables in their respective studies. The ownership structure of the firm will be represented by the following variables used in the above studies:

1. **Percentage of Promoter Shareholdings (PSH)**

2. **Percentage of Non-Promoter Institutional Shareholdings (NPISH)**

3. **Percentage of Non-Promoter Non-Institutional Shareholdings including Custodians (NPNISH)**

The above shareholding percentages are already calculated in the shareholding pattern of the selected Indian manufacturing firms and it is sourced directly from the CMIE Prowess database.

3.6.5 Operating Liquidity Variables

The capital structure of the firm plays an important role in determining the operating liquidity of the firm. The liquidity helps the firm to meet its daily obligations and to continue its operations smoothly. The operating liquidity and financial leverage affects the financial performance of the firm as both are two sides of the same coin. Various researchers like Nazir and Afza (2009), Taleb et al., (2010), Gill (2011), Zubairi (2011), Saarani and Shahadan (2012), Palombini and Nakamura (2012), Naser et al., (2013) have used operating liquidity variables in their respective studies. The operating liquidity of the firm will be represented by the following variables used in the above studies:

1. **Current Ratio (CR)**: It is the ratio of current assets to current liabilities. It measures the firm's ability to meet its short-term liabilities.

   [CR = Current Assets ÷ Current Liabilities]

2. **Cash Conversion Cycle (CCC)**: It measures the length of the operating cycle of the firm. In other words, it tells by what duration the firm can convert its resource inputs into cash flows. It helps the firm to control its credit policies. It is calculated as follows:

   [CCC = Inventory Days + Debtor Days – Creditor Days]

   Where,

   Inventory Days = Average Inventory ÷ Cost of Goods Sold per day.

   Debtor Days = Average Debtors ÷ Credit Sales per day.

   Creditor Days = Average Creditors ÷ Cost of Goods Sold per day.

3. **Operating Cash Flow Margin (OCFM)**: It measures the efficiency of the firm in converting its sales into cash. The higher ratio indicates the high earning quality of the firm. It is calculated as:

   [OCFM = Operating Cash Flow (OCF) ÷ Net Sales]

Where,

Operating Cash Flow (OCF) = Net Income + Depreciations and Amortization (D&A) + Non-Cash Items + Changes in Working Capital.

Working Capital = Current Assets - Current Liabilities.

Net Sales = Total Sales – Sales Return.

3.6.6 Other Control Variables

The control variables are significant factors that help in determining the capital structure of the selected Indian manufacturing firms. It also helps in testing the relationship of leverage with other financial parameters of the firm. It consists of various firm specific and macro-economic variables. Various researchers like Venkatesan (1983), Titman and Wessels (1988), Harris and Raviv (1991), Chung (1993), Hatfield et al., (1994), Rajan and Zingales (1995), Leland and Toft (1996), Dhankar and Boora (1996), Michaelas et al., (1998), Booth et al., (2001), Fama and French (2002), Bhaduri (2002), Cassar and Holmes (2003), Bhole and Mahakud (2004), Gupta (2004), Pandey (2004), Akhtar (2005), Chen and Strange (2005), De Johannes (2006), Delcoure (2007), Mazur (2007), De Jong et al., (2008), Rajagopal (2009), Frank and Goyal (2009), Abor and Biekpe (2009), Cook and Tang (2010), Mukherjee and Mahakud (2010), Slim and Fathi (2010), Al-Najjar (2011), Mishra (2011), Majumdar (2012), Kouki and Said (2012), Purohit and Khanna (2012), Moyo et al., (2013), Bayrakdaroglu et al., (2013), Quang and Xin (2014) have used various control variables in their respective studies. The various control variables used in the above studies were as follows:

1. **Firm Size (Size)**: The large firms enjoy lower asset volatility, better performance and economies of scale. They generally have easy access to capital markets and good rating for their debts. The firm size is calculated as the natural logarithm of total assets.

   [Firm Size = Log (Total Assets)]

2. **Firm Age (Age)**: The age of the firm is calculated as the number of years of firm operation from the date of its incorporation. The old firms enjoy better credibility and market goodwill.

   [Firm Age = Current Year – Year of Incorporation]

3. **Tangibility or Asset Collateral (Tang)**: The asset tangibility of the firm is the proportion of net fixed assets in total assets. It represents the investment in properties, plants, equipment's and other long term resources. The higher the percentage of fixed assets, higher will be the value of asset collateral.

[Tangibility = Net fixed Assets ÷ Total Assets]

Where,

Net Fixed Assets = Total Fixed Assets – Depreciation and Amortization (D&A).

4. **Non-Debt Tax Shield (NDTS)**: The NDTS is calculated as the ratio of depreciation and amortization (D&A) to total assets. The higher ratio implies the high amount of tax saving from D&A as it is a tax deductible business expense.

[NDTS = D&A ÷ Total Assets]

5. **Business Risk (Risk)**: The business risk of the firm is represented by its operating leverage. The operating leverage shows how effectively the firm has used its fixed operating cost in running its business operations.

[Risk = Operating Leverage = (% Change in EBIT) ÷ (% Change in Net Sales)]

6. **Growth (Gwth)**: The growth rate of the firm is calculated on two basis Total Assets growth rate and Net Sales growth rate on a yearly basis. The high growth rate implies the better performance of the firm.

[Asset Growth Rate (A-Gwth) = (Total Assets$_n^1$ - Total Assets$_n^0$) ÷ (Total Assets$_n^0$)]

[Sales Growth Rate (S-Gwth) = (Net Sales$_n^1$ - Net Sales$_n^0$) ÷ (Net Sales$_n^0$)]

7. **Dividend Payout Ratio (DPO)**: The DPO shows how much dividend is distributed among the equity shareholders from the net income of the firm. It is the ratio of dividends paid to net income of the firm.

[DPO = Dividends paid ÷ profit after tax]

8. **Interest Coverage Ratio (ICR)**: The ICR shows the extent of interest expense coverage from the operating profit of the firm. The high ratio implies low financial and default risk. It is calculated as the ratio of EBIT to interest expense.

[ICR = EBIT ÷ Interest Expense]

9. **Cash Flow Coverage Ratio (CFCR)**: The CFCR is the ratio of operating cash flow (OCF) to total debt. The high ratio implies low financial and default risk.

[CFCR = Operating Cash Flow (OCF) ÷ Total Debt]

Where,

Operating Cash Flow (OCF) = Net Income + Depreciations and Amortization (D&A) + Non-Cash Items + Changes in Working Capital.

10. **Inflation (Inflat)**: The inflation rate in India is calculated as a percentage change in wholesale price index (WPI) on a yearly basis. It is one of the significant macro-economic factors of the country. It is calculated as follows:

[Inflation Rate = $(WPI_n^1 - WPI_n^0) \div (WPI_n^0)$]

11. **Gross Domestic Product (GDP)**: The GDP growth rate in India is calculated as a percentage change in gross domestic product (GDP) of the country on a yearly basis. It is one of the significant macro-economic factors and represents the economic development of the country.

[GDP Growth Rate = $(GDP_n^1 - GDP_n^0) \div (GDP_n^0)$]

12. **Asset Turnover (Turnover)**: It is the ratio of net sales to total assets of the firm. It shows that how efficiently the assets of the firm have been utilized in generating its sales.

[Turnover = Net Sales ÷ Total Assets]

13. **Uniqueness (Unique)**: The firm's uniqueness is represented by the ratio of sales and distribution expense (S&D) to net sales. The high ratio implies that high level of sales and distribution expenditure is incurred by the firm to create a unique image in the market for its products and services.

[Uniqueness = S&D Expense ÷ Net Sales]

14. **Industry Practice or Classification (Indty)**: The industry practices or benchmarks provide the platform to the firms for setting their own individual practices. Any firm belongs to a particular industry group adapts the practices of that group to carry on its operations. The industry classification will be represented by the industry median debt ratio and it will be calculated for each of the industry groups separately as shown in the Table 3.1. Thus, each firm will represent the industry median debt ratio of the industry belonging to its group.

[Industry Classification = Industry Median Debt Ratio]

Thus, all the above research variables will be used respectively to test the research hypotheses and their findings will be presented in Chapter 4 and Chapter 5 of the present study.

Table 3.2 provides the summary of the above research variables:

Table 3.2 Research Variables

Summary			
S.No	**Variables**	**Formula**	**Symbol**
1	Total Debt to Total Assets	Total Debt ÷ Total Assets	D/A
2	Total Debt to Total Capital	Total Debt ÷ Total Capital	D/C
3	Total Debt to Total Equity	Total Debt ÷ Total Equity	D/E
4	EBIT to Total Assets	EBIT or Operating Profit ÷ Total Assets	EBTA
5	Return on Assets	Net Income ÷ Total Assets	ROA
6	Return on Equity	Net Income ÷ Total Equity	ROE
7	Tobin's Q	Market Value of the Firm ÷ Total Assets	Tobin's Q
8	Market to Book Ratio	Share Price ÷ Book value per share	M/B
9	Enterprise Value	Market Value of Equity + Total Debt + Preferred Stock – Cash and Cash Equivalents	EV
10	Equity Share Price	BSE Share Price	P
11	Price to Earnings Ratio	Equity Share Price ÷ EPS	PE

12	PSH	Percentage of Promoter Shareholdings	PSH
13	NPISH	Percentage of Non-Promoter Institutional Shareholdings	NPISH
14	NPNISH	Percentage of Non-Promoter Non-Institutional Shareholdings including Custodians	NPNISH
15	Current Ratio	Current Assets ÷ Current Liabilities	CR
16	Cash Conversion Cycle	Inventory Days + Debtor Days – Creditor Days	CCC
17	Operating Cash Flow Margin	Operating Cash Flow (OCF) ÷ Net Sales	OCFM
18	Firm Size	Log (Total Assets)	Size
19	Firm Age	Current Year – Year of Incorporation	Age
20	Tangibility	Net fixed Assets ÷ Total Assets	Tang
21	Non-Debt Tax Shield	D&A ÷ Total Assets	NDTS
22	Business Risk	% Change in EBIT ÷ % Change in Net Sales	Risk
23	Asset Growth Rate	$(\text{Total Assets}_n^1 - \text{Total Assets}_n^0) \div (\text{Total Assets}_n^0)$	A-Gwth
24	Sales Growth Rate	$(\text{Net Sales}_n^1 - \text{Net Sales}_n^0) \div (\text{Net Sales}_n^0)$	S-Gwth
25	Dividend Payout Ratio	Dividends paid ÷ profit after tax	DPO
26	Interest Coverage Ratio	EBIT ÷ Interest Expense	ICR
27	Cash Flow Coverage Ratio	Operating Cash Flow (OCF) ÷ Total Debt	CFCR
28	Inflation	$(WPI_n^1 - WPI_n^0) \div (WPI_n^0)$	Inflat
29	Gross Domestic Product	$(GDP_n^1 - GDP_n^0) \div (GDP_n^0)$	GDP
30	Asset Turnover	Net Sales ÷ Total Assets	Turnover
31	Uniqueness	S&D Expense ÷ Net Sales	Unique
32	Industry Classification	Industry Median Debt Ratio	Indty

Source: Literature Review

3.7 RESEARCH TECHNIQUE

The panel data regression technique was followed under the present study to test the research hypotheses. It is an advanced analytical technique which employs both time-series and cross-sectional data. Since the last decade or so, panel data technique has occupied a central stage in the field of quantitative research. It has become popular among various social and behavioral science

scholars. It has become one of the most practical and advanced practice of literature in Econometrics. The main flaw in the simple regression model is that it is based on the condition that the parameters do not vary across the sample observations. On the other hand, panel data model allows parameters to vary in some fixed or random way through the patterns of the sample data or even from observation to observation basis. The panel data regression technique is discussed in the next section.

3.7.1 Panel Data

A panel data set consists of observations on various individuals, where each individual is measured at several times during the time period of the series. Baltagi (2005) defines panel data as the pooling of observations having both cross-sectional and time series characteristics, over several time periods. The cross-section of individuals consists of countries, households and firms. Therefore, each individual has multiple observations in the sample. In other words, panel data is a two-dimensional data series. Panel data can be balanced or unbalanced. The balanced panel data set is one which has data for the entire time series for all the cross-sectional units. On the other hand, the unbalanced panel data data is one which contains missing individual observations. Adams et al., (2003) applied panel data technique to examine the determinants. The panel data have become a very popular method and there is an increase in the number of studies on this technique. It is widely used in social sciences and econometric analysis as it considers the simultaneous effect of both time series and cross-sectional data, which is better than the traditional cross-sectional or simple time series data sets. Chipalkatti et al., (2007) used panel data method to study the flow of capital to the emerging markets.

3.7.1.1 Merits of Panel Data

The various merits of panel data technique as per Baltagi (2005) were as follows:

1. The panel data technique controls the heterogeneity of individuals by taking into consideration the individual specific variables. In other words, it restricts the heterogeneity of individuals by observing the behavior of other individuals responding in the same pattern. If there is no such control, the outcome of the

analysis would be affected by the individual biasness. Thus, this technique provides more accurate results by having a control on the individual biasness.

2. This technique provides more data variability, information and degrees of freedom. It is more informative in nature. It is less affected by the problem of Multicollinearity because of the presence of cross-sectional aspect, which minimizes the collinearity problem by considering the effect of individual differences. Also, the presence of more data variability and degrees of freedom increases the efficiency of regression outcome.

3. The panel data helps in estimating the effect of dynamic adjustments. The presence of cross-sectional and time series aspects provides an idea of changes in individual behaviors over a period of time. The simple time series or cross-sectional regression was failed to observe this dynamic adjustment of individuals over a period of time. Thus, panel data helps in providing a more accurate estimation of these adjustments.

4. This method helps in observing those effects, which are not possible to detect in the simple cross- section or time series data sets. Further, it helps to develop and study more complicated behavioral models, which are not possible to study under pure cross-section or time series data. For example, the effect of factors like technological advancement, competition and economies of scale can better be controlled by the panel data regression method.

5. The panel data reduces the biasness of the regression outcome that arises from the broad aggregates of individuals. It provides more accuracy in the regression outcome as it considers only the data of individuals observed over several time periods. Thus, this technique improves the results of an empirical analysis.

3.7.1.2 Demerits of Panel Data

The various demerits of panel data technique as per Baltagi (2005) were as follows:

1. The panel data technique can be affected by the design and data collection problems. The problem related to the data collection includes the time and area coverage, non-response, the number of interviews and their gaps, reference period, biasness of relationship and sample selection. This problem is mainly concerned with the primary research data sets. Also, the panel data is a costly method as compared to the pure cross-sectional or time series data methods.

2. This technique can be affected by the measurement errors arising due to wrong responses of interview questions, memory errors, manipulation of the responses, small size, clerical mistakes and influence of the interviewer. Thus, measurement error results in distortion of the regression outcome.

3. The panel data technique can be affected by the problem of sample selection as the sample for analysis cannot be randomly drawn from the population and there is some sort of selection biasness. Further, there is a self-selection of sample due to the coverage and non-response problem. The problem of non-response arises, when the target individuals in the sample do not participate in the sample survey. Also, the time constraint affects the panel data collection because of problems in getting the data of individuals at different time periods. This refers to the problem of attrition, which is the result of losing some of the individuals in every time period.

3.7.2 Panel Data Regression

A panel data model combines the indexing of both cross-sectional and time-series data. In other words, it has a double indexing of variables denoting both individuals and time period. A simple panel data regression equation can be expressed as:

$$Y_{it} = \alpha + \beta X_{it} + u_{it}, \; i = 1,2,3\ldots\ldots, N; \; t = 1,2,3\ldots\ldots, T \qquad \textbf{(3.1)}$$

Where, i refers to the cross-sectional dimension and t refers to the time series dimension. Y_{it} is a dependent variable and α is a scalar constant. β is a regression coefficient and X_{it} is an independent variable on i^{th} cross-section in t^{th} time period on control variables. u_{it} is an error component of the equation which can be expressed in one-way or two-way form. Most of the times, one-way form is widely used in panel data applications and it is presented as:

$$u_{it} = \mu_i + v_{it} \qquad \textbf{(3.2)}$$

Where, μ_i refers to the unobservable individual specific time invariant effect and v_{it} refers to the remainder disturbances, Baltagi (2005).

The two-way form of error component is an addition to the one-way in the sense that it has an additional time specific individual invariant component and can be expressed as:

$$u_{it} = \mu_i + \lambda_t + v_{it} \qquad \textbf{(3.3)}$$

Where, λ_t refer to the time-specific individuals variants like macro-economic conditions, GDP, inflation etc.

The panel data model along with the error component relationship can be further defined as panel data fixed effect model or panel data random effect model. The fixed effect model assumed error component as a fixed constant. On the other hand, the panel data random effect model assumed error component as a result of random variations in the individuals. In case of the fixed effect model, μ_i and λ_t are assumed as fixed constant and the remainder disturbance v_{it} as independent and identically distributed $(0, \sigma_v^2)$. X_{it} are presumed to be independent of v_{it} for all i and t. In the random effect model, μ_i and λ_t are assumed as random variant and X_{it} along μ_i IID $(0, \sigma^2_\mu)$, λ_t IID $(0, \sigma^2_\lambda)$ and v_{it} IID $(0, \sigma^2_v)$ are presumed to be independent of v_{it} for all i and t, Baltagi (2005).

3.7.3 Types of Panel Data Regression Models

The two most commonly used estimation methods of the panel data regression model are explained in this section. For fixed effect model with one-way error component, the method of least squares dummy variable (LSDV) estimator is explained. On the other hand, for random effect model with one-way error component, the method of generalized least squares (GLS) estimator is presented.

3.7.3.1 Fixed Effect Method or Least Squares Dummy Variable (LSDV) Estimator

The LSDV estimator is used to estimate the coefficients of the fixed effect model with one-way error component. In this model, the time invariant cross-section specific component is assumed to be a fixed constant. The model assumes that the slope coefficients of the regressor do not vary across individuals. In other words, the uniqueness of each individual unit is fixed as constant, when the intercept is moving for each individual along with the slope coefficients.

The panel data equation (3.1) can be expressed in the vector form as:

$$Y=\begin{bmatrix} y_1 \\ y_2 \\ . \\ . \\ . \\ y_N \end{bmatrix}=\alpha+\begin{bmatrix} e \\ 0 \\ . \\ . \\ . \\ 0 \end{bmatrix}\mu_1+\begin{bmatrix} 0 \\ e \\ . \\ . \\ . \\ e \end{bmatrix}\mu_2+.....+\begin{bmatrix} 0 \\ 0 \\ . \\ . \\ . \\ e \end{bmatrix}\mu_N+\beta\begin{bmatrix} x_1 \\ x_2 \\ . \\ . \\ . \\ x_N \end{bmatrix}+\begin{bmatrix} \mu_1 \\ \mu_2 \\ . \\ . \\ . \\ \mu_N \end{bmatrix} \quad \textbf{(3.4)}$$

Where,

$$\underset{Tx1}{y_i}=\begin{bmatrix} y_{i1} \\ y_{i2} \\ . \\ . \\ . \\ y_{iT} \end{bmatrix},\ \underset{Tx1}{X_i}=\begin{pmatrix} x_{1i1} & \cdots & x_{Ki1} \\ \vdots & \ddots & \vdots \\ x_{1iT} & \cdots & x_{KiT} \end{pmatrix}$$

$e_{Tx1}' = (1,1,.....1)$, $u_{itx1}' = (u_{i1}, u_{i2,.....}, u_{iT})$

$E(u_i) = 0$, $E(u_i\ u_i') = \sigma^2 u I_T$, $E(u_i\ u_j') = 0$, if $i \neq j$

I_T is an identity matrix of TxT. The best unbiased linear estimator for the equation (3.4) is the ordinary least squares (OLS) estimator and can be derived by minimizing:

$$\sum_{i=1}^{N} u_i' u_i = \sum_{i=1}^{N}\sum_{t=1}^{T} v_{it}^2 = \sum_{i=1}^{N}\sum_{t=1}^{T} (y_i - e\mu_i - \beta x_i - \alpha)'(y_i - e\mu_i - \beta x_i - \alpha)$$

(3.5)

Subject to a restriction

$$\sum_{i=1}^{N} \mu_i = 0$$

(3.6)

Utilizing the restriction and solving the marginal conditions yield

$$\hat{\alpha} = \bar{y} - \beta' \bar{x}$$

(3.7)

$$v_i = \bar{y}_i - \hat{\alpha} - \beta' \bar{x}_i$$

(3.8)

Where,

$$\bar{y} = \frac{1}{NT}\sum_{i=1}^{N}\sum_{t=1}^{T} y_{it}, \qquad \bar{x} = \frac{1}{NT}\sum_{i=1}^{N}\sum_{t=1}^{T} x_{it},$$

(3.9)

When substituting (3.7) and (3.8) into (3.9) and taking partial derivatives with respect to β, it is obtained as:

$$\hat{\beta} = \left[\sum_{i=1}^{N}\sum_{t=1}^{T}\left(x_{it} - \bar{x}_i\right)\left(x_{it} - \bar{x}_i\right)'\right]^{-1}\left[\sum_{i=1}^{N}\sum_{t=1}^{T}\left(x_{it} - \bar{x}_i\right)\left(y_{it} - \bar{y}_i\right)\right]$$

(3.10)

It is also called as the least squares dummy variable (LSDV) estimator.

3.7.3.2 Random Effect Method or Generalized Least Squares (GLS) Estimator

The GLS estimator is used to estimate the coefficients of the random effect model with one-way error component. This model considers both the time and cross-section dummy as a part of the error component. It is also known as an error component model. The basic panel regression can be described as:

$$Y_{it} = \beta_{1i} + \beta_2 X_{2it} + \beta_3 X_{3it} + \ldots\ldots + \beta_n X_{nit} + u_{it} \quad \textbf{(3.11)}$$

The random model assumed β_{1i} as a random variable and defined as:

$$\beta_{1i} = \beta_1 + e_i \, , \; i = 1,2,\ldots.., N \quad \textbf{(3.12)}$$

Where, e_i is a random variable with zero mean value. By solving equation 3.11 and 3.12, the new equation is derived as follows:

$$Y_{it} = \beta_1 + \beta_2 X_{2it} + \beta_3 X_{3it} + \ldots\ldots + \beta_n X_{nit} + w_{it} \quad \textbf{(3.13)}$$

Where,

$$w_{it} = e_i + u_{it} \quad \textbf{(3.14)}$$

w_{it} is a combined error term and it consists of individual specific error component (e_i) and the combined error component of individual and time (u_{it}). Hence, the random effect model is also called as an error component model because of the presence of this combined error.

The error component model assumptions are:

e_i is IID with $N(0, \sigma_e^2)$, u_{it} is IID with $N(0, \sigma_u^2)$, $E(e_i u_{it}) = 0$ $E(e_i e_j) = 0$ $(i \neq j)$

So, $E(u_{it}u_{is}) = E(u_{it}u_{jt}) = E(u_{it}u_{js}) = 0$ $(i \neq j, t \neq s)$. **(3.15)**

Equation 3.15 depicts that cross-section error components are not correlated with each other and there is no autocorrelation across individuals and time series units. Hence,

$$E(w_{it}) = 0 \quad \textbf{(3.16)}$$

$$\sigma^2 w_{it} = \sigma^2_e + \sigma^2_u \quad \textbf{(3.17)}$$

3.7.3.3 Fixed Effect or Random Effect Model

The selection between fixed effect and random effect model of panel data is an important consideration before applying the regression analysis, as results from both the models can differ significantly. The selection is based on the assumption related to the relationship between the individuals specific error term e_i and X's regressors. If it is assumed that there is no correlation between e_i and X's, then the random effect model is more suitable and vice – versa for the fixed effect model. Various researchers like Judge et al., (1982), Baltagi (2005) have made the following observations for the selection of the panel model:

1. When a sample of the study is based on particular cross-sections and results are limited to those sections only, then the fixed effects panel model is more valid.
2. When the time period of the study is greater than the number of cross-sections, then any method can be applied as per the requirement of the analyst. However, fixed method is comparatively convenient than the random effect model.
3. When the number of cross-sections is greater than the time period of the study, then the fixed method is applied, when cross-sections are not randomly obtained from the population. On the other hand, random method is applied, when cross-sections are randomly drawn from the population.

Apart from these findings, a test was developed by the Hausman (1978) that can be used to make a choice between the fixed and random effect panel model. The present study will apply Hausman test criteria to make a selection between the fixed and random effect panel model. This test is

based on the assumption that there is no significant difference between the estimates of fixed and random effects.

$H_o : E(u_{it} \mid X_{it}) = 0$ **(3.18)**

If the null hypothesis is rejected, then the panel data fixed effect model is found to be more suitable for the regression analysis.

3.8 TESTS SPECIFICATION

The present empirical study will conduct some initial analysis of the data obtained and other requisite data tests before presenting the results of various models in chapter 4 and chapter 5 of the thesis. These tests will include test for stationarity, test for multicollinearity, test for autocorrelation, descriptive statistics of data and Hausman test to select between fixed effect and random effect model. These tests will help to check the feasibility of the panel data regression model. The description of these tests and their results would be presented in the next chapters. All the above tests and various panel data regression models would be run with the help of E-Views version 8 statistical software. This software helps in the analysis and interpretation of the sample data.

3.9 CONCLUSION

This chapter describes the research methodology of the present study in a detailed manner. It defines the sample size, period of the study, research variables used, research technique and other tests specified for the purpose of meaningful analysis. The panel data regression model will be used under present study to test the hypothesis. Various merits and demerits of panel data method have been discussed in this chapter. Hausman test will help to choose between the fixed and random effect panel data model. Further, this chapter provides the guidelines to the next two chapters for conducting the empirical analysis of the present study. It develops a blueprint of the entire empirical analysis, which helps in the attainment of research objectives.

End Notes:

1. Prowess – CMIE database is a financial database of the Indian companies provided by the Centre for Monitoring Indian Economy Pvt. Ltd. Established in 1976, CMIE is a business information company which provides financial and market data of the Indian companies through paid subscription. The database is updated on a regular basis and annual reports of individual companies are the principal source of this database.

2. E-Views software version 8 is statistical software provided by IHS Global Inc. This software is a collection of various statistical tests and regression models.

3. Bombay Stock Exchange (BSE) is the largest stock exchange of India in terms of listed members, which are around 5,500 trading companies.

CHAPTER 4

AN EMPIRICAL ANALYSIS OF CAPITAL STRUCTURE – DETERMINANTS, TRENDS AND THEORY APPLICABILITY

4.1 INTRODUCTION

The main objective of this chapter is to determine the factors that affect the capital structure decisions of the selected Indian manufacturing firms. Further, the chapter will analyze the leverage trends and which theory of capital structure, i.e. trade-off or pecking order is more appropriate in explaining the capital structure of the Indian manufacturing sector. In other words, this chapter will investigate hypothesis 1, 2 and 3 of the study mentioned in chapter 3. Panel data regression models have been applied to test the capital structure determinants and its theory implications. For trend analysis, the ratio analysis technique has been used to find out the level of debt in the capital structure of the sample Indian manufacturing firms.

The determinants are studied with the help of various firm specific and macro-economic variables. The variables are identified on the basis of literature review and a panel data regression technique was applied to examine the impact of these variables on the leverage of the selected Indian manufacturing firms. For theory validation test, the results of the panel data regression analysis will be matched with the proposed propositions of the trade-off and pecking order theory. The trend analysis will be studied with the help of financial leverage variables. It will help to find out the preference of Indian manufacturing firms towards equity or debt financing.

In this chapter, the empirical findings of the various panel data models are presented. Before presenting the results of various models used in the study, some prerequisite and essential analysis of data was performed to confirm the statistical viability of the models and their sample data. This includes testing for stationarity using Levin-Lin-Chu (LLC) test, descriptive statistics of variables, test for multicollinearity using correlation analysis, autocorrelation check using Durbin-Watson (D-W) statistic and Hausman test to choose between fixed effect and random effect model. Thus,

panel data analysis, ratio analysis and all other essential tests will be performed with the help of E-Views version eight statistical software to present the empirical findings of the current study.

4.2 TEST FOR STATIONARITY

The test for stationarity in a data set is a test to check the presence of unit roots in a given data series. If a data set has a unit root, it means that it is a non-stationary series. A stationary time series is one which moves around a constant mean value. The data set used in the present study is panel in nature. Hence, the study adopts the panel data unit root test advocated by Levin, Lin and Chu (2002). The test will present the results of both individual effects and individual effects with trend. In other words, results with trend and without trend. If data is found to be non-stationary, then the series will be differentiated to further test for stationarity.

4.2.1 Levin-Lin-Chu (LLC) Test

The LLC test for panel unit root is a first unit root test developed for panel data and presented by Levin, Lin and Chu in 2002. It is based on Augmented Dickey-Fuller (ADF) test with different lag lengths across the units of the panel. This test can use for both small and large panel data sets.

The traditional ADF test equation can be expressed as follows:

$$\Delta X_{i,t} = \alpha_i + \beta_i X_{i,t-1} + \gamma_i t + \sum_{j=1}^{k} \theta_{ij} \Delta X_{i,t-j} + \varepsilon_{i,t} \qquad \textbf{(4.1)}$$

In equation 4.1, the unit root null hypothesis of $\beta_i = 0$ is tested against the alternative hypothesis $\beta_i < 0$. The alternative hypothesis agrees with the stationarity of data ($X_{i,\ t}$). The test statistic is presented as $t_{\beta i} = \beta_i' / se(\beta_i')$, where β_i' is the OLS estimate and $se(\beta_i')$ is the standard error. The problem with ADF is that it reveals low power of the data under stationary process. On the other hand, LLC panel data version of the ADF test restricts β_i' by keeping it identical on the basis of data individuality and increase the power of the data series. LLC model can be expressed as follows:

$$\Delta X_{i,t} = \alpha_i + \beta X_{i,t-1} + \gamma_i t + \sum_{j=1}^{k} \theta_{ij} \Delta X_{i,t-j} + \varepsilon_{i,t} \quad \textbf{(4.2)}$$

In equation 4.2, the panel unit root null hypothesis $\beta_1 = \beta_2 = \ldots\ldots = \beta = 0$ is tested against the alternative hypothesis $\beta_1 = \beta_2 = \ldots\ldots = \beta < 0$. LLC assumes cross-sectional independence and acceptance of alternative hypothesis assures that data is free from the unit root.

Table 4.1 Results of LLC Panel Unit Root Test

	No Trend		Trend	
Variables	**Statistics**	**p-value**	**Statistics**	**p-value**
D/A	-34.962	0.000	-37.009	0.000
D/C	-35.552	0.000	-37.324	0.000
D/E	-41.695	0.000	-34.972	0.000
Size	-24.731	0.000	-34.703	0.000
Age	-95.928	0.000	-98.024	0.000
Tang	-33.611	0.000	-31.394	0.000
A-Gwth	-87.491	0.000	-82.060	0.000
EBTA	-42.065	0.000	-46.715	0.000
DPO	-33.404	0.000	-37.396	0.000
Risk	-392.939	0.000	-693.856	0.000
NDTS	-41.833	0.000	-41.944	0.000
CR	-37.221	0.000	-95.468	0.000
Unique	-94.324	0.000	-39.018	0.000
ICR	-152.893	0.000	-113.831	0.000
CFCR	-261.290	0.000	-336.204	0.000
Indty	-21.876	0.000	-29.695	0.000
Inflat	-52.282	0.000	-80.586	0.000
GDP	-33.977	0.000	-55.561	0.000

Note: H_0: Non-Stationary or Unit Root

Estimates are statistically significant at 5% and 1% level of significance.

Source: CMIE Prowess, **Statistical Tool:** E-Views 8.

Table 4.1 depicts the results of LLC panel unit root test for all dependent and independent variables covered under this chapter. It shows the results of both when a time trend is excluded (No trend) and when a time trend (Trend) is included. It is evident from the results that all variables are stationary when a time trend is excluded and when a time trend is included. Thus, the series is free from the problem of unit roots.

4.3 EMPIRICAL RESULTS

As discussed earlier, the present study will employ panel data regression models to determine the factors which affect the leverage of the selected Indian manufacturing firms. This section includes descriptive statistics of data, correlation matrix to check the problem of multicollinearity, results of panel data regression models develop to test the Hypothesis 1 and 2, leverage trends of Indian manufacturing firms using ratio analysis (Hypothesis 3), Hausman test results to choose between fixed effect and random effect model and Durbin-Watson (D-W) statistics to check autocorrelation. As a rule, D-W score ranging between 1.5 and 2.5 indicates that the data is free from the problem of autocorrelation and serial correlation.

Prior testing the hypothesis and running panel data models, the sample data was tested for normality and heteroscedasticity. The data have been normalized and standardized by detecting outliers, which helps in solving the problem of heteroscedasticity.

4.3.1 Descriptive Statistics

Table 4.2 Descriptive Statistics of Variables

Variables	Mean	Median	Maximum	Minimum	Std. Dev.
D/A	0.290	0.212	25.026	0.000	1.031
D/C	0.447	0.404	27.000	0.000	1.083
D/E	0.810	0.722	4.998	0.000	0.931
Size	7.558	7.490	14.974	0.531	1.899
Age	36.055	28.000	150.000	4.000	21.964

Tang	0.340	0.320	0.981	0.001	0.181
A-Gwth	0.186	0.097	111.778	-0.781	1.794
EBTA	0.103	0.094	2.835	-1.661	0.131
DPO	0.253	0.125	92.000	0.000	1.681
Risk	32.886	21.163	93.120	-70.630	31.551
NDTS	0.034	0.029	0.436	0.000	0.028
CR	2.745	1.886	32.250	0.000	5.389
Unique	0.051	0.035	1.444	0.000	0.056
ICR	73.538	25.519	160.500	0.000	30.699
CFCR	10.609	3.161	135.829	0.000	20.028
Inflat	6.544	6.535	9.562	3.809	1.845
GDP	7.530	8.201	10.260	3.891	2.189

Source: CMIE Prowess, Reserve Bank of India (RBI), World Development Indicators (WDI)

Statistical Tool: E-Views 8

Table 4.2 shows the descriptive statistics of dependent and independent variables of different regression models used in this chapter. The table exhibits that the average debt-equity ratio (D/E) of the selected 422 Indian manufacturing firms is around 0.81x. This leverage ratio is high in proportion and represents a significant level of debt in the capital structure of the Indian manufacturing firms. Similarly, the average D/A and D/C are around 0.29x and 0.45x, which represents that the Indian manufacturing firms are highly dependent on debt to finance their assets and operations. Thus, Indian manufacturing firms face a high level of financial risk.

Further, the size of the firm reveals that most of the sample firms are larger in size and operations. Average age of the sample firms is around 36 years, which shows that sample firms are well developed and enjoys the experience of operations and market accessibility. The average proportion of fixed assets to total assets is around 34%, which depicts that huge investments are made in property, plant and equipment's by the sample firms. This high amount of fixed assets can be used as a collateral against the debt. The average asset growth rate is around 18.60%, which represents the huge deployment of debt capital in the creation of total assets by the sample 422 Indian manufacturing firms.

The average return on total assets (EBTA) is around 10.30% and a good amount of dividends (25.30%) are distributed out of profits by the sample firms. The Indian manufacturing firms face a high level of business risk as represented by the operating leverage of the firms (32.88x). The average depreciation tax shield is around 3.40% and there is a high level of liquidity (2.75x) in the Indian manufacturing firms because of the nature and scale of the operations. The sample firms spend an average 5.10% of sales on marketing and sales to create an image of their products. These firms are cash rich as depicted by the CFCR (10.61x) and ICR (73.54x).

The average GDP growth rate of the Indian economy is around 7.53% for the period from 2004 – 2013. This shows that there is a significant amount of economic development has taken place in India. The average inflation rate of India is about 6.54% over the study period, which reveals the growth of wholesale price index. The standard deviation values represent that there is a significant variation in the sample data which is acceptable for our analysis.

4.3.2 Correlation Analysis of Control Variables

The correlation coefficients show the degree of relationship between the variables. If the value of coefficient correlation is greater than 0.5, it means that there is a high degree of relationship between those variables and the variables suffer with the problem of multicollinearity.

Table 4.3 depicts the correlation matrix of all the independent variables covered under this chapter. It is clear from the matrix that none of the independent variable is highly correlated with the others. Thus, there is no statistically high degree of correlation between the independent variables and the panel regression models are free from the problem of multicollinearity.

Table 4.3 Correlation Matrix of Independent Variables

Variable	Size (V1)	Age (V2)	Tang (V3)	A-Gwth (V4)	EBTA (V5)	DPO (V6)	Risk (V7)	NDTS (V8)	CR (V9)	Unique (V10)	ICR (V11)	CFCR (V12)	Indty (V13)	Inflat (V14)	GDP (V15)
V1	1.000														
V2	0.364	1.000													
V3	-0.117	-0.129	1.000												
V4	0.005	-0.023	-0.044	1.000											
V5	0.162	0.078	-0.176	0.026	1.000										
V6	0.030	0.025	-0.040	-0.002	0.013	1.000									
V7	-0.005	0.008	-0.017	-0.004	-0.032	-0.002	1.000								
V7	-0.180	-0.103	0.379	-0.061	-0.168	-0.015	0.152	1.000							
V9	-0.094	-0.126	-0.043	-0.007	-0.063	-0.016	-0.007	0.019	1.000						
V10	0.133	0.153	-0.061	-0.008	0.106	0.020	-0.005	-0.009	-0.103	1.000					
V11	0.080	0.052	-0.107	0.001	0.090	0.011	-0.002	-0.053	-0.022	0.137	1.000				
V12	0.055	0.047	-0.059	0.003	0.047	0.006	-0.001	-0.023	-0.012	0.041	0.077	1.000			
V13	-0.011	-0.067	0.264	-0.002	-0.117	-0.014	-0.017	0.118	0.067	-0.086	-0.051	-0.037	1.000		
V14	0.095	0.068	-0.028	-0.021	-0.037	-0.004	-0.013	-0.046	0.030	-0.030	0.023	0.046	-0.019	1.000	
V15	-0.099	-0.068	0.047	-0.019	0.033	-0.029	0.009	0.062	-0.017	0.027	-0.025	-0.026	0.024	-0.369	1.000

Source: CMIE Prowess, Reserve Bank of India (RBI), World Development Indicators (WDI)

Statistical Tool: E-Views 8

4.3.3 Hypotheses Testing

The main objective of the study is to examine the determinants of capital structure of 422 selected Indian manufacturing firms (**Hypothesis 1**). The determining variables will cover both firm specific and macroeconomic factors. The data will be analyzed for the period from 2004 to 2013. The panel data regression technique will be adopted to test the capital structure determinants. The study will further test the applicability of trade-off theory and pecking order theory in the context of Indian manufacturing sector (**Hypothesis 2**). The objective is to check which single theory is more suitable in explaining the capital structure of the Indian manufacturing firms. The theory validation test will be done with the help of panel regression models. Results of Hausman tests and Durbin-Watson (D-W) statistics will be presented along with the regression models.

This chapter also covers the **Hypothesis 3**, by analyzing the trends of leverage of the sample Indian manufacturing firms, which will help to know the level of debt in the capital structure of the selected firms.

Following section investigates the hypotheses (1, 2 and 3) and presents their results to achieve objectives of the present study:

4.3.3.1 Hypothesis 1

H_{01}: There is no significant relationship between leverage and both firm specific and macro-economic variables of the selected Indian manufacturing firms.

The main purpose to test this hypothesis is to know the relationship between the leverage and both firm specific and macro-economic variables of the sample firms. In other words, the objective is to examine the key variables which affect the capital structure of the selected Indian manufacturing firms. Based on the result of Hausman test, panel data fixed effects regression model was employed to test the above relationship. D/A, D/C and D/E are used to represent the financial leverage of the sample firms. Therefore, three panel data regression models were developed to test the Hypothesis 1. The three panel regression equations are presented as follows:

Model 1

$$D/A_{nt} = C_n + \beta(Size)_{nt} + \beta_1(Age)_{nt} + \beta_2(Tang)_{nt} + \beta_3(A\text{-}Gwth)_{nt} + \beta_4(EBTA)_{nt} + \beta_5(DPO)_{nt} + \beta_6(Risk)_{nt} + \beta_7(NDTS)_{nt} + \beta_8(CR)_{nt} + \beta_9(Unique)_{nt} + \beta_{10}(ICR)_{nt} + \beta_{11}(CFCR)_{nt} + \beta_{12}(Indty)_{nt} + \beta_{13}(Inflat)_{nt} + \beta_{14}(GDP)_{nt} + U_{nt} \quad \textbf{(4.3)}$$

Model 2

$$D/C_{nt} = C_n + \beta(Size)_{nt} + \beta_1(Age)_{nt} + \beta_2(Tang)_{nt} + \beta_3(A\text{-}Gwth)_{nt} + \beta_4(EBTA)_{nt} + \beta_5(DPO)_{nt} + \beta_6(Risk)_{nt} + \beta_7(NDTS)_{nt} + \beta_8(CR)_{nt} + \beta_9(Unique)_{nt} + \beta_{10}(ICR)_{nt} + \beta_{11}(CFCR)_{nt} + \beta_{12}(Indty)_{nt} + \beta_{13}(Inflat)_{nt} + \beta_{14}(GDP)_{nt} + U_{nt} \quad \textbf{(4.4)}$$

Model 3

$$D/E_{nt} = C_n + \beta(Size)_{nt} + \beta_1(Age)_{nt} + \beta_2(Tang)_{nt} + \beta_3(A\text{-}Gwth)_{nt} + \beta_4(EBTA)_{nt} + \beta_5(DPO)_{nt} + \beta_6(Risk)_{nt} + \beta_7(NDTS)_{nt} + \beta_8(CR)_{nt} + \beta_9(Unique)_{nt} + \beta_{10}(ICR)_{nt} + \beta_{11}(CFCR)_{nt} + \beta_{12}(Indty)_{nt} + \beta_{13}(Inflat)_{nt} + \beta_{14}(GDP)_{nt} + U_{nt} \quad \textbf{(4.5)}$$

Where, C= Constant, U= residual component, n= 1,…,422 and t= 1,…,10.

The empirical results of the above three regression models were presented as follows:

Table 4.4 Empirical Result of Model 1

(Dependent Variable: D/A)

Independent Variables	Coefficient	t-statistic	p-value
Constant	0.500	2.391	0.017
Firm-Specific Variables			
Size	-0.208*	-8.652	0.000
Age	0.030*	5.921	0.000
Tang	0.998*	8.501	0.000
A-Gwth	-0.031*	-5.523	0.000
EBTA	-0.368*	-4.230	0.000
DPO	0.002	0.383	0.702
Risk	-0.000	-0.602	0.548
NDTS	3.161*	6.523	0.000
CR	-0.000	-0.020	0.984
Unique	-1.908*	-6.501	0.000
ICR	0.000	0.606	0.543
CFCR	0.000	0.130	0.897
Indty	0.055	0.738	0.461

Macro-Economic Variables			
Inflat	-0.001	-0.191	0.848
GDP	0.003	0.532	0.595
Model Statistics			
Period	10	**Cross-Sections**	422
Total Panel (Balanced)	4220		
R^2	0.690		
Adjusted R^2	0.654		
F-statistics	19.321		
Prob. (F-statistics)	0.000		
D-W Statistics	1.726		
Hausman Test	**Chi-Sq. (χ2) / p-value**		
	105.315 / 0.000		

**Note: ***Estimate is statistically significant at $p \leq 0.05$

Source: CMIE Prowess, Reserve Bank of India (RBI), World Development Indicators (WDI)

Statistical Tool: E-Views 8

Table 4.4 shows the empirical results of Model 1, where total debt to total assets ratio (D/A) is used as a proxy for financial leverage. The model is regressed at a significance level of 5%. It has been found that size, asset growth rate, profitability (EBTA) and uniqueness are statistically significant and negatively correlated with the leverage of the sample firms.

On the other hand, age, tangibility and non-debt tax shield (NDTS) are statistically significant and positively correlated with the financial leverage of the sample firms. Other variables like DPO, risk, liquidity (CR), ICR, CFCR, industry classification (Indty), inflation and GDP are found to be statistically insignificant. However, risk, liquidity and inflation are not significant, but they are in negative relationship with the leverage of the sample firms. On the other hand, DPO, ICR, CFCR, industry and GDP growth rate are not significant factors, but they are positively correlated with the leverage of the selected firms.

The examination of R-squared and adjusted R-Squared value shows that approximately 69% and 65% of the changes in the financial leverage of sample Indian manufacturing firms can be explained by all the independent variables together. The values of F-statistics exhibit the fit of the relationship model at a significance level of 5%. The Durbin-Watson (D-W) score of 1.726 shows that the model is free from the problem of autocorrelation and serial correlation. The result of the Hausman test rejects the null hypothesis, thereby indicating that fixed effects panel data model or LSDV is preferred over random effects panel data model to run the regression model. Hence, the current model adopts the fixed effects panel data approach to test the required relationship.

Thus, size, age, tangibility, asset growth rate, profitability, non-debt tax shield and uniqueness are the key significant factors that determine the capital structure of the selected 422 Indian manufacturing firms. The large sized, growth-oriented and profitable Indian manufacturing firms had an inverse relationship with the leverage. These profitable firms tend to rely more on the retained earnings to finance their assets, growth and operations. On the other hand, older and more tangible Indian manufacturing firms had a positive relationship with the financial leverage. These firms had huge investments in property, plant and equipment's, can avail more debt at a lower interest cost because of the high collateral value of their fixed assets.

The positive relationship between leverage and NDTS reveals that Indian firms do not consider depreciation tax shields as a substitute for interest tax shields. The macro-economic factors of the country do not affect the leverage of the sample firms. Hence, the financial manager of the Indian manufacturing firms has to consider all these factors before deciding upon the target leverage level.

Table 4.5 Empirical Result of Model 2

(Dependent Variable: D/C)

Independent Variables	Coefficient	t-statistic	p-value
Constant	0.921	3.278	0.001
Firm-Specific Variables			
Size	-0.182	-5.623	0.000
Age	0.063	9.058	0.000
Tang	1.616	10.245	0.000
A-Gwth	-0.039	-5.240	0.000
EBTA	-0.662	-5.663	0.000
DPO	0.003	0.350	0.727
Risk	-0.000	-0.436	0.638
NDTS	1.676	2.573	0.010
CR	-0.003	-0.725	0.468
Unique	-1.474	-3.739	0.000
ICR	0.000	0.516	0.607
CFCR	0.000	0.263	0.793
Indty	0.082	0.820	0.412
Macro-Economic Variables			
Inflat	-0.004	-0.447	0.655
GDP	0.004	0.526	0.599
Model Statistics			
Period	10	**Cross-Sections**	422
Total Panel (Balanced)	4220		
R^2	0.493		
Adjusted R^2	0.435		
F-statistics	8.441		
Prob. (F-statistics)	0.000		

D-W Statistics	1.631
Hausman Test	**Chi-Sq. ($\chi 2$) / p-value**
	117.949 / 0.000

**Note: ***Estimate is statistically significant at $p \leq 0.05$

Source: CMIE Prowess, Reserve Bank of India (RBI), World Development Indicators (WDI)

Statistical Tool: E-Views 8

Table 4.5 shows the empirical results of Model 2, where total debt to total capital ratio (D/C) is used as a proxy for financial leverage. The model is regressed at a significance level of 5%. It has been found that size, asset growth rate, profitability (EBTA) and uniqueness are statistically significant and negatively correlated with the leverage of the sample firms. On the other hand, age, tangibility and non-debt tax shield (NDTS) are statistically significant and positively correlated with the financial leverage of the sample firms.

Other variables like DPO, risk, liquidity (CR), ICR, CFCR, industry classification (Indty), inflation and GDP are found to be statistically insignificant. However, risk, liquidity and inflation are not significant, but they are in negative relationship with the leverage of the sample firms. On the other hand, DPO, ICR, CFCR, industry and GDP growth rate are not significant factors, but they are positively correlated with the leverage of the selected firms.

The examination of R-squared and adjusted R-Squared value shows that approximately 49% and 44% of the changes in the financial leverage of sample Indian manufacturing firms can be explained by all the independent variables together. The values of F-statistics exhibit the fit of the relationship model at a significance level of 5%. The Durbin-Watson (D-W) score of 1.631 shows that the model is free from the problem of autocorrelation and serial correlation. The result of the Hausman test rejects the null hypothesis, thereby indicating that fixed effects panel data model or LSDV is preferred over random effects panel data model to run the regression model. Hence, the current model adopts the fixed effects panel data approach to test the required relationship.

Thus, size, age, tangibility, asset growth rate, profitability, non-debt tax shield and uniqueness are the key significant factors that determine the capital structure of the selected 422 Indian

manufacturing firms. The large sized, growth-oriented and profitable Indian manufacturing firms had an inverse relationship with the leverage. These profitable firms tend to rely more on the retained earnings to finance their assets, growth and operations.

On the other hand, older and more tangible Indian manufacturing firms had a positive relationship with the financial leverage. These firms had huge investments in property, plant and equipment's, can avail more debt at a lower interest cost because of the high collateral value of their fixed assets. The positive relationship between leverage and NDTS reveals that Indian firms do not consider depreciation tax shields as a substitute for interest tax shields. The macro-economic factors of the country do not affect the leverage of the sample firms. Hence, the financial manager of the Indian manufacturing firms has to consider all these factors before deciding upon the target leverage level.

Table 4.6 Empirical Result of Model 3

(Dependent Variable: D/E)

Independent Variables	Coefficient	t-statistic	p-value
Constant	0.634	2.848	0.011
Firm-Specific Variables			
Size	-0.272	-10.632	0.000
Age	0.042	7.613	0.000
Tang	1.207	9.656	0.016
A-Gwth	-0.033	-5.598	0.017
EBTA	-0.230	-2.483	0.013
DPO	0.002	0.330	0.742
Risk	-0.000	-0.556	0.578
NDTS	1.608	3.116	0.005
CR	-0.000	-0.019	0.884
Unique	-1.366	-4.372	0.000
ICR	0.000	0.865	0.386

CFCR	0.000	0.187	0.852
Indty	0.067	0.844	0.431
Macro-Economic Variables			
Inflat	-0.002	-0.313	0.754
GDP	0.002	0.328	0.743
Model Statistics			
Period	10	**Cross-Sections**	422
Total Panel (Balanced)	4220		
R^2	0.569		
Adjusted R^2	0.519		
F-statistics	11.444		
Prob. (F-statistics)	0.000		
D-W Statistics	1.925		
Hausman Test	**Chi-Sq. (χ2) / p-value**		
	103.803 / 0.000		

**Note: ***Estimate is statistically significant at $p \leq 0.05$

Source: CMIE Prowess, Reserve Bank of India (RBI), World Development Indicators (WDI)

Statistical Tool: E-Views 8

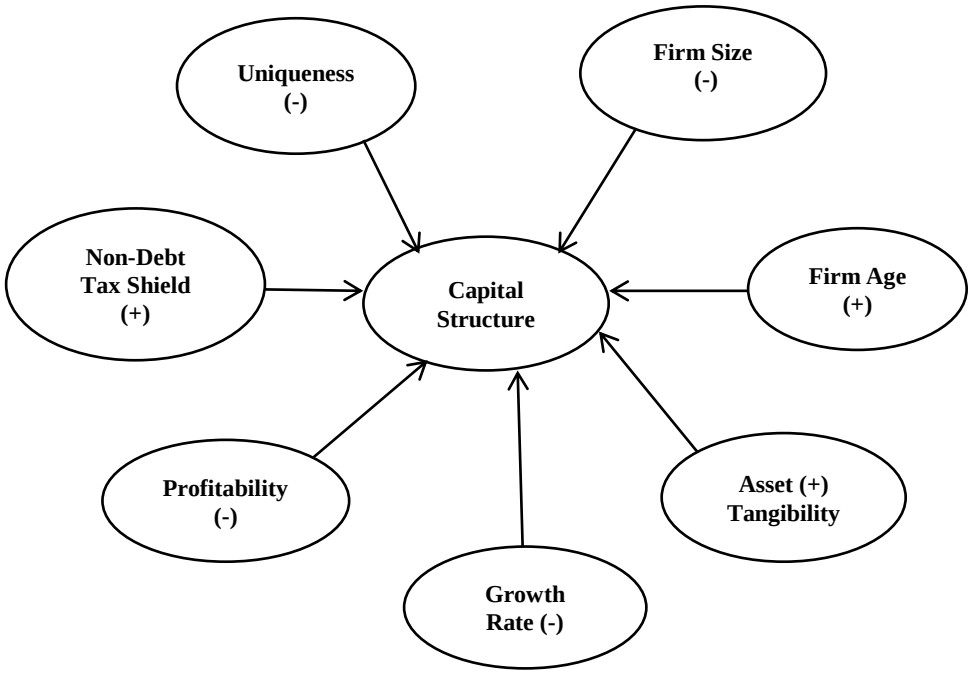
Table 4.6 shows the empirical results of Model 3, where total debt to total equity ratio (D/E) is used as a proxy for financial leverage. The model is regressed at a significance level of 5%. It has been found that size, asset growth rate, profitability (EBTA) and uniqueness are statistically significant and negatively correlated with the leverage of the sample firms. On the other hand, age, tangibility and non-debt tax shield (NDTS) are statistically significant and positively correlated with the financial leverage of the sample firms.

Other variables like DPO, risk, liquidity (CR), ICR, CFCR, industry classification (Indty), inflation and GDP are found to be statistically insignificant. However, risk, liquidity and inflation are not significant, but they are in negative relationship with the leverage of the sample firms. On the other

hand, DPO, ICR, CFCR, industry and GDP growth rate are not significant factors, but they are positively correlated with the leverage of the selected firms.

The examination of R-squared and adjusted R-Squared value shows that approximately 57% and 52% of the changes in the financial leverage of sample Indian manufacturing firms can be explained by all the independent variables together. The values of F-statistics exhibit the fit of the relationship model at a significance level of 5%. The Durbin-Watson (D-W) score of 1.925 shows that the model is free from the problem of autocorrelation and serial correlation. The result of the Hausman test rejects the null hypothesis, thereby indicating that fixed effects panel data model or LSDV is preferred over random effects panel data model to run the regression model. Hence, the current model adopts the fixed effects panel data approach to test the required relationship.

Figure 4.1 Final Determinants of Capital Structure of Indian Manufacturing Firms



Source: Results of Model 1, 2 and 3

The empirical findings of the above three models, reveal that size, age, tangibility, asset growth rate, profitability, non-debt tax shield and uniqueness are the key significant factors that determine the capital structure of the selected 422 Indian manufacturing firms. Figure 4.1 provides the pictorial presentation of the final determinants that affects the capital structure of the sample firms.

These factors have to be considered before deciding upon the target leverage level. Further, it was found that macro-economic factors like GDP, inflation do not affect the leverage of the sample firms. In other words, firm-specific factors determine the leverage of the Indian manufacturing sector. Thus, the null hypothesis is rejected and the factors that determine the leverage of the developed countries also affect the leverage of the selected Indian manufacturing firms.

4.3.3.2 Hypothesis 2

H_{02}: The propositions of both Trade-off theory and Pecking order theory are not applicable to the selected firms that are operating in the Indian manufacturing sector.

Hypothesis 2 analyses whether the implications of the trade-off theory and pecking order theory are applicable to the Indian manufacturing firms. It investigates the propositions of these capital structure theories to know which theory predictions are more applicable to the sample Indian manufacturing firms. The trade-off theory states that an optimum leverage level can be attained by maintaining a balance between the tax shield benefits of debt and associated cost of financial distress. It focused on the debt capital usage till this trade-off can be maintained.

On the other hand, pecking order states that the firms should finance their funds starting from retained earnings, then debt capital and equity as a last resort. It provides a pecking preference of the capital source and do not favor any optimum target level. Retained earnings or internal funds are more preferred over other sources of capital as it is the cheapest source of capital to meet the funding needs of the firms. Thus, each theory of capital structure has its own implications and predictions.

To determine which theory's implications are more validating in the Indian manufacturing sector, i.e. Trade-off vs. Pecking order theory, following are the predictions provided by the above theories in Table 4.7 for some independent variables and its relationship with the financial leverage.

Table 4.7 Trade-off Theory Vs. Pecking Order Theory Predictions

Capital Structure Theory	Independent Variable	Relationship with Financial Leverage	Comments
Trade-off	**Profitability**	Positive	The future cost of bankruptcy is low for profitable firms and tax shield is more valuable for these firms.
Pecking order		Negative	Profitable firms use more retained earnings to finance their current as well as future projects.
Trade-off	**Size**	Positive	The future cost of bankruptcy is lower for large sized firms because of their diversification and less default risk.
Pecking order		Negative	Large sized firms use more retained earnings because of their prolong history of adding retained earnings of their business.
Trade-off	**Tangibility**	Positive	Tangibility enables increased borrowing capacity at a lower interest rate because of the high collateral value of assets.
Pecking order		Negative	Firms with fewer tangible assets suffer informational asymmetries and thus prefer debt over equity when they require external funds.
Trade-off	**Growth**	Negative	Growth increases the future cost of bankruptcy because the firms use more debt to support growth opportunities.
Pecking order		Positive	Firms require additional funds during the growth period and retained earnings alone won't provide sufficient funds to meet the growth requirements. As a result, firms will move to the next preferred source of capital, i.e. debt capital.

Source: Literature Review

To test the predictions of the above theories, three panel data regression models were developed with D/A, D/C and D/E as the dependent variables representing the financial leverage of the firms. The independent variables include profitability (EBTA), size, tangibility and growth rate (A-Gwth) of the firms. As per the findings of the Hausman tests, the panel data fixed effects regression approach was employed to test the above relationship. Thus, the validation of trade-off and pecking order theories for the Indian manufacturing sector will be confirmed on the basis of above predictions and their evaluation with the empirical findings of the panel models. The three panel regression equations are presented as follows:

Model 4

$$D/A_{nt} = C_n + \beta(EBTA)_{nt} + \beta_1(Size)_{nt} + \beta_2(Tang)_{nt} + \beta_3(A\text{-}Gwth)_{nt} + U_{nt} \quad \textbf{(4.6)}$$

Model 5

$$D/C_{nt} = C_n + \beta(EBTA)_{nt} + \beta_1(Size)_{nt} + \beta_2(Tang)_{nt} + \beta_3(A\text{-}Gwth)_{nt} + U_{nt} \quad \textbf{(4.7)}$$

Model 6

$$D/E_{nt} = C_n + \beta(EBTA)_{nt} + \beta_1(Size)_{nt} + \beta_2(Tang)_{nt} + \beta_3(A\text{-}Gwth)_{nt} + U_{nt} \quad \textbf{(4.8)}$$

Where, C= Constant, U= residual component, n= 1,…,422 and t= 1,…,10.

The empirical results of the above three regression models were presented as follows:

Table 4.8 Empirical Result of Model 4

(Dependent Variable: D/A)

Independent Variables	**Coefficient**	**t-statistic**	**p-value**
Constant	0.998	6.879	0.000
EBTA	-0.438	-5.005	0.000
Size	-0.124	-6.957	0.000
Tang	1.124	9.816	0.000
A-Gwth	-0.037	-6.540	0.000
Model Statistics			
Period	10	**Cross-Sections**	422
Total Panel (Balanced)	4220		
R^2	0.679		
Adjusted R^2	0.643		
F-statistics	18.883		
Prob. (F-statistics)	0.000		
D-W Statistics	1.669		
Hausman Test	**Chi-Sq. (χ2) / p-value**		
	66.711 / 0.000		

**Note: ***Estimate is statistically significant at $p \leq 0.05$

Source: CMIE Prowess, **Statistical Tool:** E-Views 8

Table 4.8 shows the empirical results of Model 4, where total debt to total assets ratio (D/A) is used as a proxy for financial leverage. The model is regressed at a significance level of 5%. It has been found that profitability (EBTA), size and growth rate (A-Gwth) are statistically significant and negatively correlated with the leverage of the sample firms. On the other hand, tangibility is statistically significant and positively correlated with the financial leverage of the sample firms. The examination of R-squared and adjusted R-Squared value shows that approximately 68% and 64% of the changes in the financial leverage of sample Indian manufacturing firms can be

explained by all the independent variables together. The values of F-statistics exhibit the fit of the relationship model at a significance level of 5%. The Durbin-Watson (D-W) score of 1.669 shows that the model is free from the problem of autocorrelation and serial correlation. The result of the Hausman test rejects the null hypothesis, thereby indicating that fixed effects panel data model or LSDV is preferred over random effects panel data model to run the regression model. Hence, the current model adopts the fixed effects panel data approach to test the required relationship.

Thus, profitability (EBTA) and size variables support the implications of the pecking order theory, whereas tangibility and growth rate (A-Gwth) validates the predictions of the trade-off theory.

Table 4.9 Empirical Result of Model 5
(Dependent Variable: D/C)

Independent Variables	**Coefficient**	**t-statistic**	**p-value**
Constant	1.198	6.197	0.000
EBTA	-0.725	-6.214	0.000
Size	-0.155	-6.520	0.000
Tang	1.704	11.171	0.000
A-Gwth	-0.042	-5.585	0.000
Model Statistics			
Period	10	**Cross-Sections**	422
Total Panel (Balanced)	4220		
R^2	0.484		
Adjusted R^2	0.426		
F-statistics	8.361		
Prob. (F-statistics)	0.000		
D-W Statistics	1.737		
Hausman Test	**Chi-Sq. (χ2) / p-value**		
	54.541 / 0.000		

**Note: ***Estimate is statistically significant at $p \leq 0.05$

Source: CMIE Prowess, **Statistical Tool:** E-Views 8

Table 4.9 shows the empirical results of Model 5, where total debt to total capital ratio (D/C) is used as a proxy for financial leverage. The model is regressed at a significance level of 5%. It has been found that profitability (EBTA), size and growth rate (A-Gwth) are statistically significant and negatively correlated with the leverage of the sample firms. On the other hand, tangibility is statistically significant and positively correlated with the financial leverage of the sample firms. The examination of R-squared and adjusted R-Squared value shows that approximately 48% and 43% of the changes in the financial leverage of sample Indian manufacturing firms can be explained by all the independent variables together.

The values of F-statistics exhibit the fit of the relationship model at a significance level of 5%. The Durbin-Watson (D-W) score of 1.737 shows that the model is free from the problem of autocorrelation and serial correlation. The result of the Hausman test rejects the null hypothesis, thereby indicating that fixed effects panel data model or LSDV is preferred over random effects panel data model to run the regression model. Hence, the current model adopts the fixed effects panel data approach to test the required relationship.

Thus, profitability (EBTA) and size variables support the implications of the pecking order theory, whereas tangibility and growth rate (A-Gwth) validates the predictions of the trade-off theory.

Table 4.10 Empirical Result of Model 6
(Dependent Variable: D/E)

Independent Variables	Coefficient	t-statistic	p-value
Constant	1.101	7.132	0.037
EBTA	-0.193	-2.078	0.038
Size	-0.114	-5.984	0.000
Tang	0.301	2.469	0.014

A-Gwth	-0.030	-5.078	0.015
Model Statistics			
Period	10	**Cross-Sections**	422
Total Panel (Balanced)	4220		
R^2	0.554		
Adjusted R^2	0.504		
F-statistics	11.098		
Prob. (F-statistics)	0.000		
D-W Statistics	1.819		
Hausman Test	**Chi-Sq. (χ2) / p-value**		
	38.980 / 0.000		

**Note: ***Estimate is statistically significant at $p \leq 0.05$

Source: CMIE Prowess, **Statistical Tool:** E-Views 8

Table 4.10 shows the empirical results of Model 6, where total debt to total equity ratio (D/E) is used as a proxy for financial leverage. The model is regressed at a significance level of 5%. It has been found that profitability (EBTA), size and growth rate (A-Gwth) are statistically significant and negatively correlated with the leverage of the sample firms. On the other hand, tangibility is statistically significant and positively correlated with the financial leverage of the sample firms. The examination of R-squared and adjusted R-Squared value shows that approximately 55% and 50% of the changes in the financial leverage of sample Indian manufacturing firms can be explained by all the independent variables together.

The values of F-statistics exhibit the fit of the relationship model at a significance level of 5%. The Durbin-Watson (D-W) score of 1.819 shows that the model is free from the problem of autocorrelation and serial correlation. The result of the Hausman test rejects the null hypothesis, thereby indicating that fixed effects panel data model or LSDV is preferred over random effects panel data model to run the regression model. Hence, the current model adopts the fixed effects panel data approach to test the required relationship. Thus, profitability (EBTA) and size variables

support the implications of the pecking order theory, whereas tangibility and growth rate (A-Gwth) validates the predictions of the trade-off theory.

Table 4.11 Trade-off Theory Vs. Pecking Order Theory Validation Summary

Independent Variable	Model 4	Model 5	Model 6	Overall	Theory Validation
Profitability (EBTA)	Negative	Negative	Negative	Negative	Pecking Order Theory
Size	Negative	Negative	Negative	Negative	Pecking Order Theory
Tangibility	Positive	Positive	Positive	Positive	Trade-off Theory
Growth (A-Gwth)	Negative	Negative	Negative	Negative	Trade-off Theory

Note: Overall results of panel regression models are matched with the theory's predictions to validate it.

Table 4.11 validates the predictions of both trade-off theory and pecking order theory. Both the theories explain the capital structure of the sample 422 Indian manufacturing firms. There is no single theory, which is more applicable to the Indian manufacturing sector, rather implications of both the theories are equally significant in the context of the Indian manufacturing sector. Each theory of capital structure has its own relevance for the sample firms. The profitability and size variable supports the existence of pecking order theory in Indian context. On the other hand, the tangibility and growth rate variable results are in line with the implications of the trade-off theory. Thus, the null hypothesis is rejected and propositions of both the theories of capital structure exist in the context of the Indian manufacturing sector.

4.3.3.3 Hypothesis 3

H_{03}: There is no debt in the capital structure of the selected Indian manufacturing firms.

Hypothesis 3 investigates the level of debt in the capital structure of sample 422 Indian manufacturing firms. The capital structure trends are analyzed with the help of the following three ratios:

1. Total Debt/Total Assets (D/A): A measure of leverage calculated by dividing Total Debt by Total Assets. It indicates the percentage of assets that are financed by debt. Higher percentage indicates the greater level of financial risk and a high level of dependence on debt.

2. Total Debt/Total Capital (D/C): A measure of leverage calculated by dividing Total Debt by Total Capital. It indicates that company is more inclined towards debt financing or equity financing. Higher percentage indicates aggressive financing and high level of dependence on debt.

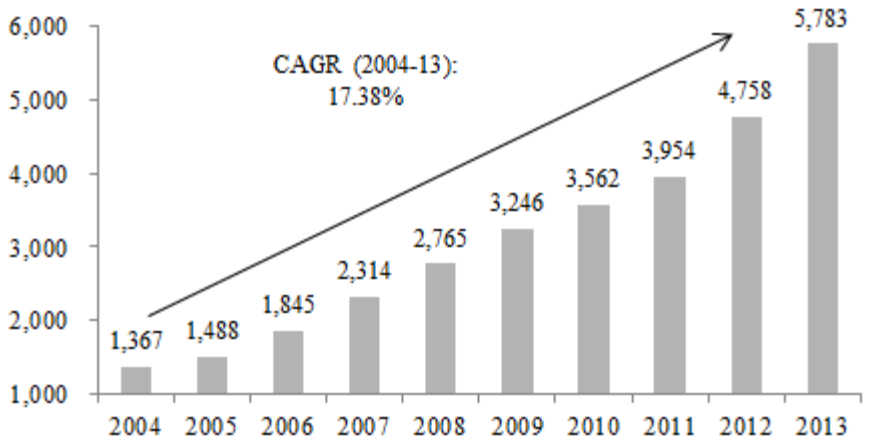
3. Total Debt/Total Equity (D/E): A measure of leverage calculated by dividing Total Debt by Total Shareholder's funds. It indicates the proportion of debt and equity in financing company's assets. Higher percentage indicates aggressive financing and high level of dependence on debt.

The above ratios are calculated on an annual average basis for the period from 2004 to 2013. With the help of this ratio analysis, the debt usage level of the Indian manufacturing firms is revealed and will help the managers in financial decision making of the firms. Generally, a debt-equity ratio of 0.50x is considered as an ideal ratio and anything beyond that is considered as a high debt ratio.

The capital structure trends of the sample 422 Indian manufacturing firms are presented as follows:

Figure 4.2 Average Total Debt

(Rs. in millions)

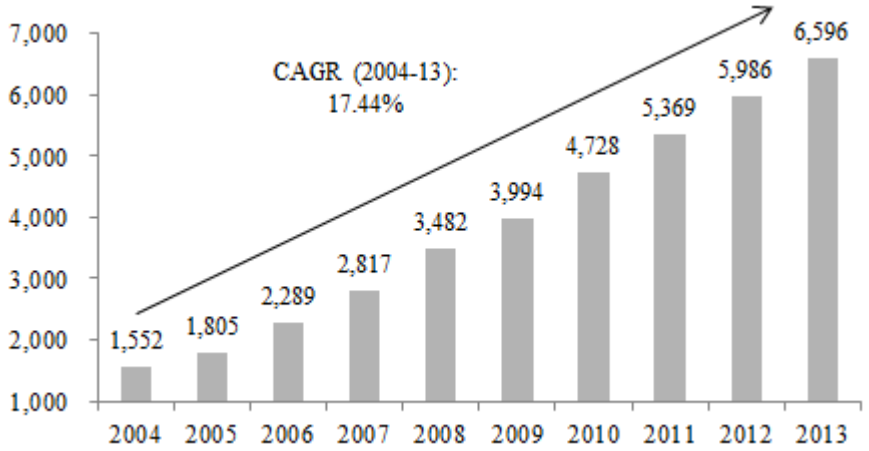


Source: CMIE Prowess

Figure 4.2 depicts the average annual total debt amount of the sample firms. It has been found that the average debt amount has increased continuously from 2004 to 2013 at a compounded annual growth rate (CAGR) of 17.38% approx. It reflects a significant increase in the debt level usage and firms preference for debt to finance their operations and assets. The average debt level of the sample Indian manufacturing firms in 2004 was around Rs. 1,367 million and it was increased to Rs. 5,783 million in 2013.

Figure 4.3 Average Total Equity

(Rs. in millions)

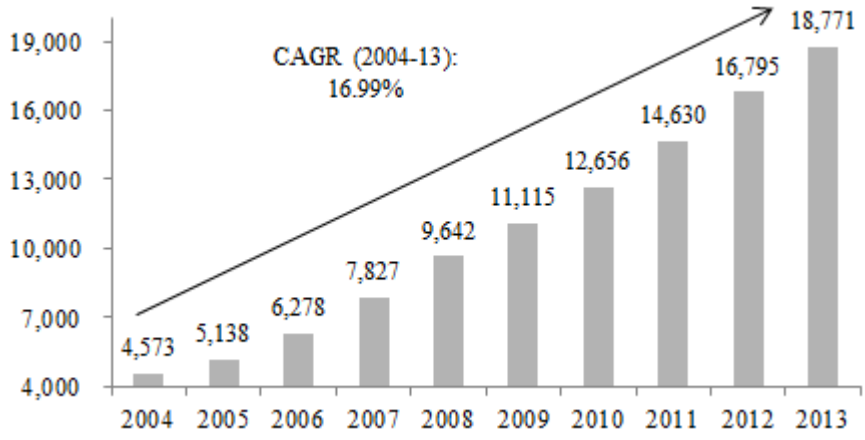


Source: CMIE Prowess

Figure 4.3 depicts the average annual total equity amount of the sample firms. It has been found that the average equity amount has increased continuously from 2004 to 2013 at a compounded annual growth rate (CAGR) of 17.44% approx. It also reflects a significant increase in the equity level usage. The average equity level of the sample Indian manufacturing firms in 2004 was around Rs. 1,552 million and it was increased to Rs. 6,596 million in 2013.

Figure 4.4 Average Total Assets

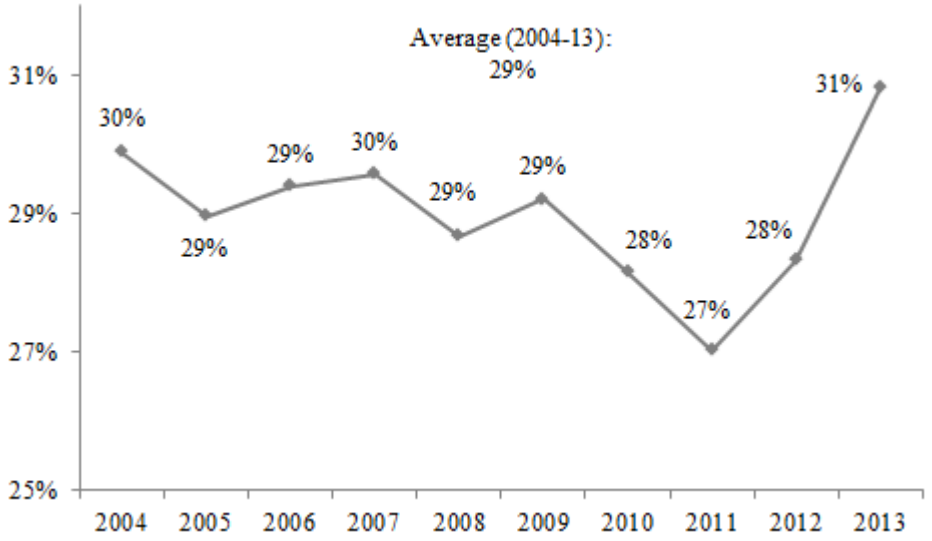
(Rs. in millions)



Source: CMIE Prowess

Figure 4.4 depicts the average annual total assets amount of the sample firms. It has been found that the average assets amount has increased continuously from 2004 to 2013 at a compounded annual growth rate (CAGR) of 16.99% approx. It reflects a huge investment in property, plant and equipment's. The average asset level of the sample Indian manufacturing firms in 2004 was around Rs. 4,573 million and it was increased to Rs. 18,771 million in 2013.

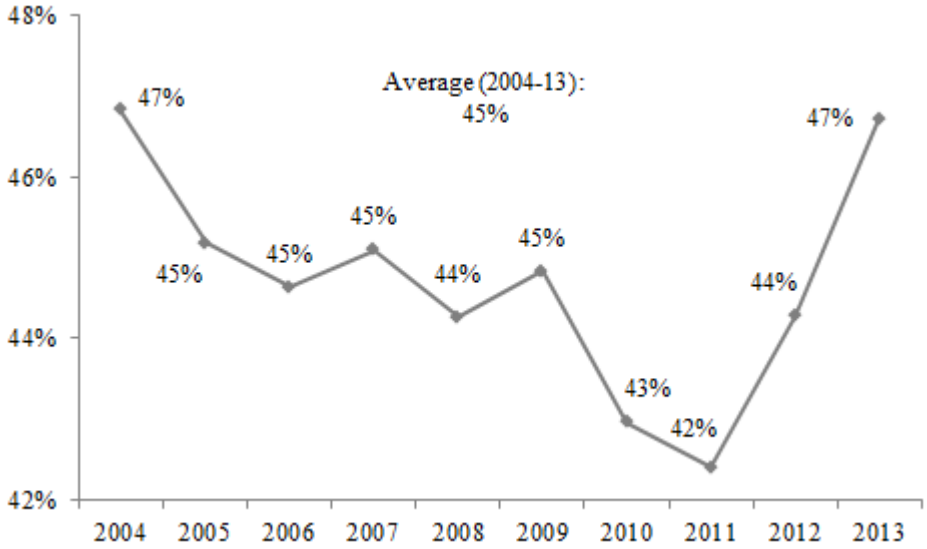
Figure 4.5 Average Total Debt / Total Assets (D/A)



Source: CMIE Prowess

Figure 4.5 provides the trend of D/A ratio and show that the average debt to assets percentage of Indian manufacturing sample firms was around 29% from 2004 to 2013. It reflects that the significant amounts of total assets are financed by the debt capital and involves a chance of financial risk. There is some fall in the D/A percentage for a few years after the global recession period of 2008.

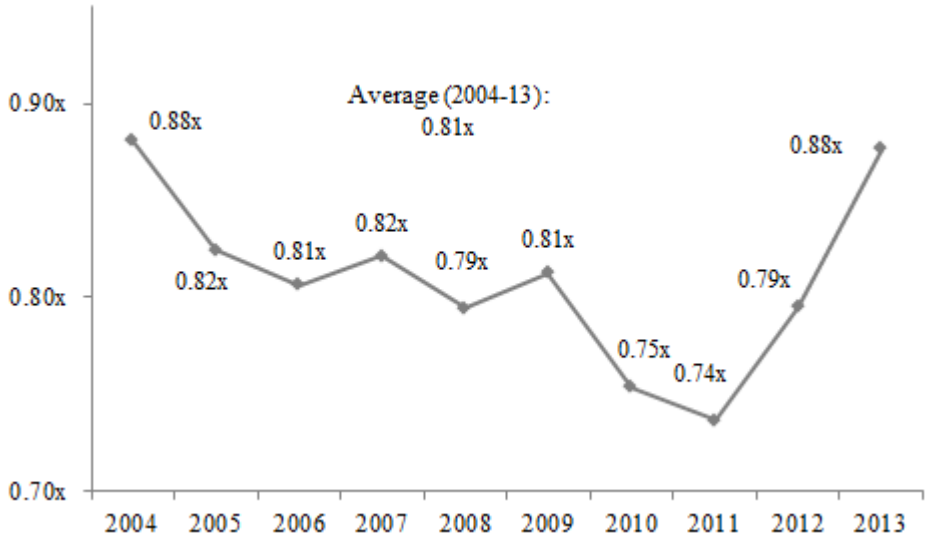
Figure 4.6 Average Total Debt / Total Capital (D/C)



Source: CMIE Prowess

Figure 4.6 provides the trend of D/C ratio and show that the average debt to capital percentage of Indian manufacturing sample firms was around 45% from 2004 to 2013. It reflects the aggressive financing and preference of companies towards debt financing, which involves a chance of bankruptcy risk. There is some dip in the D/C percentage for a few years after the global recession period of 2008.

Figure 4.7 Average Total Debt / Total Equity (D/E)



Source: CMIE Prowess

Figure 4.7 provides the trend of D/E ratio and show that the average debt to equity ratio of Indian manufacturing sample firms was around 0.81x from 2004 to 2013. It reflects the high financial leverage and preference of companies towards debt financing, which involves a chance of financial risk. There is some dip in the D/E ratio for a few years after the global recession period of 2008.

From the above figures, it has been concluded that there is a definite and significant increase in the debt level usage in the Indian manufacturing sector for the period from 2004 to 2013. However, there is some fall in the debt level usage for a few years after the recession of 2008. But, it is observed from the trends that firms have revived their debt level usage, which shows the preference of firms towards debt financing. Further, it shows that Indian firms follow some target

leverage level. Thus, the null hypothesis is rejected and there is a significant amount of debt exists in the capital structure of the sample Indian manufacturing firms.

4.4 CONCLUSION

In summary, Chapter 4 has examined the determinants of capital structure of 422 Indian manufacturing firms for the period from 2004 to 2013. Further, the chapter investigates which theory of capital structure, i.e. trade off or pecking order theory is more applicable to the current Indian manufacturing sector scenario. It also examines the trends of debt level in the capital structure of the sample firms. Based on the results of Hausman test, the panel data fixed effects regression models were used to identify the key capital structure determinants of the Indian manufacturing sector. The models were also used to validate the implications of the trade-off theory and pecking order theory of the capital structure. Ratio analysis technique, i.e. financial leverage ratios were used to examine the trends of debt level in the capital structure of the sample firms.

The empirical findings of the regression models reveal that size, age, tangibility, asset growth rate, profitability, non-debt tax shield and uniqueness are the key significant factors that determine the capital structure of the selected 422 Indian manufacturing firms. These factors have to be considered before deciding upon the target leverage level. Further, it was found that macro-economic factors like GDP, inflation do not affect the leverage of the sample firms. In other words, firm-specific factors determine the leverage of the Indian manufacturing sector. The predictions of both trade-off theory and pecking order theory explains the capital structure of the sample firms. There is no single theory, which is more applicable to the Indian manufacturing sector, rather implications of both the theories are equally significant in the context of the Indian manufacturing sector. The profitability and size variable supports the existence of pecking order theory and the tangibility and growth rate variable results are in line with the implications of the trade-off theory.

Regarding leverage trends, there is a definite and significant increase in the debt level usage in the Indian manufacturing sector for the period from 2004 to 2013. However, there is some fall in the debt level usage for a few years after the recession of 2008. But, it is observed from the trends that

firms have revived their debt level usage, which shows the preference of firms towards debt financing. Thus, this chapter draws major conclusions about the capital structure determinants, trends and theory validation in the context of the Indian manufacturing sector. It provides the scope for the future study. These results can be used by the corporate managers as a measure, while deciding upon the target leverage level of the Indian manufacturing firms.

CHAPTER 5

AN EMPIRICAL ANALYSIS OF CAPITAL STRUCTURE – MISCELLANEOUS ISSUES

5.1 INTRODUCTION

This chapter analyzes the various relationships of financial leverage with the other financial parameters of the selected Indian manufacturing firms. The chapter will analyze the impact of leverage on the value of the selected firms. Then, it will examine the effect of ownership structure on the capital structure decisions. Further, the chapter investigates the impact of leverage on the financial performance of the sample firms. Finally, the chapter analyzes the relationship between leverage, operating liquidity and financial performance of the selected firms.

In other words, this chapter will investigate hypothesis 4, 5, 6 and 7 of the study mentioned in chapter 3. The variables are identified on the basis of literature review and panel data regression models have been applied to test the relationship of capital structure with the various financial parameters of the sample firms. The total debt to total assets (D/A) ratio is used as a proxy for financial leverage in testing the above relationships.

In this chapter, the empirical findings of the various panel data models are presented. Before presenting the results of various models used in the study, some prerequisite and essential analysis of data was performed to confirm the statistical viability of the models and their sample data.

This includes testing for stationarity using Levin-Lin-Chu (LLC) test, descriptive statistics of variables, test for multicollinearity using correlation analysis, autocorrelation check using Durbin-Watson (D-W) statistic and Hausman test to choose between fixed effect and random effect model. Thus, panel data analysis, ratio analysis and all other essential tests will be performed with the help of E-Views version 8 statistical software to present the empirical findings of the current study.

5.2 TEST FOR STATIONARITY

The test for stationarity in a data set is a test to check the presence of unit roots in a given data series. If a data set has a unit root, it means that it is a non-stationary series. A stationary time series is one which moves around a constant mean value. The data set used in the present study is panel in nature. Hence, the study adopts the panel data unit root test advocated by Levin, Lin and Chu (2002). The test will present the results of both individual effects and individual effects with trend. In other words, results with trend and without trend. If data is found to be non-stationary, then the series will be differentiated to further test for stationarity.

Table 5.1 Results of LLC Panel Unit Root Test

	No Trend		Trend	
Variables	**Statistics**	**p-value**	**Statistics**	**p-value**
D/A	-34.962	0.000	-37.009	0.000
Size	-24.731	0.000	-34.703	0.000
Age	-95.928	0.000	-98.024	0.000
Tang	-33.611	0.000	-31.394	0.000
A-Gwth	-87.491	0.000	-82.060	0.000
EBTA	-42.065	0.000	-46.715	0.000
Risk	-392.939	0.000	-693.856	0.000
NDTS	-41.833	0.000	-41.944	0.000
CR	-37.221	0.000	-95.468	0.000
Indty	-21.876	0.000	-29.695	0.000
EV	-28.373	0.000	-47.875	0.000
P	-34.039	0.000	-26.388	0.000
PE	-40.185	0.000	-45.058	0.000
M/B	-35.810	0.000	-140.184	0.000
PSH	-26.719	0.000	-34.244	0.000
NPISH	-58.726	0.000	-85.875	0.000

NPNISH	-45.896	0.000	-72.579	0.000
ROA	-32.043	0.000	-42.507	0.000
ROE	-175.174	0.000	-121.662	0.000
Tobin's Q	-31.720	0.000	-48.423	0.000
Turnover	-29.159	0.000	-62.715	0.000
S-Gwth	-53.994	0.000	-57.018	0.000
CCC	-27.240	0.000	-44.730	0.000
OCFM	-179.359	0.000	-55.607	0.000

Note: H_0: Non-Stationary or Unit Root

Estimates are statistically significant at 5% and 1% level of significance.

Source: CMIE Prowess, **Statistical Tool:** E-Views 8.

Table 5.1 depicts the results of LLC panel unit root test for all dependent and independent variables covered under this chapter. It shows the results of both when a time trend is excluded (No trend) and when a time trend (Trend) is included. It is evident from the results that all variables are stationary when a time trend is excluded and when a time trend is included. Thus, the series is free from the problem of unit roots.

5.3 EMPIRICAL RESULTS

As discussed earlier, the present study will employ panel data regression models to analyze the various relationships of the capital structure of selected Indian manufacturing firms. This section includes descriptive statistics of data, correlation matrix to check the problem of multicollinearity, results of panel data regression models develop to test the Hypothesis 4, 5, 6 and 7, Hausman test results to choose between fixed effect and random effect model and Durbin-Watson (D-W) statistics to check autocorrelation. As a rule, D-W score ranging between 1.5 and 2.5 indicates that the data is free from the problem of autocorrelation and serial correlation. Prior testing the hypothesis and running panel data models, the sample data was tested for normality and heteroscedasticity. The data have been normalized and standardized by detecting outliers, which helps in solving the problem of heteroscedasticity.

5.3.1 Descriptive Statistics

Table 5.2 Descriptive Statistics of Variables

Variables	Mean	Median	Maximum	Minimum	Std. Dev.
D/A	0.290	0.212	25.026	0.000	1.031
Size	7.558	7.490	14.974	0.531	1.899
Age	36.055	28.000	150.000	4.000	21.964
Tang	0.340	0.320	0.981	0.001	0.181
A-Gwth	0.186	0.097	111.778	-0.781	1.794
EBTA	0.103	0.094	2.835	-1.661	0.131
Risk	32.886	21.163	93.120	-70.630	31.551
NDTS	0.034	0.029	0.436	0.000	0.028
CR	2.745	1.886	32.250	0.000	5.389
PE	9.434	6.625	50.000	0.000	10.068
M/B	1.854	0.990	19.880	0.000	2.475
PSH	0.510	0.520	0.990	0.000	0.194
NPISH	0.080	0.021	0.596	0.000	0.111
NPNISH	0.410	0.381	1.000	0.008	0.212
ROA	0.048	0.040	0.480	-0.300	0.080
ROE	0.114	0.110	0.500	-0.290	0.128
Tobin's Q	1.194	0.770	25.130	0.010	1.494
Turnover	1.030	0.930	6.090	0.000	0.665
S-Gwth	0.177	0.130	9.980	-14.500	0.607
CCC	87.948	80.115	298.790	-29.470	70.647
OCFM	0.080	0.064	25.500	-6.118	0.544

Source: CMIE Prowess, **Statistical Tool:** E-Views 8

Table 5.2 shows the descriptive statistics of dependent and independent variables of different regression models used in this chapter. The table exhibits that the average debt-assets ratio (D/A) of the selected 422 Indian manufacturing firms is around 0.29x. This leverage ratio is high in

proportion and represents a significant level of debt in the capital structure of the Indian manufacturing firms. It represents that the Indian manufacturing firms are highly dependent on debt to finance their assets and operations. Thus, Indian manufacturing firms face a high level of financial risk.

Further, the size of the firm reveals that most of the sample firms are larger in size and operations. Average age of the sample firms is around 36 years, which shows that sample firms are well developed and enjoys the experience of operations and market accessibility. The average proportion of fixed assets to total assets is around 34%, which depicts that huge investments are made in property, plant and equipment's by the sample firms. This high amount of fixed assets can be used as a collateral against the debt. The average asset growth rate is around 18.60%, which represents the huge deployment of debt capital in the creation of total assets by the sample 422 Indian manufacturing firms.

The average return on total assets (EBTA) or profitability has around 10.30 % and the Indian manufacturing firms faced a high level of business risk as represented by the operating leverage of the firms (32.88x). The average depreciation tax shield is around 3.40% and there is a high level of liquidity (2.75x) in the Indian manufacturing firms because of the nature and scale of the operations. The average PE ratio of 9.43x depicts high earnings growth potential of the sample firms. The average M/B ratio (1.85x) reveals the possibility of high growth opportunities available in the Indian manufacturing sector.

The average managerial ownership or PSH percentage is around 51%, which can influence the leverage decisions of the sample firms. The ROA, ROE and Tobin's Q represents the earning potential and financial performance of the sample firms. The average asset turnover ratio (1.03x) shows the efficiency of assets in generating the revenue of the sample firms. The average sales growth in the Indian manufacturing sector is around 17.7%. The average CCC and OCFM figures help in estimating the working capital requirements of the selected firms. The standard deviation values represent that there is a significant variation in the sample data which is acceptable for our analysis.

5.3.2 Correlation Analysis of Control Variables

The correlation coefficients show the degree of relationship between the variables. If the value of coefficient correlation is greater than 0.5, it means that there is a high degree of relationship between those variables and the variables suffer with the problem of multicollinearity. Table 5.3 depicts the correlation matrix of all the independent variables covered under this chapter. It is clear from the matrix that none of the independent variable is highly correlated with the others. Thus, there is no statistically high degree of correlation between the independent variables and the panel regression models are free from the problem of multicollinearity.

Table 5.3 Correlation Matrix of Independent Variables

Variable	Size (V1)	Age (V2)	Risk (V3)	EBTA (V4)	Indty (V5)	M/B (V6)	PSH (V7)	Tang (V8)	NDTS (V9)	A-Gwth (V10)	Turnover (V11)	S-Gwth (V12)	CCC (V13)	CR (V14)	OCFM (V15)
V1	1.000														
V2	0.364	1.000													
V3	-0.005	0.008	1.000												
V4	0.162	0.078	-0.032	1.000											
V5	-0.011	-0.067	-0.017	-0.117	1.000										
V6	0.255	0.172	-0.013	0.246	-0.163	1.000									
V7	0.182	0.128	-0.018	0.140	-0.040	0.173	1.000								
V7	-0.117	-0.129	-0.017	-0.176	0.264	-0.190	-0.113	1.000							
V9	-0.180	-0.103	0.152	-0.168	0.118	-0.081	-0.064	0.379	1.000						
V10	0.005	-0.023	-0.004	0.026	-0.002	0.006	0.017	-0.044	-0.061	1.000					
V11	-0.059	-0.050	0.004	0.214	0.038	0.067	0.114	-0.227	-0.017	-0.006	1.000				
V12	0.000	-0.061	-0.006	0.101	-0.023	0.071	0.001	-0.027	0.007	0.077	0.115	1.000			
V13	0.078	-0.014	-0.010	0.009	0.013	-0.030	0.102	-0.068	-0.064	0.007	-0.164	-0.004	1.000		
V14	-0.094	-0.126	-0.007	-0.063	0.067	-0.093	-0.092	-0.043	0.019	-0.007	-0.078	-0.027	0.062	1.000	
V15	0.005	-0.021	-0.002	0.004	0.023	0.013	0.007	0.034	0.029	-0.033	-0.045	-0.071	-0.025	-0.048	1.000

Source: CMIE Prowess, **Statistical Tool:** E-Views 8

5.3.3 Hypotheses Testing

Hypothesis 4 investigates the impact of leverage on the value of 422 selected Indian manufacturing firms. The study will further test the relationship between the ownership structure and capital structure (Hypothesis 5). The study also analyses the impact of leverage on the financial performance of the sample firms (Hypothesis 6). Finally, Hypothesis 7 examines the effect of leverage on the operating liquidity and the combined impact of both leverage and operating liquidity on the performance of the selected firms. The data will be analyzed for the period from 2004 to 2013. The panel data regression technique will be adopted to test the various relationships of the capital structure. Results of Hausman tests and Durbin-Watson (D-W) statistics will be presented along with the regression models.

Following section investigates the hypotheses (4, 5, 6 and 7) and presents their results to achieve objectives of the present study:

5.3.3.1 Hypothesis 4

H_{04}: There is no significant relationship between leverage and firm value of the selected Indian manufacturing firms.

The main purpose to test this hypothesis is to know the relationship between leverage and firm value of the sample firms. In other words, the objective is to determine whether leverage affects the firm value of the selected Indian manufacturing firms or not. Based on the result of Hausman test, panel data fixed effects regression model was employed to test the above relationship. EV, P and PE are used to represent the firm value and D/A is used to represent the leverage of the sample firms. The control variables include size, age, risk, profitability (EBTA), growth prospects (M/B) and industry. Thus, three panel data regression models were developed to test the Hypothesis 4. The three panel regression equations are presented as follows:

Model 1

$$EV_{nt} = C_n + \beta(D/A)_{nt} + \beta_1(Size)_{nt} + \beta_2(Age)_{nt} + \beta_3(Risk)_{nt} + \beta_4(EBTA)_{nt} + \beta_5(M/B)_{nt} + \beta_6(Indty)_{nt} + U_{nt} \quad \textbf{(5.1)}$$

Model 2

$$P_{nt} = C_n + \beta(D/A)_{nt} + \beta_1(Size)_{nt} + \beta_2(Age)_{nt} + \beta_3(Risk)_{nt} + \beta_4(EBTA)_{nt} + \beta_5(M/B)_{nt} + \beta_6(Indty)_{nt} + U_{nt} \quad \textbf{(5.2)}$$

Model 3

$$PE_{nt} = C_n + \beta(D/A)_{nt} + \beta_1(Size)_{nt} + \beta_2(Age)_{nt} + \beta_3(Risk)_{nt} + \beta_4(EBTA)_{nt} + \beta_5(M/B)_{nt} + \beta_6(Indty)_{nt} + U_{nt} \quad \textbf{(5.3)}$$

Where, C= Constant, U= residual component, n= 1,…,422 and t= 1,…,10.

The empirical results of the above three regression models were presented as follows:

Table 5.4 Empirical Result of Model 1

(Dependent Variable: EV)

Independent Variables	Coefficient	t-statistic	p-value
Constant	-47.941	-0.326	0.000
D/A	8.737	0.911	0.010
Size	14.847	3.240	0.000
Age	8.335	4.417	0.024
Risk	0.003	0.050	0.960
EBTA	16.894	0.792	0.024
M/B	24.598	9.095	0.000
Indty	-27.312	-0.039	0.701

Model Statistics			
Period	10	**Cross-Sections**	422
Total Panel (Balanced)	4220		
R^2	0.588		
Adjusted R^2	0.541		
F-statistics	12.641		
Prob. (F-statistics)	0.000		
D-W Statistics	1.848		
Hausman Test	**Chi-Sq. (χ2) / p-value**		
	54.330 / 0.000		

**Note: ***Estimate is statistically significant at $p \leq 0.05$

Source: CMIE Prowess, **Statistical Tool:** E-Views 8

Table 5.4 shows the empirical results of Model 1, where total debt to total assets ratio (D/A) is used as a proxy for financial leverage and enterprise value (EV) represents the value of the firm. The model is regressed at a significance level of 5%. It has been found that D/A, size, age, profitability (EBTA) and growth prospects (M/B) are statistically significant and positively correlated with the enterprise value (EV) of the sample firms. Business risk and industry classification are found to be statistically insignificant.

The examination of R-squared and adjusted R-Squared value shows that approximately 59% and 54% of the changes in the enterprise value of sample Indian manufacturing firms can be explained by all the independent variables together. The values of F-statistics exhibit the fit of the relationship model at a significance level of 5%. The Durbin-Watson (D-W) score of 1.848 shows that the model is free from the problem of autocorrelation and serial correlation. The result of the Hausman test rejects the null hypothesis, thereby indicating that fixed

effects panel data model or LSDV is preferred over random effects panel data model to run the regression model. Hence, the current model adopts the fixed effects panel data approach to test the required relationship.

Thus, capital structure affects the enterprise value of the selected 422 Indian manufacturing firms. The other factors that determine the enterprise value are size, age, profitability and growth prospects. Business risk and industry classification are found to be statistically insignificant. The manager has to consider all these factors to increase the enterprise value of the Indian manufacturing firms.

Table 5.5 Empirical Result of Model 2
(Dependent Variable: P)

Independent Variables	**Coefficient**	**t-statistic**	**p-value**
Constant	-26.029	-0.462	0.000
D/A	4.443	0.816	0.020
Size	23.675	2.897	0.004
Age	6.631	4.350	0.000
Risk	0.001	0.439	0.661
EBTA	25.776	0.862	0.011
M/B	35.073	18.285	0.000
Indty	-17.429	-0.679	0.621
Model Statistics			
Period	10	**Cross-Sections**	422
Total Panel (Balanced)	4220		
R^2	0.721		
Adjusted R^2	0.689		
F-statistics	22.843		
Prob. (F-statistics)	0.000		
D-W Statistics	1.760		
Hausman Test	**Chi-Sq. (χ2) / p-value**		
	70.809 / 0.000		

Note: *Estimate is statistically significant at $p \leq 0.05$

Source: CMIE Prowess, **Statistical Tool:** E-Views 8

Table 5.5 shows the empirical results of Model 2, where total debt to total assets ratio (D/A) is used as a proxy for financial leverage and share price (P) represents the value of the firm. The model is regressed at a significance level of 5%. It has been found that D/A, size, age, profitability (EBTA) and growth prospects (M/B) are statistically significant and positively correlated with the share price (P) of the sample firms. Business risk and industry classification are found to be statistically insignificant.

The examination of R-squared and adjusted R-Squared value shows that approximately 72% and 69% of the changes in the share price of sample Indian manufacturing firms can be explained by all the independent variables together. The values of F-statistics exhibit the fit of the relationship model at a significance level of 5%. The Durbin-Watson (D-W) score of 1.760 shows that the model is free from the problem of autocorrelation and serial correlation. The result of the Hausman test rejects the null hypothesis, thereby indicating that fixed effects panel data model or LSDV is preferred over random effects panel data model to run the regression model. Hence, the current model adopts the fixed effects panel data approach to test the required relationship.

Thus, capital structure affects the share price of the selected 422 Indian manufacturing firms. The other factors that determine the share price are size, age, profitability and growth prospects. Business risk and industry classification are found to be statistically insignificant. The manager has to consider all these factors to increase the share price of the Indian manufacturing firms.

Table 5.6 Empirical Result of Model 3

(Dependent Variable: PE)

Independent Variables	Coefficient	t-statistic	p-value
Constant	-39.609	-0.429	0.000
D/A	-0.304	-1.389	0.015
Size	-0.572	-1.740	0.032

Age	-1.118	-3.096	0.043
Risk	0.000	0.263	0.793
EBTA	-0.948	-0.789	0.031
M/B	0.787	10.209	0.000
Indty	-2.235	-2.168	0.821
Model Statistics			
Period	10	**Cross-Sections**	422
Total Panel (Balanced)	4220		
R^2	0.673		
Adjusted R^2	0.602		
F-statistics	15.271		
Prob. (F-statistics)	0.000		
D-W Statistics	1.985		
Hausman Test	**Chi-Sq. (χ2) / p-value**		
	59.171 / 0.000		

**Note: ***Estimate is statistically significant at $p \leq 0.05$

Source: CMIE Prowess, **Statistical Tool:** E-Views 8

Table 5.6 shows the empirical results of Model 3, where total debt to total assets ratio (D/A) is used as a proxy for financial leverage and price to earnings ratio (PE) represents the value of the firm. The model is regressed at a significance level of 5%. It has been found that D/A, size, age and profitability (EBTA) is statistically significant and negatively correlated with the PE of the sample firms. On the other hand, Growth prospect (M/B) is statistically significant and positively correlated with the PE of the sample firms. Business risk and industry classification are found to be statistically insignificant.

The examination of R-squared and adjusted R-Squared value shows that approximately 67% and 60% of the changes in the PE of sample Indian manufacturing firms can be explained by all the independent variables together. The values of F-statistics exhibit the fit of the relationship model at a significance level of 5%. The Durbin-Watson (D-W) score of 1.985 shows that the model is free

from the problem of autocorrelation and serial correlation. The result of the Hausman test rejects the null hypothesis, thereby indicating that fixed effects panel data model or LSDV is preferred over random effects panel data model to run the regression model. Hence, the current model adopts the fixed effects panel data approach to test the required relationship.

Thus, capital structure affects the price to earnings ratio of the selected 422 Indian manufacturing firms. The other factors that determine the PE are size, age, profitability and growth prospects. Business risk and industry classification are found to be statistically insignificant. Firms with low PE ratios represent high yield value of the shareholders. On the other hand, high PE ratios reveal firms with high growth opportunities. Hence, the increase in the leverage, size, age and profitability, reduces the PE ratio and thereby, increases the firm value.

To sum up, the empirical findings of the above three models reveal that leverage (D/A), size, age, profitability (EBTA) and growth opportunities (M/B) are the key significant factors that affects the firm value of the selected 422 Indian manufacturing firms. Further, it was found that business risk and industry classification do not affect the firm value of the sample firms. The Modigliani and Miller (MM) proposition of a firm's value is independent of its capital structure doesn't hold true for the firms operating in the Indian manufacturing sector. Thus, the null hypothesis is rejected and the financial leverage affects the firm value of the selected Indian manufacturing firms.

5.3.3.2 Hypothesis 5

H_{05}: There is no significant relationship between ownership structure and leverage of the selected Indian manufacturing firms.

Hypothesis 5 analyses whether the ownership structure affects the capital structure of the sample Indian manufacturing firms or not. The main purpose to test this hypothesis is to know the relationship between leverage and ownership structure of the sample firms. Based on the result of Hausman test, panel data fixed effects regression model was employed to test the above relationship. Percentage of promoter shareholdings (PSH), percentage of non-promoter

institutional shareholdings (NPISH) and percentage of non-promoter non-institutional shareholdings including custodians (NPNISH) are used to represent the ownership structure of the sample firms. D/A is used to represent the leverage of the sample firms. The control variables include size, age, profitability (EBTA), asset growth, tangibility and NDTS. Thus, three panel data regression models were developed to test the Hypothesis 5. The three panel regression equations are presented as follows:

Model 4

$$D/A_{nt} = C_n + \beta(PSH)_{nt} + \beta_1(Size)_{nt} + \beta_2(Age)_{nt} + \beta_3(EBTA)_{nt} + \beta_4(A\text{-}Gwth)_{nt} + \beta_5(Tang)_{nt} + \beta_6(NDTS)_{nt} + U_{nt} \quad \textbf{(5.4)}$$

Model 5

$$D/A_{nt} = C_n + \beta(NPISH)_{nt} + \beta_1(Size)_{nt} + \beta_2(Age)_{nt} + \beta_3(EBTA)_{nt} + \beta_4(A\text{-}Gwth)_{nt} + \beta_5(Tang)_{nt} + \beta_6(NDTS)_{nt} + U_{nt} \quad \textbf{(5.5)}$$

Model 6

$$D/A_{nt} = C_n + \beta(NPNISH)_{nt} + \beta_1(Size)_{nt} + \beta_2(Age)_{nt} + \beta_3(EBTA)_{nt} + \beta_4(A\text{-}Gwth)_{nt} + \beta_5(Tang)_{nt} + \beta_6(NDTS)_{nt} + U_{nt} \quad \textbf{(5.6)}$$

Where, C= Constant, U= residual component, n= 1,…,422 and t= 1,…,10.

The empirical results of the above three regression models were presented as follows:

Table 5.7 Empirical Result of Model 4

(Dependent Variable: D/A)

Independent Variables	**Coefficient**	**t-statistic**	**p-value**
Constant	0.527	3.363	0.001
PSH	-0.291	-3.269	0.001
Size	-0.203	-8.450	0.000
Age	0.032	7.147	0.000
EBTA	-0.339	-3.898	0.000
A-Gwth	-0.030	-5.465	0.000
Tang	1.020	8.693	0.000
NDTS	2.946	6.147	0.000
Model Statistics			
Period	10	**Cross-Sections**	422
Total Panel (Balanced)	4220		
R^2	0.687		
Adjusted R^2	0.652		
F-statistics	19.478		
Prob. (F-statistics)	0.000		
D-W Statistics	1.602		
Hausman Test	**Chi-Sq. (χ2) / p-value**		
	99.919 / 0.000		

**Note: ***Estimate is statistically significant at $p \leq 0.05$

Source: CMIE Prowess, **Statistical Tool:** E-Views 8

Table 5.7 shows the empirical results of Model 4, where total debt to total assets ratio (D/A) is used as a proxy for financial leverage and percentage of promoters shareholdings (PSH) represent the ownership structure of the firm. The model is regressed at a significance level of 5%. It has

been found that there is a significant and negative relationship between leverage and PSH. Size, profitability (EBTA) and asset growth are statistically significant and negatively correlated with the leverage of the sample firms. On the other hand, tangibility and NDTS are statistically significant and positively correlated with the leverage of the sample firms.

The examination of R-squared and adjusted R-Squared value shows that approximately 69% and 65% of the changes in the leverage of sample Indian manufacturing firms can be explained by all the independent variables together. The values of F-statistics exhibit the fit of the relationship model at a significance level of 5%. The Durbin-Watson (D-W) score of 1.602 shows that the model is free from the problem of autocorrelation and serial correlation. The result of the Hausman test rejects the null hypothesis, thereby indicating that fixed effects panel data model or LSDV is preferred over random effects panel data model to run the regression model. Hence, the current model adopts the fixed effects panel data approach to test the required relationship.

Thus, ownership structure (PSH) affects the leverage (D/A) of the selected 422 Indian manufacturing firms. The other factors that determine the leverage are size, age, profitability, asset growth rate, tangibility and NDTS. The negative relationship between PSH and leverage confirms the concept of agency theory which shows a conflict of interest between equity shareholders and debt holders. Promoters want decisions to be taken in their favor at the cost of debt holders. They want companies to be less levered so that they can enjoy more profitability due to the absence of financial cost. Hence, managerial ownership (PSH) affects the leverage decisions of the sample firms.

Table 5.8 Empirical Result of Model 5

(Dependent Variable: D/A)

Independent Variables	Coefficient	t-statistic	p-value
Constant	0.420	2.702	0.007
NPISH	0.327	1.602	0.009
Size	-0.210	-8.632	0.000
Age	0.031	6.994	0.000

EBTA	-0.348	-3.999	0.000
A-Gwth	-0.031	-5.533	0.000
Tang	1.015	8.644	0.000
NDTS	3.003	6.265	0.000
Model Statistics			
Period	10	**Cross-Sections**	422
Total Panel (Balanced)	4220		
R^2	0.687		
Adjusted R^2	0.651		
F-statistics	19.417		
Prob. (F-statistics)	0.000		
D-W Statistics	1.597		
Hausman Test	**Chi-Sq. (χ2) / p-value**		
	104.189 / 0.000		

**Note: ***Estimate is statistically significant at $p \leq 0.05$

Source: CMIE Prowess, **Statistical Tool:** E-Views 8

Table 5.8 shows the empirical results of Model 5, where total debt to total assets ratio (D/A) is used as a proxy for financial leverage and percentage of non-promoter institutional shareholdings (NPISH) represent the ownership structure of the firm. The model is regressed at a significance level of 5%. It has been found that there is a significant and positive relationship between leverage and NPISH. Size, profitability (EBTA) and asset growth are statistically significant and negatively correlated with the leverage of the sample firms. On the other hand, tangibility and NDTS are statistically significant and positively correlated with the leverage of the sample firms.

The examination of R-squared and adjusted R-Squared value shows that approximately 69% and 65% of the changes in the leverage of sample Indian manufacturing firms can be explained by all the independent variables together. The values of F-statistics exhibit the fit of the relationship model at a significance level of 5%. The Durbin-Watson (D-W) score of 1.597 shows that the model is free from the problem of autocorrelation and serial correlation. The result of the Hausman

test rejects the null hypothesis, thereby indicating that fixed effects panel data model or LSDV is preferred over random effects panel data model to run the regression model. Hence, the current model adopts the fixed effects panel data approach to test the required relationship.

Thus, ownership structure (NPISH) affects the leverage (D/A) of the selected 422 Indian manufacturing firms. The other factors that determine the leverage are size, age, profitability, asset growth rate, tangibility and NDTS. The positive relationship between NPISH and leverage confirms the concept of agency theory which shows that external equity shareholders, uses debt as a controlling device to counter the agency problem of free cash flows. Hence, NPISH affects the leverage decisions of the sample firms.

Table 5.9 Empirical Result of Model 6

(Dependent Variable: D/A)

Independent Variables	**Coefficient**	**t-statistic**	**p-value**
Constant	0.310	1.889	0.006
NPNISH	0.208	2.452	0.014
Size	-0.200	-8.299	0.000
Age	0.031	6.929	0.000
EBTA	-0.343	-3.936	0.000
A-Gwth	-0.031	-5.495	0.000
Tang	1.018	8.677	0.000
NDTS	2.971	6.199	0.000
Model Statistics			
Period	10	**Cross-Sections**	422
Total Panel (Balanced)	4220		
R^2	0.687		
Adjusted R^2	0.652		
F-statistics	19.443		
Prob. (F-statistics)	0.000		

D-W Statistics	1.600
Hausman Test	**Chi-Sq. (χ2) / p-value**
	101.726 / 0.000

**Note: ***Estimate is statistically significant at $p \leq 0.05$

Source: CMIE Prowess, **Statistical Tool:** E-Views 8

Table 5.9 shows the empirical results of Model 6, where total debt to total assets ratio (D/A) is used as a proxy for financial leverage and percentage of non-promoter non-institutional shareholdings including custodians (NPNISH) represent the ownership structure of the firm. The model is regressed at a significance level of 5%. It has been found that there is a significant and positive relationship between leverage and NPNISH. Size, profitability (EBTA) and asset growth are statistically significant and negatively correlated with the leverage of the sample firms. On the other hand, tangibility and NDTS are statistically significant and positively correlated with the leverage of the sample firms.

The examination of R-squared and adjusted R-Squared value shows that approximately 69% and 65% of the changes in the leverage of sample Indian manufacturing firms can be explained by all the independent variables together. The values of F-statistics exhibit the fit of the relationship model at a significance level of 5%. The Durbin-Watson (D-W) score of 1.600 shows that the model is free from the problem of autocorrelation and serial correlation. The result of the Hausman test rejects the null hypothesis, thereby indicating that fixed effects panel data model or LSDV is preferred over random effects panel data model to run the regression model. Hence, the current model adopts the fixed effects panel data approach to test the required relationship.

Thus, ownership structure (NPNISH) affects the leverage (D/A) of the selected 422 Indian manufacturing firms. The other factors that determine the leverage are size, age, profitability, asset growth rate, tangibility and NDTS. The positive relationship between NPNISH and leverage confirms the concept of agency theory which shows that external equity shareholders, uses debt as a controlling device to counter the agency problem of free cash flows. Hence, NPNISH affects the leverage decisions of the sample firms.

To sum up, the empirical findings of the above three models reveal that financial leverage is affected by the ownership structure of the firms operating in the Indian manufacturing sector. However, the managerial ownership (PSH) is negatively related to the leverage, reflecting the conflict of interest between internal equity shareholders and debt holders. This negative relationship has signaled the managers to consider the sentiments of promoters before deciding upon the target leverage level.

On the other hand, there is a positive relationship between external equity shareholders (NPISH and NPNISH) and leverage, favoring debt as a controlling measure to avoid the problem of free cash flows. All the control variables like size, age, profitability, growth rate, tangibility and NDTS are significant determinants of the leverage. Thus, the null hypothesis is rejected and the ownership structure explains the leverage of the sample Indian manufacturing firms.

5.3.3.3 Hypothesis 6

H_{06}: There is no significant relationship between leverage and financial performance of the selected Indian manufacturing firms.

Hypothesis 6 analyses the impact of leverage on the financial performance of selected Indian manufacturing firms. The main purpose to test this hypothesis is to know the relationship between leverage and profitability measures of the sample firms. Based on the result of Hausman test, panel data fixed effects regression model was employed to test the above relationship. Return on assets (ROA), return on equity (ROE) and Tobin's Q value are used to represent the financial performance of the sample firms. D/A is used to represent the leverage of the sample firms. The control variables include size, age, sales growth, risk, liquidity (CR), industry and asset turnover ratio. Thus, three panel data regression models were developed to test the Hypothesis 6. The three panel regression equations are presented as follows:

Model 7

$$ROA_{nt} = C_n + \beta(D/A)_{nt} + \beta_1(Size)_{nt} + \beta_2(Age)_{nt} + \beta_3(S\text{-}Gwth)_{nt} + \beta_4(Risk)_{nt} + \beta_5(CR)_{nt} + \beta_6(Indty)_{nt} + \beta_7(Turnover)_{nt} + U_{nt} \quad \textbf{(5.7)}$$

Model 8

$$ROE_{nt} = C_n + \beta(D/A)_{nt} + \beta_1(Size)_{nt} + \beta_2(Age)_{nt} + \beta_3(S\text{-}Gwth)_{nt} + \beta_4(Risk)_{nt} + \beta_5(CR)_{nt} + \beta_6(Indty)_{nt} + \beta_7(Turnover)_{nt} + U_{nt} \quad \textbf{(5.8)}$$

Model 9

$$\text{Tobin's } Q_{nt} = C_n + \beta(D/A)_{nt} + \beta_1(Size)_{nt} + \beta_2(Age)_{nt} + \beta_3(S\text{-}Gwth)_{nt} + \beta_4(Risk)_{nt} + \beta_5(CR)_{nt} + \beta_6(Indty)_{nt} + \beta_7(Turnover)_{nt} + U_{nt} \quad \textbf{(5.9)}$$

Where, C= Constant, U= residual component, n= 1,…,422 and t= 1,…,10.

The empirical results of the above three regression models were presented as follows:

Table 5.10 Empirical Result of Model 7

(Dependent Variable: ROA)

Independent Variables	Coefficient	t-statistic	p-value
Constant	0.129	8.205	0.000
D/A	-0.013	-8.224	0.000
Size	0.007	2.988	0.003
Age	0.000	0.192	0.001
S-Gwth	0.010	6.582	0.000
Risk	-0.000	-0.088	0.930
CR	-0.000	-1.797	0.502

Indty	0.028	3.942	0.812
Turnover	0.045	4.364	0.000
Model Statistics			
Period	10	**Cross-Sections**	422
Total Panel (Balanced)	4220		
R^2	0.690		
Adjusted R^2	0.654		
F-statistics	9.201		
Prob. (F-statistics)	0.000		
D-W Statistics	1.516		
Hausman Test	**Chi-Sq. (χ2) / p-value**		
	62.056 / 0.000		

**Note: ***Estimate is statistically significant at $p \leq 0.05$

Source: CMIE Prowess, **Statistical Tool:** E-Views 8

Table 5.10 shows the empirical results of Model 7, where total debt to total assets ratio (D/A) is used as a proxy for financial leverage and return on assets (ROA) represent the financial performance of the firm. The model is regressed at a significance level of 5%. It has been found that there is a significant and negative relationship between leverage (D/A) and ROA. Size, age, sales growth rate and asset turnover are statistically significant and positively correlated with the ROA of the sample firms. On the other hand, Risk, liquidity (CR) and industry classification are found to be statistically insignificant.

The examination of R-squared and adjusted R-Squared value shows that approximately 69% and 65% of the changes in the leverage of sample Indian manufacturing firms can be explained by all the independent variables together. The values of F-statistics exhibit the fit of the relationship model at a significance level of 5%. The Durbin-Watson (D-W) score of 1.516 shows that the model is free from the problem of autocorrelation and serial correlation. The result of the Hausman test rejects the null hypothesis, thereby indicating that fixed effects panel data model or LSDV is

preferred over random effects panel data model to run the regression model. Hence, the current model adopts the fixed effects panel data approach to test the required relationship.

Thus, financial leverage (D/A) affects the financial performance (ROA) of the selected 422 Indian manufacturing firms. The other factors that affect the performance are size, age, sales growth rate and asset turnover. The negative relationship between leverage and ROA reveals low debt usage to increase the overall return on assets, as debt capital carries a higher interest cost which reduces the profitability of the firm. Further, the results reveal that large sized and old aged firms generally enjoy a higher return on their assets. High sales growth rate and asset turnover ratio reflect the efficiency and increases the performance of the firm.

Table 5.11 Empirical Result of Model 8

(Dependent Variable: ROE)

Independent Variables	**Coefficient**	**t-statistic**	**p-value**
Constant	0.299	10.933	0.000
D/A	-0.008	-2.828	0.005
Size	0.002	0.516	0.002
Age	0.004	4.689	0.001
S-Gwth	0.021	7.816	0.000
Risk	-0.000	-1.591	0.715
CR	-0.000	-0.245	0.806
Indty	0.059	4.669	0.638
Turnover	0.054	5.302	0.000
Model Statistics			
Period	10	**Cross-Sections**	422
Total Panel (Balanced)	4220		
R^2	0.558		
Adjusted R^2	0.503		
F-statistics	6.372		

Prob. (F-statistics)	0.000
D-W Statistics	1.576
Hausman Test	**Chi-Sq. (χ2) / p-value**
	87.379 / 0.000

**Note: ***Estimate is statistically significant at $p \leq 0.05$

Source: CMIE Prowess, **Statistical Tool:** E-Views 8

Table 5.11 shows the empirical results of Model 8, where total debt to total assets ratio (D/A) is used as a proxy for financial leverage and return on equity (ROE) represent the financial performance of the firm. The model is regressed at a significance level of 5%. It has been found that there is a significant and negative relationship between leverage (D/A) and ROE. Size, age, sales growth rate and asset turnover are statistically significant and positively correlated with the ROE of the sample firms. On the other hand, Risk, liquidity (CR) and industry classification are found to be statistically insignificant.

The examination of R-squared and adjusted R-Squared value shows that approximately 56% and 50% of the changes in the leverage of sample Indian manufacturing firms can be explained by all the independent variables together. The values of F-statistics exhibit the fit of the relationship model at a significance level of 5%. The Durbin-Watson (D-W) score of 1.576 shows that the model is free from the problem of autocorrelation and serial correlation. The result of the Hausman test rejects the null hypothesis, thereby indicating that fixed effects panel data model or LSDV is preferred over random effects panel data model to run the regression model. Hence, the current model adopts the fixed effects panel data approach to test the required relationship.

Thus, financial leverage (D/A) affects the financial performance (ROE) of the selected 422 Indian manufacturing firms. The other factors that affect the performance are size, age, sales growth rate and asset turnover. The negative relationship between leverage and ROE confirms the agency concept that there is a conflict of interest between equity shareholders and debt holders. Also, high debt usage carries a higher interest cost which reduces the profitability of the firm. The results reveal that large sized and old aged firms generally enjoy a higher return on their equity. High

sales growth rate and asset turnover ratio reflect the efficiency and increases the financial performance of the firm.

Table 5.12 Empirical Result of Model 9

(Dependent Variable: Tobin's Q)

Independent Variables	**Coefficient**	**t-statistic**	**p-value**
Constant	1.530	8.643	0.000
D/A	-0.017	-7.511	0.000
Size	0.008	1.385	0.000
Age	0.019	3.934	0.000
S-Gwth	0.033	4.288	0.002
Risk	-0.000	-0.630	0.529
CR	-0.001	-0.453	0.651
Indty	0.380	4.666	0.752
Turnover	0.147	4.289	0.000
Model Statistics			
Period	10	**Cross-Sections**	422
Total Panel (Balanced)	4220		
R^2	0.822		
Adjusted R^2	0.802		
F-statistics	8.201		
Prob. (F-statistics)	0.000		
D-W Statistics	1.634		
Hausman Test	**Chi-Sq. (χ2) / p-value**		
	70.379 / 0.000		

**Note: ***Estimate is statistically significant at $p \leq 0.05$

Source: CMIE Prowess, **Statistical Tool:** E-Views 8

Table 5.12 shows the empirical results of Model 9, where total debt to total assets ratio (D/A) is used as a proxy for financial leverage and Tobin's Q value represent the financial performance of the firm. The model is regressed at a significance level of 5%. It has been found that there is a significant and negative relationship between leverage (D/A) and Tobin's Q. Size, age, sales growth rate and asset turnover are statistically significant and positively correlated with the Tobin's Q value of the sample firms. On the other hand, Risk, liquidity (CR) and industry classification are found to be statistically insignificant.

The examination of R-squared and adjusted R-Squared value shows that approximately 82% and 80% of the changes in the leverage of sample Indian manufacturing firms can be explained by all the independent variables together. The values of F-statistics exhibit the fit of the relationship model at a significance level of 5%. The Durbin-Watson (D-W) score of 1.634 shows that the model is free from the problem of autocorrelation and serial correlation. The result of the Hausman test rejects the null hypothesis, thereby indicating that fixed effects panel data model or LSDV is preferred over random effects panel data model to run the regression model. Hence, the current model adopts the fixed effects panel data approach to test the required relationship.

Thus, financial leverage (D/A) affects the financial performance (Tobin's Q) of the selected 422 Indian manufacturing firms. The other factors that affect the performance are size, age, sales growth rate and asset turnover.

To sum up, the empirical findings of the above three models reveal that financial leverage affects the financial performance of the firms operating in the Indian manufacturing sector. The negative relationship between leverage and financial performance parameters advocate the low usage of debt capital as high debt involves the high cost of interest. The control variables like size, age, sales growth rate and asset turnover are significant factors that determine the performance of the firm. Thus, the null hypothesis is rejected and the financial leverage determines the financial performance of the sample Indian manufacturing firms.

5.3.3.4 Hypothesis 7

H_{07}: There is no significant relationship between leverage, operating liquidity and financial performance of the selected Indian manufacturing firms.

Hypothesis 7 analyses the impact of leverage on the operating liquidity of selected Indian manufacturing firms **(Part A)**. Also, the hypothesis investigates the combined effect of leverage and operating liquidity on the performance of the sample firms **(Part B)**. Based on the result of Hausman test, panel data fixed effects regression model was employed to test the above relationship. Current ratio (CR), cash conversion cycle (CCC) and operating cash flow margin (OCFM) is used to represent the operating liquidity of the sample firms. Return on assets (ROA) is used to represent the financial performance and D/A is used to represent the leverage of the sample firms. The control variables include size, age, sales growth, profitability (EBTA) and industry classification. Thus, six panel data regression models (Part A + Part B) were developed to test the Hypothesis 7. The six panel regression equations are presented as follows:

Part A – Impact of leverage on operating liquidity

Model 10

$$CR_{nt} = C_n + \beta(D/A)_{nt} + \beta_1(Size)_{nt} + \beta_2(Age)_{nt} + \beta_3(S\text{-}Gwth)_{nt} + \beta_4(EBTA)_{nt} + \beta_5(Indty)_{nt} + U_{nt} \quad \textbf{(5.10)}$$

Model 11

$$CCC_{nt} = C_n + \beta(D/A)_{nt} + \beta_1(Size)_{nt} + \beta_2(Age)_{nt} + \beta_3(S\text{-}Gwth)_{nt} + \beta_4(EBTA)_{nt} + \beta_5(Indty)_{nt} + U_{nt} \quad \textbf{(5.11)}$$

Model 12

$$OCFM_{nt} = C_n + \beta(D/A)_{nt} + \beta_1(Size)_{nt} + \beta_2(Age)_{nt} + \beta_3(S\text{-}Gwth)_{nt} + \beta_4(EBTA)_{nt} + \beta_5(Indty)_{nt} + U_{nt} \quad \textbf{(5.12)}$$

Part B – Combined Effect of leverage and operating liquidity on firm performance

Model 13

$$ROA_{nt} = C_n + \beta(D/A)_{nt} + \beta_1(CR)_{nt} + \beta_2(Size)_{nt} + \beta_3(Age)_{nt} + \beta_4(S\text{-}Gwth)_{nt} + \beta_5(Indty)_{nt} + U_{nt} \quad \textbf{(5.13)}$$

Model 14

$$ROA_{nt} = C_n + \beta(D/A)_{nt} + \beta_1(CCC)_{nt} + \beta_2(Size)_{nt} + \beta_3(Age)_{nt} + \beta_4(S\text{-}Gwth)_{nt} + \beta_5(Indty)_{nt} + U_{nt} \quad \textbf{(5.14)}$$

Model 15

$$ROA_{nt} = C_n + \beta(D/A)_{nt} + \beta_1(OCFM)_{nt} + \beta_2(Size)_{nt} + \beta_3(Age)_{nt} + \beta_4(S\text{-}Gwth)_{nt} + \beta_5(Indty)_{nt} + U_{nt} \quad \textbf{(5.15)}$$

Where, C= Constant, U= residual component, n= 1,…,422 and t= 1,…,10.

The empirical results of the above six regression models were presented as follows:

Part A – Impact of leverage on operating liquidity

Table 5.13 Empirical Result of Model 10

(Dependent Variable: CR)

Independent Variables	**Coefficient**	**t-statistic**	**p-value**
Constant	0.718	0.704	0.020
D/A	0.015	0.150	0.024
Size	0.126	0.846	0.002
Age	0.071	2.553	0.011
S-Gwth	0.151	1.472	0.031
EBTA	-0.632	-1.160	0.023
Indty	0.504	1.078	0.397
Model Statistics			
Period	10	**Cross-**	422

		Sections	
Total Panel (Balanced)	4220		
R^2	0.649		
Adjusted R^2	0.599		
F-statistics	10.828		
Prob. (F-statistics)	0.000		
D-W Statistics	1.545		
Hausman Test	**Chi-Sq. (χ2) / p-value**		
	30.656 / 0.000		

**Note: ***Estimate is statistically significant at $p \leq 0.05$

Source: CMIE Prowess, **Statistical Tool:** E-Views 8

Table 5.13 shows the empirical results of Model 10, where total debt to total assets ratio (D/A) is used as a proxy for financial leverage and current ratio (CR) represent the operating liquidity of the firm. The model is regressed at a significance level of 5%. It has been found that there is a significant and positive relationship between leverage (D/A) and operating liquidity (CR). Size, age and sales growth rate are statistically significant and positively correlated with the CR of the sample firms. On the other hand, profitability (EBTA) is statistically significant and negatively correlated with the CR of the firms. Industry classification is found to be statistically insignificant.

The examination of R-squared and adjusted R-Squared value shows that approximately 65% and 60% of the changes in the operating liquidity of sample Indian manufacturing firms can be explained by all the independent variables together. The values of F-statistics exhibit the fit of the relationship model at a significance level of 5%. The Durbin-Watson (D-W) score of 1.545 shows that the model is free from the problem of autocorrelation and serial correlation. The result of the Hausman test rejects the null hypothesis, thereby indicating that fixed effects panel data model or LSDV is preferred over random effects panel data model to run the regression model. Hence, the current model adopts the fixed effects panel data approach to test the required relationship.

Thus, financial leverage (D/A) affects the operating liquidity (CR) of the selected 422 Indian manufacturing firms. The other factors that affect the liquidity are size, age, sales growth rate and

profitability (EBTA). The results reveal that when firms use more debt, they become more liquid and use debt capital to finance their working capital operations. This confirms that Indian manufacturing firms follow a conservative approach of working capital, where long term finance are utilized to fund short term assets. The findings also reveal that large sized and old aged firms enjoy high liquidity. High sales growth rate results in a high level of liquidity and profitable firms maintain a low level of operating liquidity.

Table 5.14 Empirical Result of Model 11

(Dependent Variable: CCC)

Independent Variables	**Coefficient**	**t-statistic**	**p-value**
Constant	0.190	0.346	0.000
D/A	0.587	0.481	0.003
Size	0.839	0.458	0.001
Age	2.004	5.857	0.000
S-Gwth	1.780	1.415	0.016
EBTA	-0.236	-0.337	0.003
Indty	2.502	0.435	0.664
Model Statistics			
Period	10	**Cross-Sections**	422
Total Panel (Balanced)	4220		
R^2	0.634		
Adjusted R^2	0.559		
F-statistics	13.521		
Prob. (F-statistics)	0.000		
D-W Statistics	1.678		
Hausman Test	**Chi-Sq. (χ2) / p-value**		
	28.882 / 0.000		

**Note: ***Estimate is statistically significant at $p \leq 0.05$

Source: CMIE Prowess, **Statistical Tool:** E-Views 8

Table 5.14 shows the empirical results of Model 11, where total debt to total assets ratio (D/A) is used as a proxy for financial leverage and cash conversion cycle (CCC) represent the operating liquidity of the firm. The model is regressed at a significance level of 5%. It has been found that there is a significant and positive relationship between leverage (D/A) and operating liquidity (CCC). Size, age and sales growth rate are statistically significant and positively correlated with the CCC of the sample firms. On the other hand, profitability (EBTA) is statistically significant and negatively correlated with the CCC of the firms. Industry classification is found to be statistically insignificant.

The examination of R-squared and adjusted R-Squared value shows that approximately 63% and 56% of the changes in the operating liquidity of sample Indian manufacturing firms can be explained by all the independent variables together. The values of F-statistics exhibit the fit of the relationship model at a significance level of 5%. The Durbin-Watson (D-W) score of 1.678 shows that the model is free from the problem of autocorrelation and serial correlation. The result of the Hausman test rejects the null hypothesis, thereby indicating that fixed effects panel data model or LSDV is preferred over random effects panel data model to run the regression model. Hence, the current model adopts the fixed effects panel data approach to test the required relationship.

Thus, financial leverage (D/A) affects the operating liquidity (CCC) of the selected 422 Indian manufacturing firms. The other factors that affect the liquidity are size, age, sales growth rate and profitability (EBTA). The results reveal that when firms use more debt, they become more liquid and use debt capital to finance their working capital operations. This confirms that Indian manufacturing firms follow a conservative approach of working capital, where long term finance are utilized to fund short term assets.

Table 5.15 Empirical Result of Model 12

(Dependent Variable: OCFM)

Independent Variables	**Coefficient**	**t-statistic**	**p-value**
Constant	0.355	2.455	0.014
D/A	0.008	0.582	0.015
Size	0.729	0.888	0.001
Age	0.006	1.556	0.013
S-Gwth	0.056	3.892	0.000
EBTA	-0.049	-0.632	0.033
Indty	0.098	1.472	0.527
Model Statistics			
Period	10	**Cross-Sections**	422
Total Panel (Balanced)	4220		
R^2	0.661		
Adjusted R^2	0.617		
F-statistics	11.073		
Prob. (F-statistics)	0.000		
D-W Statistics	1.514		
Hausman Test	**Chi-Sq. (χ2) / p-value**		
	24.348 / 0.000		

**Note: ***Estimate is statistically significant at $p \leq 0.05$

Source: CMIE Prowess, **Statistical Tool:** E-Views 8

Table 5.15 shows the empirical results of Model 12, where total debt to total assets ratio (D/A) is used as a proxy for financial leverage and operating cash flow margin (OCFM) represent the operating liquidity of the firm. The model is regressed at a significance level of 5%. It has been found that there is a significant and positive relationship between leverage (D/A) and operating liquidity (OCFM). Size, age and sales growth rate are statistically significant and positively correlated with the OCFM of the sample firms. On the other hand, profitability (EBTA) is

statistically significant and negatively correlated with the OCFM of the firms. Industry classification is found to be statistically insignificant.

The examination of R-squared and adjusted R-Squared value shows that approximately 66% and 62% of the changes in the operating liquidity of sample Indian manufacturing firms can be explained by all the independent variables together. The values of F-statistics exhibit the fit of the relationship model at a significance level of 5%. The Durbin-Watson (D-W) score of 1.514 shows that the model is free from the problem of autocorrelation and serial correlation. The result of the Hausman test rejects the null hypothesis, thereby indicating that fixed effects panel data model or LSDV is preferred over random effects panel data model to run the regression model. Hence, the current model adopts the fixed effects panel data approach to test the required relationship.

Thus, financial leverage (D/A) affects the operating liquidity (CCC) of the selected 422 Indian manufacturing firms. The other factors that affect the liquidity are size, age, sales growth rate and profitability (EBTA).

To sum up, the empirical findings of the above three models (**Part A**) reveal that financial leverage affects the operating liquidity of the firms operating in the Indian manufacturing sector. The other factors that affect the liquidity are size, age, sales growth rate and profitability (EBTA). The results reveal that when firms use more debt, they become more liquid and use debt capital to finance their working capital operations. This confirms that Indian manufacturing firms follow a conservative approach of working capital, where long term finance are utilized to fund short term assets. Thus, the null hypothesis is rejected and the financial leverage determines the operating liquidity of the sample Indian manufacturing firms.

Part B – Combined Effect of leverage and operating liquidity on firm performance

Table 5.16 Empirical Result of Model 13

(Dependent Variable: ROA)

Independent Variables	**Coefficient**	**t-statistic**	**p-value**
Constant	0.129	8.206	0.020
D/A	-0.013	-8.230	0.001
CR	0.002	1.797	0.022
Size	0.007	2.989	0.003
Age	0.000	0.190	0.001
S-Gwth	0.010	6.582	0.000
Indty	0.028	3.943	0.849
Model Statistics			
Period	10	**Cross-Sections**	422
Total Panel (Balanced)	4220		
R^2	0.510		
Adjusted R^2	0.454		
F-statistics	9.225		
Prob. (F-statistics)	0.000		
D-W Statistics	1.516		
Hausman Test	**Chi-Sq. (χ2) / p-value**		
	60.782 / 0.000		

**Note: ***Estimate is statistically significant at $p \leq 0.05$

Source: CMIE Prowess, **Statistical Tool:** E-Views 8

Table 5.16 shows the empirical results of Model 13, where total debt to total assets ratio (D/A) is used as a proxy for financial leverage and current ratio (CR) represent the operating liquidity of the firm. The financial performance is represented by the return on assets (ROA) of the firms. The model is regressed at a significance level of 5%. It has been found that there is a significant and

negative relationship between leverage (D/A) and ROA. On the other hand, there is a significant and positive relationship between operating liquidity (CR) and ROA. Size, age and sales growth rate are statistically significant and positively correlated with the ROA of the sample firms. Industry classification is found to be statistically insignificant.

The examination of R-squared and adjusted R-Squared value shows that approximately 51% and 45% of the changes in the ROA of sample Indian manufacturing firms can be explained by all the independent variables together. The values of F-statistics exhibit the fit of the relationship model at a significance level of 5%. The Durbin-Watson (D-W) score of 1.516 shows that the model is free from the problem of autocorrelation and serial correlation. The result of the Hausman test rejects the null hypothesis, thereby indicating that fixed effects panel data model or LSDV is preferred over random effects panel data model to run the regression model. Hence, the current model adopts the fixed effects panel data approach to test the required relationship.

Thus, financial leverage (D/A) and operating liquidity (CR) jointly affects the financial performance of the selected 422 Indian manufacturing firms. The other factors that affect the performance are size, age and sales growth rate. The negative relationship between leverage and performance depicts that high debt level decreases the profitability of the firm because of the occurrence of high interest cost. On the other hand, the positive relationship between operating liquidity and performance reveals the huge requirements of liquid funds in the Indian manufacturing firms because of the nature and scale of their operations. The results also reveal that large sized and old aged firms generally enjoy a higher return on their assets. High sales growth rate results in increased performance of the firm.

Table 5.17 Empirical Result of Model 14

(Dependent Variable: ROA)

Independent Variables	Coefficient	t-statistic	p-value
Constant	0.134	8.512	0.010
D/A	-0.013	-8.387	0.002
CCC	0.004	3.631	0.003

Size	0.006	2.609	0.009
Age	0.000	0.602	0.002
S-Gwth	0.010	6.529	0.000
Indty	0.028	3.946	0.548
Model Statistics			
Period	10	**Cross-Sections**	422
Total Panel (Balanced)	4220		
R^2	0.511		
Adjusted R^2	0.456		
F-statistics	9.272		
Prob. (F-statistics)	0.000		
D-W Statistics	1.521		
Hausman Test	**Chi-Sq. (χ2) / p-value**		
	66.177 / 0.000		

**Note: ***Estimate is statistically significant at $p \leq 0.05$

Source: CMIE Prowess, **Statistical Tool:** E-Views 8

Table 5.17 shows the empirical results of Model 14, where total debt to total assets ratio (D/A) is used as a proxy for financial leverage and cash conversion cycle (CCC) represent the operating liquidity of the firm. The financial performance is represented by the return on assets (ROA) of the firms. The model is regressed at a significance level of 5%. It has been found that there is a significant and negative relationship between leverage (D/A) and ROA. On the other hand, there is a significant and positive relationship between operating liquidity (CCC) and ROA. Size, age and sales growth rate are statistically significant and positively correlated with the ROA of the sample firms. Industry classification is found to be statistically insignificant.

The examination of R-squared and adjusted R-Squared value shows that approximately 51% and 46% of the changes in the ROA of sample Indian manufacturing firms can be explained by all the independent variables together. The values of F-statistics exhibit the fit of the relationship model at a significance level of 5%. The Durbin-Watson (D-W) score of 1.521 shows that the model is free

from the problem of autocorrelation and serial correlation. The result of the Hausman test rejects the null hypothesis, thereby indicating that fixed effects panel data model or LSDV is preferred over random effects panel data model to run the regression model. Hence, the current model adopts the fixed effects panel data approach to test the required relationship.

Thus, financial leverage (D/A) and operating liquidity (CCC) jointly affects the financial performance of the selected 422 Indian manufacturing firms. The other factors that affect the performance are size, age and sales growth rate. The negative relationship between leverage and performance depicts that high debt level decreases the profitability of the firm because of the occurrence of high interest cost. On the other hand, the positive relationship between operating liquidity and performance reveals the huge requirements of liquid funds in the Indian manufacturing firms because of the nature and scale of their operations. The results also reveal that large sized and old aged firms generally enjoy a higher return on their assets. High sales growth rate results in increased performance of the firm.

Table 5.18 Empirical Result of Model 15

(Dependent Variable: ROA)

Independent Variables	**Coefficient**	**t-statistic**	**p-value**
Constant	0.127	8.073	0.001
D/A	-0.013	-8.207	0.001
OCFM	0.005	2.777	0.006
Size	0.006	2.806	0.005
Age	0.000	0.336	0.001
S-Gwth	0.011	6.793	0.000
Indty	0.029	4.042	0.738
Model Statistics			
Period	10	**Cross-Sections**	422
Total Panel (Balanced)	4220		
R^2	0.510		

Adjusted R^2	0.455
F-statistics	9.246
Prob. (F-statistics)	0.000
D-W Statistics	1.511
Hausman Test	**Chi-Sq. (χ2) / p-value**
	65.781 / 0.000

**Note: ***Estimate is statistically significant at $p \leq 0.05$

Source: CMIE Prowess, **Statistical Tool:** E-Views 8

Table 5.18 shows the empirical results of Model 15, where total debt to total assets ratio (D/A) is used as a proxy for financial leverage and operating cash flow margin (OCFM) represent the operating liquidity of the firm. The financial performance is represented by the return on assets (ROA) of the firms. The model is regressed at a significance level of 5%. It has been found that there is a significant and negative relationship between leverage (D/A) and ROA. On the other hand, there is a significant and positive relationship between operating liquidity (OCFM) and ROA. Size, age and sales growth rate are statistically significant and positively correlated with the ROA of the sample firms. Industry classification is found to be statistically insignificant.

The examination of R-squared and adjusted R-Squared value shows that approximately 51% and 46% of the changes in the ROA of sample Indian manufacturing firms can be explained by all the independent variables together. The values of F-statistics exhibit the fit of the relationship model at a significance level of 5%. The Durbin-Watson (D-W) score of 1.511 shows that the model is free from the problem of autocorrelation and serial correlation. The result of the Hausman test rejects the null hypothesis, thereby indicating that fixed effects panel data model or LSDV is preferred over random effects panel data model to run the regression model. Hence, the current model adopts the fixed effects panel data approach to test the required relationship.

Thus, financial leverage (D/A) and operating liquidity (OCFM) jointly affects the financial performance of the selected 422 Indian manufacturing firms. The other factors that affect the performance are size, age and sales growth rate.

To sum up, the empirical findings of the above three models (**Part B**) reveal that financial leverage and operating liquidity jointly affect the performance of the firms operating in the Indian manufacturing sector. The other factors that affect the performance are size, age and sales growth rate. The negative relationship between leverage and performance depicts that high debt level decreases the profitability of the firm because of the occurrence of high interest cost.

On the other hand, the positive relationship between operating liquidity and performance reveals the huge requirements of liquid funds in the Indian manufacturing firms because of the nature and scale of their operations. Thus, the null hypothesis is rejected and there exist a significant relationship between leverage, operating liquidity and performance of the sample Indian manufacturing firms.

5.4 CONCLUSION

In summary, Chapter 5 has examined the impact of leverage on the firm value of the sample firms. Then, it investigates the effect of ownership structure on the leverage decisions of the firms. Further, it analyses the impact of leverage on the financial performance of the sample firms. Finally, it examined the relationship between leverage, operating liquidity and financial performance of the selected firms. Based on the results of Hausman test, the panel data fixed effects regression models were used to test the various relationships of capital structure with the different financial parameters of the sample firms.

The empirical findings of the regression models reveal that leverage affects the firm value of the selected 422 Indian manufacturing firms. The Modigliani and Miller (MM) proposition of a firm's value is independent of its capital structure doesn't hold true for the firms operating in the Indian manufacturing sector. Further, the results reveal that financial leverage is affected by the ownership structure of the firms operating in the Indian manufacturing sector. The managerial ownership (PSH) is negatively related to the leverage, reflecting the conflict of interest between internal equity shareholders and debt holders. This negative relationship has signaled the managers to consider the sentiments of promoters before deciding upon the target leverage level.

The financial leverage also affects the financial performance of the firms operating in the Indian manufacturing sector. The negative relationship between leverage and financial performance parameters advocate the low usage of debt capital as high debt involves the high cost of interest. Then, it was found that the financial leverage affects the operating liquidity of the firms operating in the Indian manufacturing sector. This confirms that Indian manufacturing firms follow a conservative approach of working capital, where long term finance are utilized to fund short term assets. Finally, the financial leverage and operating liquidity jointly affect the performance of the firms operating in the Indian manufacturing sector. There exist a significant relationship between leverage, operating liquidity and performance of the sample Indian manufacturing firms.

Thus, this chapter draws major conclusions about the various relationships of leverage in the context of the Indian manufacturing sector. It provides the scope for the future study. These results can be referred by the corporate managers, while taking decisions on the capital structure of the Indian manufacturing firms.

CHAPTER 6

SUMMARY, CONCLUSIONS AND SUGGESTIONS

6.1 INTRODUCTION

The capital structure decision provides financing to the firm with the help of debt and equity capital. An optimum capital mix reduces the overall cost of capital and ultimately increases the wealth of the shareholders. An unlevered firm uses only equity capital as compared to the levered firm which uses both debt and equity capital. In other words, a firm has to decide its target capital mix and it has to manage its capital structure successfully. Various capital structure theories and assumptions have been presented in the past. The implications of these theories and assumptions have been investigated under the scope of present study. The present study focuses on firms operating in the Indian manufacturing sector.

This chapter summarizes the major findings of the present study and draws suggestions and recommendations for the Indian manufacturing sector. It aims to provide practical implications to the firms operating in the Indian manufacturing sector. The present study addresses the seven research questions as mentioned in chapter 3 of the study. This chapter draws the results and conclusions of the addressed research questions, so that the intended objectives of the present study are achieved. Then, it provides the implications of the study and policy recommendations. Finally, the chapter ends with the discussions on the limitations of the study that provide the base for future research work of the study.

6.2 SUMMARY AND CONCLUSION

This section summarizes the key findings of the study and answers the seven research questions mentioned in chapter 3 of the present study. The first three research questions have been empirically addressed in chapter 4 of the present study, whereas, the last four research questions are covered under chapter 5 of the present study.

6.2.1 Whether firm specific or micro-economic variables and macro-economic variables of the country determine the capital structure of the selected Indian manufacturing firms?

The main objective of the present study is to identify the key determinants of capital structure of the sample Indian manufacturing firms. The determinants are studied with the help of various firm specific and macro-economic variables and they are identified on the basis of past capital structure studies. The panel data fixed effects regression models are employed to analyze the capital structure determinants. The study was conducted for the period from 2004 to 2013. The key empirical findings of the study are as follows:

1. Firm specific factors like firm size, firm age, asset tangibility, asset growth rate, profitability, non-debt tax shield (NDTS) and uniqueness are the key significant factors that determine the capital structure of the selected 422 Indian manufacturing firms.

2. Macro-economic factors like GDP growth rate and inflation rate do not affect the financial leverage of the sample firms. In other words, it was found that only firm-specific factors determine the capital structure of the selected Indian manufacturing firms.

3. There is a significant and negative relationship between financial leverage and firm size. The negative relationship depicts that large Indian manufacturing sector firms are diversified and they add a good amount of retained earnings to their business. As a result, they rely more on retained earnings rather than on debt financing. In other words, large sized firms prefer internal financing over external source of financing.

4. The significant and positive relationship between financial leverage and firm age reveals that old aged Indian manufacturing firms prefer debt financing as they enjoy an easy access to the capital markets because of their long period of operations and experience. They had built a market reputation and goodwill in the industry, which helps them to source debt finance for their capital investments. Also, the cost of debt is cheaper than the cost of equity.

5. There is a significant and positive relationship between financial leverage and asset tangibility. The positive relationship reveals that Indian manufacturing firms had huge investments in property, plant and equipment's (fixed assets), therefore they can avail more debt at a lower interest rate because of the high collateral value available from their fixed assets. Higher the collateral value of fixed assets, more is the chance of using such assets to obtain debt as such firms has a low probability of bankruptcy.

6. The significant and negative relationship between financial leverage and profitability depicts that profitable Indian manufacturing firms prefer internal financing over external source of financing. In other words, profitable firms tend to rely more on the retained earnings to finance their assets, growth and operations. Also, retained earnings or internal financing is the cheapest source of capital finance.

7. There is a significant and negative relationship between financial leverage and asset growth rate. The negative relationship reveals that Indian manufacturing firms with high growth rate prefer low debt usage as financing the growth with high debt increases the risk and cost of future bankruptcy.

8. The significant and positive relationship between financial leverage and non-debt tax shield (NDTS) or depreciation tax shield reveals that Indian manufacturing firms do not consider depreciation tax shields as a substitute for interest tax shields. In other words, Indian firms do not support the neutrality of depreciation and interest taxation on capital structure. The positive relationship provides incentives to firms to borrow more. It increases the effective tax rate and thus, the value of the debt tax shield. Also, the depreciation level and tax credits reflect the asset tangibility, which generates them.

9. There is a significant and negative relationship between financial leverage and uniqueness. The uniqueness of the firm reveals that how much money is invested in creating unique identity of the firm's products. In other words, it involves the cost of brand creation. The uniqueness cost of the firm involves advertising expenses, sales and distribution expenses, R&D cost, etc. The negative relationship depicts that Indian

manufacturing firm who spends heavily on marketing and sales, generally maintains a low level of debt as sufficient funds are not available to cover the high interest cost.

10. The other firm specific variables like dividend payout ratio (DPO), business risk, liquidity, interest coverage ratio (ICR), cash flow coverage ratio (CFCR) and industry classification are found to be insignificant in determining the leverage of the sample firms. However, the coefficients of DPO, ICR and CFCR are positive, which reveals that high cash rich firms maintain a high level of leverage. Industry classification is positive means firm follow their industry benchmarks. On the other hand, the coefficients of risk and liquidity are found to be negative, which depicts that risky and liquid firms prefer low usage of debt.

11. Both the macro-economic variables, i.e. GDP and inflation are found to be insignificant. However, the coefficient of GDP is positively related to the leverage, which reflects that economic development of the country increases the leverage level. On the other hand, the coefficient of inflation is negatively related to the leverage, which reflects that when prices are rising, it increases the interest cost and ultimately, decreases the leverage level.

Thus, it is clear from the above findings that only firm specific factors like size, age, tangibility, asset growth rate, profitability, non-debt tax shield and uniqueness are the key significant factors that determine the capital structure of the selected 422 Indian manufacturing firms. These factors have to be considered before deciding upon the target leverage level. Further, it was found that macro-economic factors like GDP, inflation do not affect the leverage of the sample firms. This traditional factors that determine the leverage of the developed countries also affect the leverage of the selected Indian manufacturing firms.

The results of the present study are in line with Harris and Raviv (1991), Chung (1993), Rajan and Zingales (1995), Chittenden et al., (1996), Booth et al., (2001), Fama and French (2002), Cassar and Holmes (2003), Bhole and Mahakud (2004), Gupta (2004), Pandey (2004), Akhtar (2005), Miao (2005), Abor and Biekpe (2005), Coleman (2006), Delcoure (2007), Eriotis et al., (2007), Mazur (2007), Das and Roy (2007), De Jong et al., (2008), Shanmugasundaram (2008), Ebel

Ezeoha (2008), Rajagopal (2009), Mukherjee and Mahakud (2010), Zhang (2010), Mittal (2011), Ahmed Sheikh and Wang (2011), Adhegaonkar and Indi (2012), Purohit and Khanna (2012), Kouki and Said (2012), Bayrakdaroglu et al., (2013) and Moyo et al., (2013).

6.2.2 Whether capital structure theories like Trade off theory (TOT) or Pecking order theory (POT) are applicable to the firms operating in the Indian manufacturing sector?

The present study analyses whether the implications of the trade-off theory and pecking order theory are applicable to the Indian manufacturing firms or not. It investigates the propositions of these capital structure theories to know which theory predictions are more applicable to the sample Indian manufacturing firms. The trade-off theory states that an optimum leverage level can be attained by maintaining a balance between the tax shield benefits of debt and associated cost of financial distress. It focused on the debt capital usage till this trade-off can be maintained. On the other hand, pecking order states that the firms should finance their funds starting from retained earnings, then debt capital and equity as a last resort. It provides a pecking preference of the capital source and do not favor any optimum target level. Retained earnings or internal funds are more preferred over other sources of capital as it is the cheapest source of capital to meet the funding needs of the firms. Thus, each theory of capital structure has its own implications.

The theories are tested with the help of four firm specific variables and their relationship with the financial leverage. The four variables are profitability, size, tangibility and growth rate. The panel data fixed effects regression models are employed to validate the capital structure theories. The validation of trade-off and pecking order theories for the Indian manufacturing sector will be confirmed on the basis of the theory's predictions and their evaluation with the empirical findings of the panel models. The empirical results of the study are as follows:

1. It has been found that profitability, size and growth rate are statistically significant and negatively correlated with the leverage of the sample firms. On the other hand, tangibility is statistically significant and positively correlated with the financial leverage of the sample firms.

2. The negative relationship between the leverage and profitability supports the pecking order theory. As per pecking order theory, the profitable firms prefer internal financing or retained earnings as the first source of capital finance to fund their current and future projects.

3. The negative relationship between the leverage and size supports the pecking order theory. As per pecking order theory, the large sized firms uses more of retained earnings because of their prolong history of adding a good amount of retained earnings to their business. As a result, they rely more on retained earnings rather than on debt financing.

4. The positive relationship between the leverage and tangibility supports the trade-off theory. As per trade-off theory, the firms with high tangibility of fixed assets use more of debt finance. Tangibility enables increased borrowing capacity at a lower interest rate because of the high collateral value of fixed assets. Thus, it enables the firms to borrow more.

5. The negative relationship between the leverage and growth supports the trade-off theory. As per trade-off theory, the firms with high growth rate increases the risk and future cost of bankruptcy because the firms use more debt to support growth opportunities.

Thus, both trade-off and pecking order theory explains the capital structure of the sample 422 Indian manufacturing firms. There is no single theory, which is more applicable to the Indian manufacturing sector, rather implications of both the theories are equally significant in the context of the Indian manufacturing sector. Each theory of capital structure has its own relevance for the sample firms. The profitability and size variable supports the existence of pecking order theory. On the other hand, the tangibility and growth rate variable results are in line with the implications of the trade-off theory. Hence, both the theories of capital structure exist simultaneously in the Indian manufacturing sector.

The results of the present study are in line with Harris and Raviv (1991), Rajan and Zingales (1995), Booth et al., (2001), Bhole and Mahakud (2004), Gupta (2004), Pandey (2004), Akhtar (2005), Abor and Biekpe (2005), Mazur (2007), Das and Roy (2007), Seifert and Gonenc (2008),

Shanmugasundaram (2008), Rajagopal (2009), Frank and Goyal (2009), Silva Serrasqueiro and Rego Rogao (2009), Ravi et al., (2009), Mukherjee and Mahakud (2010), Mittal (2011), Ahmed Sheikh and Wang (2011), Adhegaonkar and Indi (2012), Purohit and Khanna (2012), Kouki and Said (2012), Bayrakdaroglu et al., (2013) and Moyo et al., (2013).

6.2.3 Do Indian manufacturing firms prefer debt financing or equity financing? What are there past leverage level trends?

The present study investigates the level of debt in the capital structure of sample 422 Indian manufacturing firms. The capital structure trends are analyzed with the help of ratio analysis. The leverage ratio considered for the study includes Total Debt/Total Assets (D/A), Total Debt/Total Capital (D/C) and Total Debt/Total Equity (D/E). The key trends are as follows:

1. The average debt to assets (D/A) percentage of Indian manufacturing sample firms was around 29% from 2004 to 2013. It reflects that the significant amounts of total assets are financed by the debt capital and involves a chance of financial risk. However, there is some fall in the D/A percentage for a few years after the global recession period of 2008.

2. The average debt to capital (D/C) percentage of Indian manufacturing sample firms was around 45% from 2004 to 2013. It reflects the aggressive financing and preference of companies towards debt financing, which involves a chance of bankruptcy risk. However, there is some dip in the D/C percentage for a few years after the global recession period of 2008.

3. The average debt to equity (D/E) ratio of Indian manufacturing sample firms was around 0.81x from 2004 to 2013. It reflects the high financial leverage and preference of companies towards debt financing, which involves a chance of financial risk. However, there is some dip in the D/E ratio for a few years after the global recession period of 2008.

4. It has been found that the average debt amount has increased continuously from 2004 to 2013 at a compounded annual growth rate (CAGR) of 17.38% approx. It reflects a significant increase in the debt level usage and firms preference for debt to finance their

operations and assets. The average debt level of the sample Indian manufacturing firms in 2004 was around Rs. 1,367 million and it was increased to Rs. 5,783 million in 2013.

5. The average equity amount has increased at a CAGR of 17.44% from 2004 to 2013. It also reflects a significant increase in the equity level usage. The average equity level of the sample Indian manufacturing firms in 2004 was around Rs. 1,552 million and it was increased to Rs. 6,596 million in 2013.

6. The average assets amount has increased continuously from 2004 to 2013 at a CAGR of 16.99% approx. It reflects a huge investment in property, plant and equipment's. The average asset level of the sample Indian manufacturing firms in 2004 was around Rs. 4,573 million and it was increased to Rs. 18,771 million in 2013.

Thus, there is a definite and significant increase in the debt level usage in the Indian manufacturing sector for the period from 2004 to 2013. However, there is some fall in the debt level usage for a few years after the recession of 2008. But, it is observed from the trends that firms have revived their debt level usage, which shows the preference of firms towards debt financing. Further, it has been observed that Indian manufacturing sample firms follow some target leverage level. The results are in line with Bhole and Mahakud (2004) and Bhayani (2009).

6.2.4 Does a statistical relationship between leverage level and the value of the firm exist, and if it does, how much of the deviation in the value of the firm can be explained by the leverage?

The present study analyses the relationship between the leverage and firm value of the sample firms. In other words, the objective is to determine whether leverage affects the firm value of the selected Indian manufacturing firms or not. Enterprise value (EV), share price (P) and price to earnings (PE) ratio are used to represent the firm value and D/A is used to represent the leverage of the sample firms. The panel data fixed effects regression model was employed to test the leverage value relationship. The empirical results of the study are as follows:

1. It has been found that leverage, size, age, profitability and growth opportunities are the key significant factors that affect the firm value of the selected 422 Indian manufacturing firms. On the other hand, business risk and industry classification are found to be statistically insignificant.

2. The significant and positive relationship (Coefficient: 8.737) between leverage and enterprise value (EV) depicts that leverage increases the aggregate value of the firm. Similarly, the positive relationship (Coefficient: 4.443) between leverage and share price reveals that debt issue reflects the confidence of the firm and generates trust in the minds of the investors. As a result, the share price of the firm increases. Further, the results reveal that there is an inverse relationship (Coefficient: -0.304) between leverage and PE ratio of the firm. Firms with low PE ratios represent high yield value of the shareholders. Hence, the increase in the leverage reduces the PE ratio and thereby, increases the firm value.

3. Thus, the Modigliani and Miller (MM) proposition of a firm's value is independent of its capital structure doesn't hold true for the firms operating in the Indian manufacturing sector. The financial leverage affects the firm value of the selected Indian manufacturing firms.

4. It has been observed that firm size and firm age increases the value of the firm. Similarly, profitable firms and firms with high growth opportunities increase their firm value. Business risk and industry classification do not affect the firm value of the sample firms.

Thus, the results reveal that capital structure affects the firm value of the sample Indian manufacturing firms. The results are in line with Gangadhar and Begum (2003), De Wet (2006), Sharma (2006), Madan (2007), Slim and Fathi (2010), Chowdhury and Chowdhury (2010), Cheng et al., (2010), Lin and Chang (2011), Cheng and Tzeng (2011) and Ogbulu and Emeni (2012).

6.2.5 Does the ownership structure of the manufacturing firm determine its capital structure?

The present study analyses the relationship between the leverage and ownership structure of the sample firms. In other words, the objective is to determine whether ownership structure affects the capital structure of the selected Indian manufacturing firms or not. Percentage of promoter shareholdings (PSH), percentage of non-promoter institutional shareholdings (NPISH) and percentage of non-promoter non-institutional shareholdings including custodians (NPNISH) are used to represent the ownership structure of the sample firms. D/A is used to represent the leverage of the sample firms. The panel data fixed effects regression model was employed to test the desired relationship. The empirical results of the study are as follows:

1. It has been found that there is a significant and negative relationship between leverage and PSH. The negative relationship between PSH and leverage confirms the concept of agency theory which shows a conflict of interest between equity shareholders and debt holders. It has signaled the managers to consider the sentiments of promoters before deciding upon the target leverage level. Promoters want decisions to be taken in their favor at the cost of debt holders. They want companies to be less levered so that they can enjoy more profitability due to the absence of financial cost. Hence, managerial ownership (PSH) affects the leverage decisions of the sample firms.

2. There is a significant and positive relationship between leverage and NPISH. The positive relationship between NPISH and leverage confirms the concept of agency theory which shows that external equity shareholders, uses debt as a controlling device to counter the agency problem of free cash flows. Hence, NPISH affects the leverage decisions of the sample firms.

3. It has been found that there is a significant and positive relationship between leverage and NPNISH. The positive relationship between NPNISH and leverage confirms the concept of agency theory which shows that external equity shareholders, uses debt as a controlling device to counter the agency problem of free cash flows. Hence, NPNISH affects the leverage decisions of the sample firms.

4. All the control variables like size, age, profitability, growth rate, tangibility and NDTS are significant determinants of the leverage of the sample firms.

Thus, ownership structure explains the leverage of the sample Indian manufacturing firms. The results are in line with Wang (2003), Welch (2003), Pandey (2004), Nguyen and Ramachandran (2006), Huang (2006), Abor (2008), King and Santor (2008), Ravi et al., (2009), Huang et al., (2011), Lim (2012), Ganguli (2013) and Quang and Xin (2014).

6.2.6 Does a statistical relationship between leverage level and the financial performance of the firm exist, and if it does, how much of the deviation in the financial performance of the firm can be explained by the leverage?

The present study analyses the impact of leverage on the financial performance parameters of selected Indian manufacturing firms. Return on assets (ROA), return on equity (ROE) and Tobin's Q value are used to represent the financial performance parameters of the sample firms. D/A is used to represent the leverage of the sample firms. The panel data fixed effects regression model was employed to test the desired relationship. The empirical results of the study are as follows:

1. There is a significant and negative relationship (Coefficient: -0.013) between leverage and ROA. The negative relationship reveals low debt usage to increase the overall return on assets, as debt capital carries a higher interest cost which reduces the profitability of the firm.

2. It has been found that there is a significant and negative relationship (Coefficient: -0.008) between leverage and ROE, which confirms the agency concept that there is a conflict of interest between equity shareholders and debt holders. Also, high debt usage carries a higher interest cost which reduces the profitability of the firm.

3. There is a significant and negative relationship (Coefficient: -0.017) between leverage and Tobin's Q value. The negative relationship reveals low debt usage to increase the score of

Tobin's Q, as debt value is generally available as accounting book value as compared to the market or traded value.

4. Regarding control variables, size, age, sales growth rate and asset turnover are statistically significant and positively correlated with the performance of the sample firms. The large sized and old aged firms enjoy a higher return. High sales growth rate and asset turnover ratio reflect the efficiency and increases the performance of the firm. On the other hand, risk, liquidity and industry classification are found to be statistically insignificant and do not affect the performance of the sample firms.

Thus, financial leverage affects the financial performance of the firms operating in the Indian manufacturing sector. The results are in line with Gangadhar and Begum (2003), Madan (2007), Salehi and Biglar (2009), Olufunso et al., (2010), Obert and Olawale (2010), Azhagaiah and Gavoury (2011), Pouraghajan et al., (2012), Muritala (2012), Salim and Yadav (2012), Chinaemerem and Anthony (2012), Goyal (2013), Olokoyo (2013), Ahmed Sheikh and Wang (2013), Twairesh (2014), Quang and Xin (2014) and Mireku et al., (2014).

6.2.7 Does a statistical relationship between leverage level and the operating liquidity of the firm exist, and if it does, how much of the deviation in the operating liquidity of the firm can be explained by the leverage? Also, What is the combined effect of operating liquidity and financial leverage on the financial performance of the selected Indian manufacturing firms?

The present study analyses the impact of leverage on the operating liquidity of selected Indian manufacturing firms. Further, it investigates the combined effect of leverage and operating liquidity on the performance of the sample firms. Current ratio (CR), cash conversion cycle (CCC) and operating cash flow margin (OCFM) is used to represent the operating liquidity of the sample firms. Return on assets (ROA) is used to represent the financial performance and D/A is used to represent the leverage of the sample firms. The panel data fixed effects regression model was employed to test the desired relationship. The empirical results of the study are as follows:

1. It has been found that there is a significant and positive relationship between leverage (D/A) and operating liquidity measures of the sample firms (CR, CCC and OCFM). The

positive coefficient values are 0.015 (CR), 0.587 (CCC) and 0.008 (OCFM). The results reveal that when firms use more debt, they become more liquid and use debt capital to finance their working capital requirements. This confirms that Indian manufacturing firms follow a conservative approach of working capital, where long term finance are utilized to fund short term assets.

2. Regarding control variables, size, age and sales growth rate are statistically significant and positively correlated with the operating liquidity of the sample firms. On the other hand, profitability is statistically significant and negatively correlated with the operating liquidity of the firms. Industry classification is found to be statistically insignificant.

3. It has been found that financial leverage (D/A) and operating liquidity measures (CR, CCC and OCFM) jointly affects the financial performance (ROA) of the selected 422 Indian manufacturing firms. There is a significant and negative relationship between leverage (D/A) and ROA (Coefficient: -0.013). On the other hand, there is a significant and positive relationship between operating liquidity measures (CR, CCC and OCFM) and ROA. The positive coefficient values are 0.002 (CR), 0.004 (CCC) and 0.005 (OCFM). The control variables like size, age and sales growth rate are statistically significant and positively correlated with the performance of the sample firms. Industry classification is found to be statistically insignificant.

4. The negative relationship between leverage and performance depicts that high debt level decreases the profitability of the firm because of the occurrence of high interest cost. On the other hand, the positive relationship between operating liquidity and performance reveals the huge requirements of liquid funds in the Indian manufacturing firms because of the nature and scale of their operations.

Thus, financial leverage affects the operating liquidity of the firms operating in the Indian manufacturing sector. Further, both financial leverage and operating liquidity jointly affect the financial performance of the sample firms. Hence, there exist a significant relationship between leverage, operating liquidity and financial performance of the sample Indian manufacturing firms.

The results are in line with Nazir and Afza (2009), Taleb et al., (2010), Gill (2011), Zubairi (2011), Saarani and Shahadan (2012), Palombini and Nakamura (2012) and Naser et al., (2013).

6.3 IMPLICATIONS OF THE STUDY AND POLICY RECOMMENDATIONS

This study analyzes empirically the factors that determine the capital structure of Indian manufacturing firms. Then, it examines the theories of capital structure along with the leverage trends. Finally, the study investigates the various relationships of financial leverage with the different financial parameters of the sample firms. Thus, the present study contributes to the existing literature and provides an insight of the capital structure of Indian manufacturing firms. It will aid the regulators in making better financial policies for the development of the Indian manufacturing sector.

Valuable insights and analysis opportunities given by the study models will help the financial managers, analyst and other stakeholders to better evaluate the firms' leverage structure. It will further help them to analyze their leverage in a better way, to increase the overall performance of the firm. The study also helps the managers in understanding the areas of weakness and strengths in financial management and how much extra strength is required in order to become as good as their competitors. It provides the evidences for better understanding of the financial behaviors of firms in developing economies like India.

The results will also help managers of international firms planning to invest in the Indian manufacturing sector by familiarizing them with the financial practices prevalent here and helping them understand how these practices are different from the ones in their native countries. It will help practitioners achieve the target of maximizing shareholder wealth through proper financial management. Thus, the present study will provide greater insights into the financial management practices in the Indian manufacturing sector and will therefore help financial managers to make better decisions.

The findings of the present study provide recommendations to the corporate managers. The results of this study can be considered by them to draw meaningful conclusions, while deciding upon the target leverage level of the Indian manufacturing firm. They can use this study for abandoning or

continuing with the existing corporate financial policies. Findings of the study suggest following recommendations to policymakers and corporate managers:

1. Firm size, firm age, asset tangibility, asset growth rate, profitability, non-debt tax shield (NDTS) and uniqueness are the key factors that affect the leverage of the Indian manufacturing sector. It is recommended that corporate managers should consider these factors before deciding upon the target leverage level. Efforts should be paid to the importance of each factor and consequently its effect on the maximization of shareholder's wealth.

2. The trade-off theory explains the Indian manufacturing sector as supported by tangibility and growth factor. The positive relationship between leverage and tangibility recommends policies to utilize fixed assets as a collateral because it helps the firms to borrow at a lower interest rate. However, collateral limit should be maintained as excessive borrowing lead to the risk of bankruptcy. On the other hand, the negative relationship between leverage and growth recommends the prudential measures to make leverage policies more flexible during growth times, so that the excessive leverage level should not be maintained to avoid the risk of bankruptcy. Thus, capital structure balance should be maintained, which ultimately maximizes the value of the firm.

3. The pecking order also explains the Indian manufacturing sector as supported by profitability and size factor. The negative relationship between leverage and both profitability and size recommends policies to utilize internal earnings or retained earnings as a primary source to meet the requirements of the capital investments. Retained earnings are the cheapest source of capital finance. The large sized firms should continue to add more and more retained earnings to their business to avoid extra debt. Further, appropriate measures should be taken to reduce the dependence on debt in their capital structures as it reduces the profitability of the firm.

4. The positive relationship between leverage and firm age implies that old firms enjoy an easy access to the capital markets because of their long period of operations and market reputation. Therefore, it is recommended to control the financial behavior of these firms

as any extra debt burden without its usage can lead to the bankruptcy of the firm. Similarly, the positive relationship between leverage and depreciation tax shield implies that Indian manufacturing firms do not consider depreciation tax shields as a substitute for interest tax shields. Therefore, it is recommended to control the financial behavior of these firms and consider depreciation tax shield as a substitute for an interest tax shield which will help in maintaining the target leverage level.

5. The leverage trends reveal that there is a definite and significant increase in the debt level usage in the Indian manufacturing sector. However, there is some fall in the debt level usage for a few years after the recession of 2008. But, it is observed from the trends that firms have revived their debt level usage, which shows the preference of firms towards debt financing. It is recommended that Indian manufacturing firms should maintain their target debt ratios and avoid excessive debt as it reduces the profitability and performance of the firm. High debt exposure can lead to the risk of bankruptcy.

6. The findings reveal that leverage increases the value of the firm. Therefore, it is recommended that an optimum debt level should be maintained, which reduces the overall cost of capital and ultimately, increases the wealth of the shareholders. Any debt without its earning potential can be harmful to the financial health of the firm. Thus, Indian firms should follow their optimum target debt ratios. Further, the managers should consider factors like size, age, profitability and growth opportunities, which also affect the value of the Indian manufacturing firms.

7. The negative relationship between leverage and managerial ownership implies that a conflict of interest between equity shareholders and debt holders exists. In other words, the concept of agency cost theory is applicable to the Indian manufacturing sector. Therefore, it is recommended that the corporate managers should consider the interest of both shareholders and debt holders, before deciding upon the target debt ratios. The managers should not get influenced by the internal shareholders. They should avoid the problem of under-investment and over-investment. Further, it is recommended for the policymakers that debt should be used as a control mechanism to control the problem of free cash flows. Firm's cash flows should be not used for the personal benefits of

managers. Also, debt issuance sends positive signal in the market, which will increase the value of the firm.

8. The results reveal that leverage reduces the financial performance of the firm as reflected by the performance parameters like ROA, ROE and Tobin's Q. Therefore, it is recommended that Indian manufacturing firms should depend more on internal earnings of the firms as compared to the debt. The increase in the debt capital will increase the financial burden and ultimately, reduces the profitability of the firm. The managers should also consider the factors like size, age, sales growth rate and asset turnover, which affects the performance of the firm. Therefore, an appropriate debt ratio should be maintained, without harming the financial performance of the firm.

9. The findings of the study depict that leverage increases the operating liquidity of the firm. It implies that Indian manufacturing firms use debt capital to finance their working capital requirements. This confirms that Indian manufacturing firms follow a conservative approach of working capital, where long term finance are utilized to fund short term assets. Therefore, it is recommended that Indian manufacturing firms should follow a balanced approach of working capital, where short term sources are utilized for short-term needs and long term sources are used for long-term needs. The managers should also consider the factors like size, age, profitability and sales growth rate, which affect the operating liquidity of the Indian manufacturing firms. Further, the results reveal there is a positive relationship between operating liquidity and firm performance. It reflects the huge requirements of liquid funds in the Indian manufacturing firms because of the nature and scale of their operations. Thus, both leverage and operating liquidity affect the performance of the firm. It is therefore recommended that both financial leverage and working capital should be efficiently managed to increase the overall performance of the firm.

Thus, it is recommended that Indian manufacturing firms should follow a balanced and target approach for financing needs, which will maximize the wealth of the shareholders. They should use retained earnings in financing new investments and operational cost. With the past financial crisis in mind, Indian firms should increase their cash generation capacity through efficient asset

management, increase competitiveness, establish healthy bank relations and provide highly trained managerial personnel to upgrade technologies with the new global trends.

6.4 LIMITATIONS OF THE STUDY

The present study and its empirical analysis are limited to certain factors due to the scope of the study. The broad limitations of the study are explained below:

1. The results of the present study are limited to the Indian manufacturing sector only. Therefore, the results are indicative and not conclusive for the other industries and geographies in general.

2. The study is limited to manufacturing firms operating throughout the analysis period. This limitation restricted the number of firms to be included in the sample of the study and therefore the sample size (422 firms) was limited and small.

3. The study considered balanced panel data only and therefore, an equal number of firms are included in each year of the analysis. This balancing excluded several new firms from the study, which started their operations in the later years after 2004.

4. The study is limited to BSE listed Indian manufacturing firms only and therefore, non-listed, non-BSE and private firms are excluded from the scope of the study.

5. The study was conducted for the period from 2004 to 2013. Hence, it has been done with the limitations of time and resources.

6. The data for the entire study is collected from the secondary sources only. Therefore, the accuracy of the results depends entirely on the quality of data collected from those databases.

6.5 FUTURE RESEARCH

The present study focuses on the determinants of capital structure, its trends and relationships with other financial parameters of the firm in the Indian manufacturing sector. The results, scope and limitations of the present study have opened a wide variety of possible areas that require further research. Thus, there are several opportunities for future research work and these are presented as follows:

1. The present study relies purely on financial factors to analyze capital structure determinants and its relationships. But there are also other factors which do affect the leverage and financial performance of the firm. Hence, future research can be extended to include non-financial factors such as asset quality, product diversification, customer satisfaction, government policy, employee satisfaction, product quality, competition, buying behavior, licensing policy, information technology, corporate governance and industry reforms. These non-financial factors can be incorporated in the future models to answer various questions related to capital structure of the firm. Behavioral finance provides a good scope for inclusion of these non-financial factors.

2. The present study findings are limited to an overall Indian manufacturing sector only. Also, it was found that industry classification is not a significant factor. But there are many industries within the Indian manufacturing sector. Therefore, future research can be extended to analyze the capital structure of Indian manufacturing sector on the basis of these sub-industries. Also, future studies can re-investigate the industry classification factor in a detailed manner.

3. The present study does not focus on the speed of adjustment towards target leverage ratio. Therefore, future research can analyze the speed of adjustment of Indian manufacturing firms towards its target leverage ratios.

4. Future work may include more input and output variables to determine the capital structure of Indian manufacturing firms by incorporating more firm-specific and macroeconomic factors in second stage.

5. The study can be replicated with data from other industries in India and the results can be compared with our results to examine the differences in capital management across Indian industries. Similarly, it can be replicated with data from other countries and the results can be compared with our results to examine the differences in capital management across countries. Also, cross-country variations and institutional differences can be incorporated to investigate the further research.

6. This study tests the relationship between leverage and ownership structure. The ownership structure is one part of the corporate governance and in the present study it only touches the shareholding pattern of the firm's ownership structure. But, there are so many other factors which form the part of the ownership structure and corporate governance. Therefore, the future research can be extended by doing an in-depth analysis of corporate governance factors with the firm's leverage.

7. In the present study, there are certain important factors like business risk, DPO, ICR, CFCR, GDP growth rate and inflation rate are found to be insignificant in determining the capital structure of the Indian manufacturing firms. Hence, future studies can re-investigate these crucial factors in a detailed manner to test the above relationship.

8. The study investigates only trade-off and pecking order theories of the capital structure. Therefore, future research can be extended to investigate other theories of capital structure in the context of the Indian manufacturing sector.

9. Finally, a detailed analysis of factors affecting leverage, value, performance and operating liquidity can be done in the future research work.

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ANNEXURE 1: LIST OF SAMPLE FIRMS

1. 3M India Ltd.
2. A B B India Ltd.
3. A B C Bearings Ltd.
4. A C C Ltd.
5. A C I Infocom Ltd.
6. A D F Foods Ltd.
7. A N G Industries Ltd.
8. A P M Industries Ltd.
9. A P T Packaging Ltd.
10. A V T Natural Products Ltd.
11. Aarey Drugs & Pharmaceuticals Ltd.
12. Aarti Drugs Ltd.
13. Aarti Industries Ltd.
14. Aarvee Denims & Exports Ltd.
15. Accurate Transformers Ltd.
16. Acknit Industries Ltd.
17. Acrow India Ltd.
18. Acrysil Ltd.
19. Adarsh Plant Protect Ltd.
20. Addi Industries Ltd.
21. Adi Finechem Ltd.
22. Aditya Birla Chemicals (India) Ltd.
23. Aditya Ispat Ltd.
24. Aditya Spinners Ltd.
25. Ador Fontech Ltd.
26. Ador Welding Ltd.
27. Advance Multitech Ltd.
28. Advance Petrochemicals Ltd.
29. Advanced Micronic Devices Ltd.
30. Advik Laboratories Ltd.
31. Agro Dutch Inds. Ltd.
32. Agro Tech Foods Ltd.
33. Ahlcon Parenterals (India) Ltd.
34. Ahmednagar Forgings Ltd.
35. Aimco Pesticides Ltd.
36. Ajanta Pharma Ltd.
37. Ajanta Soya Ltd.
38. Akar Tools Ltd.
39. Aksh Optifibre Ltd.
40. Aksharchem (India) Ltd.
41. Albert David Ltd.
42. Alembic Ltd.
43. Alfa Ica (India) Ltd.
44. Alfa Laval (India) Ltd.
45. Alfa Transformers Ltd.
46. Alkyl Amines Chemicals Ltd.
47. Alok Industries Ltd.
48. Alps Industries Ltd.
49. Alstom T & D India Ltd.
50. Alufluoride Ltd.
51. Aluminium Industries Ltd.
52. Amal Ltd.
53. Amara Raja Batteries Ltd.
54. Amarjothi Spinning Mills Ltd.
55. Ambalal Sarabhai Enterprises Ltd.
56. Ambika Cotton Mills Ltd.
57. Ambuja Cements Ltd.
58. Amco India Ltd.
59. Amines & Plasticizers Ltd.
60. Amit Spinning Inds. Ltd.
61. Amrit Corp. Ltd.
62. Amrutanjan Health Care Ltd.

63. Amtek Auto Ltd.
64. Amtek India Ltd.
65. Andhra Petrochemicals Ltd.
66. Andrew Yule & Co. Ltd.
67. Anil Special Steel Inds. Ltd.
68. Anjani Portland Cement Ltd.
69. Anjani Synthetics Ltd.
70. Antarctica Ltd.
71. Anugraha Jewellers Ltd.
72. Anuh Pharma Ltd.
73. Apar Industries Ltd.
74. Apcotex Industries Ltd.
75. Apis India Ltd.
76. Aplab Ltd.
77. Apollo Tyres Ltd.
78. Arcee Industries Ltd.
79. Archies Ltd.
80. Aro Granite Inds. Ltd.
81. Arora Fibres Ltd.
82. Arrow Coated Products Ltd.
83. Artech Power Products Ltd.
84. Arvind International Ltd.
85. Arvind Ltd.
86. Arvind Remedies Ltd.
87. Asahi India Glass Ltd.
88. Asahi Industries Ltd.
89. Ashiana Ispat Ltd.
90. Ashima Ltd.
91. Ashirwad Steels & Inds. Ltd.
92. Ashish Polyplast Ltd.
93. Ashnoor Textile Mills Ltd.
94. Ashok Leyland Ltd.
95. Asian Electronics Ltd.
96. Asian Fertilizers Ltd.
97. Asian Flora Ltd.
98. Asian Paints Ltd.
99. Asian Star Co. Ltd.
100. Assam Company India Ltd.
101. Assambrook Ltd.
102. Associated Alcohols & Breweries Ltd.
103. Astra Microwave Products Ltd.
104. Astrazeneca Pharma India Ltd.
105. Atlas Copco (India) Ltd.
106. Atlas Cycles (Haryana) Ltd.
107. Atul Auto Ltd.
108. Atul Ltd.
109. Aunde India Ltd.
110. Aurangabad Paper Mills Ltd.
111. Aurobindo Pharma Ltd.
112. Austin Engineering Co. Ltd.
113. Auto Pins (India) Ltd.
114. Autolite (India) Ltd.
115. Automobile Corpn. Of Goa Ltd.
116. Automotive Axles Ltd.
117. Avantel Ltd.
118. Avanti Feeds Ltd.
119. Avery India Ltd.
120. Avon Organics Ltd.
121. Axtel Industries Ltd.
122. B & A Ltd.
123. B & A Packaging India Ltd.
124. B A S F India Ltd.
125. B C C Fuba India Ltd.

126. B C L Industries & Infrastructures Ltd.
127. B D H Industries Ltd.
128. B E M L Ltd.
129. B P L Ltd.
130. B S L Ltd.
131. Bagadia Colourchem Ltd.
132. Bajaj Electricals Ltd.
133. Bajaj Hindusthan Ltd.
134. Bajaj Steel Inds. Ltd.
135. Bal Pharma Ltd.
136. Balaji Amines Ltd.
137. Balaji Galvanising Inds. Ltd.
138. Balkrishna Industries Ltd.
139. Ballarpur Industries Ltd.
140. Balmer Lawrie & Co. Ltd.
141. Balmer Lawrie-Van Leer Ltd.
142. Balrampur Chini Mills Ltd.
143. Bambino Agro Inds. Ltd.
144. Banaras Beads Ltd.
145. Banco Products (India) Ltd.
146. Bannari Amman Sugars Ltd.
147. Bansisons Tea Inds. Ltd.
148. Banswara Syntex Ltd.
149. Baroda Extrusion Ltd.
150. Baroda Rayon Corpn. Ltd.
151. Basant Agro Tech (India) Ltd.
152. Bata India Ltd.
153. Batliboi Ltd.
154. Bayer Cropscience Ltd.
155. Belapur Industries Ltd.
156. Bengal Tea & Fabrics Ltd.
157. Berger Paints India Ltd.
158. Bhagawati Oxygen Ltd.
159. Bhageria Dye-Chem Ltd.
160. Bhagiradha Chemicals & Inds. Ltd.
161. Bhagwati Autocast Ltd.
162. Bhagyanagar India Ltd.
163. Bhandari Hosiery Exports Ltd.
164. Bhansali Engineering Polymers Ltd.
165. Bharat Bijlee Ltd.
166. Bharat Electronics Ltd.
167. Bharat Forge Ltd.
168. Bharat Gears Ltd.
169. Bharat Heavy Electricals Ltd.
170. Bharat Immunologicals & Biologicals Corpn. Ltd.
171. Bharat Petroleum Corpn. Ltd.
172. Bharat Rasayan Ltd.
173. Bharat Seats Ltd.
174. Bhartiya International Ltd.
175. Bheema Cements Ltd.
176. Bhoruka Aluminium Ltd.
177. Bhushan Steel Ltd.
178. Bihar Sponge Iron Ltd.
179. Bilcare Ltd.
180. Bimetal Bearings Ltd.
181. Biopac India Corpn. Ltd.
182. Birla Corporation Ltd.
183. Birla Ericsson Optical Ltd.
184. Birla Precision Technologies Ltd.
185. Bisil Plast Ltd.
186. Bliss G V S Pharma Ltd.
187. Bloom Dekor Ltd.

188. Blue Blends (India) Ltd.
189. Blue Star Ltd.
190. Bodal Chemicals Ltd.
191. Bombay Burmah Trdg. Corpn. Ltd.
192. Bombay Dyeing & Mfg. Co. Ltd.
193. Borax Morarji Ltd.
194. Borosil Glass Works Ltd.
195. Britannia Industries Ltd.
196. Butterfly Gandhimathi Appliances Ltd.
197. C C L Products (India) Ltd.
198. C J Gelatine Products Ltd.
199. Cable Corpn. Of India Ltd.
200. Cadila Healthcare Ltd.
201. Camphor & Allied Products Ltd.
202. Caplin Point Laboratories Ltd.
203. Caprihans India Ltd.
204. Carborundum Universal Ltd.
205. Carnation Industries Ltd.
206. Castrol India Ltd.
207. Ceat Ltd.
208. Cenlub Industries Ltd.
209. Centum Electronics Ltd.
210. Century Enka Ltd.
211. Century Extrusions Ltd.
212. Century Textiles & Inds. Ltd.
213. Chaman Lal Setia Exports Ltd.
214. Chambal Fertilisers & Chemicals Ltd.
215. Chembond Chemicals Ltd.
216. Chemfab Alkalis Ltd.
217. Chennai Petroleum Corpn. Ltd.
218. Cheslind Textiles Ltd.
219. Cheviot Co. Ltd.
220. Cimmco Ltd.
221. Cipla Ltd.
222. Clariant Chemicals (India) Ltd.
223. Classic Diamonds (India) Ltd.
224. Clutch Auto Ltd.
225. Cmi F P E Ltd.
226. Colgate-Palmolive (India) Ltd.
227. Combat Drugs Ltd.
228. Confidence Petroleum India Ltd.
229. Coral Laboratories Ltd.
230. Coromandel International Ltd.
231. Cosmo Ferrites Ltd.
232. Cosmo Films Ltd.
233. Coventry Coil-O-Matic (Haryana) Ltd.
234. Crompton Greaves Ltd.
235. Cubex Tubings Ltd.
236. Cummins India Ltd.
237. Cupid Ltd.
238. D C M Ltd.
239. D C M Shriram Inds. Ltd.
240. D C M Shriram Ltd.
241. D C W Ltd.
242. D I C India Ltd.
243. Dabur India Ltd.
244. Dai-Ichi Karkaria Ltd.
245. Daikaffil Chemicals India Ltd.
246. Dalmia Bharat Sugar & Inds. Ltd.
247. Damodar Industries Ltd.
248. Deccan Cements Ltd.
249. Deccan Polypacks Ltd.

250. Deepak Fertilisers & Petrochemicals Corpn. Ltd.
251. Deepak Nitrite Ltd.
252. Deepak Spinners Ltd.
253. Delton Cables Ltd.
254. Dhampur Sugar Mills Ltd.
255. Dhanuka Agritech Ltd.
256. Dharamsi Morarji Chemical Co. Ltd.
257. Dhunseri Petrochem & Tea Ltd.
258. Diamines & Chemicals Ltd.
259. Diamond Power Infrastructure Ltd.
260. Diana Tea Co. Ltd.
261. Digjam Ltd.
262. Disa India Ltd.
263. Divi'S Laboratories Ltd.
264. Divyashakti Granites Ltd.
265. Donear Industries Ltd.
266. Dr. Reddy'S Laboratories Ltd.
267. Dutron Polymers Ltd.
268. Dynamatic Technologies Ltd.
269. E C E Industries Ltd.
270. E I D-Parry (India) Ltd.
271. E L Forge Ltd.
272. E P C Industrie Ltd.
273. Eastern Silk Inds. Ltd.
274. Ecoboard Industries Ltd.
275. Ecoplast Ltd.
276. Eicher Motors Ltd.
277. Eimco Elecon (India) Ltd.
278. Elder Health Care Ltd.
279. Elder Pharmaceuticals Ltd.
280. Elecon Engineering Co. Ltd.
281. Electrosteel Castings Ltd.
282. Electrotherm (India) Ltd.
283. Elgi Equipments Ltd.
284. Ema India Ltd.
285. Emami Ltd.
286. Emco Ltd.
287. Ensa Steel Inds. Ltd.
288. Esab India Ltd.
289. Escorts Ltd.
290. Eskay K'N'It (India) Ltd.
291. Essar Oil Ltd.
292. Essel Propack Ltd.
293. Ester Industries Ltd.
294. Eurotex Industries & Exports Ltd.
295. Eveready Industries (India) Ltd.
296. Everest Industries Ltd.
297. Everlon Synthetics Ltd.
298. Excel Glasses Ltd.
299. Excel Industries Ltd.
300. Exide Industries Ltd.
301. Expo Gas Containers Ltd.
302. F A G Bearings India Ltd.
303. F D C Ltd.
304. Fact Enterprise Ltd.
305. Falcon Tyres Ltd.
306. Federal-Mogul Goetze (India) Ltd.
307. Ferro Alloys Corpn. Ltd.
308. Fertilisers & Chemicals, Travancore Ltd.
309. Filatex India Ltd.
310. Finolex Cables Ltd.
311. Finolex Industries Ltd.

312. Flawless Diamond (India) Ltd.
313. Flex Foods Ltd.
314. Fluidomat Ltd.
315. Foods & Inns Ltd.
316. Forbes & Co. Ltd.
317. Force Motors Ltd.
318. Foseco India Ltd.
319. Foundry Fuel Products Ltd.
320. Freshtrop Fruits Ltd.
321. G E E Ltd.
322. G E I Industrial Systems Ltd.
323. G G Dandekar Machine Works Ltd.
324. G H C L Ltd.
325. G I V O Ltd.
326. G M Breweries Ltd.
327. G M M Pfaudler Ltd.
328. G R Cables Ltd.
329. G R P Ltd.
330. G S Auto International Ltd.
331. G T N Industries Ltd.
332. Gabriel India Ltd.
333. Gandhi Special Tubes Ltd.
334. Ganesha Ecosphere Ltd.
335. Gangotri Iron & Steel Co. Ltd.
336. Gangotri Textiles Ltd.
337. Garden Silk Mills Ltd.
338. Garware Marine Inds. Ltd.
339. Garware Polyester Ltd.
340. Garware-Wall Ropes Ltd.
341. Genus Power Infrastructures Ltd.
342. Gillette India Ltd.
343. Gini Silk Mills Ltd.
344. Ginni Filaments Ltd.
345. Glaxosmithkline Pharmaceuticals Ltd.
346. Glenmark Pharmaceuticals Ltd.
347. Glittek Granites Ltd.
348. Goa Carbon Ltd.
349. Godfrey Phillips India Ltd.
350. Godrej Consumer Products Ltd.
351. Godrej Industries Ltd.
352. Golden Tobacco Ltd.
353. Goldiam International Ltd.
354. Goldstone Infratech Ltd.
355. Gontermann-Peipers (India) Ltd.
356. Good Luck Steel Tubes Ltd.
357. Goodricke Group Ltd.
358. Goodyear India Ltd.
359. Gopala Polyplast Ltd.
360. Gothi Plascon (India) Ltd.
361. Govind Rubber Ltd.
362. Granules India Ltd.
363. Graphite India Ltd.
364. Grasim Industries Ltd.
365. Grauer & Weil (India) Ltd.
366. Gravity (India) Ltd.
367. Greaves Cotton Ltd.
368. Greenply Industries Ltd.
369. Grindwell Norton Ltd.
370. Gufic Biosciences Ltd.
371. Gujarat Alkalies & Chemicals Ltd.
372. Gujarat Ambuja Exports Ltd.
373. Gujarat Apollo Inds. Ltd.
374. Gujarat Automotive Gears Ltd.
375. Gujarat Borosil Ltd.

376. Gujarat Fluorochemicals Ltd.
377. Gujarat Foils Ltd.
378. Gujarat Intrux Ltd.
379. Gujarat Narmada Valley Fertilizers & Chemicals Ltd.
380. Gujarat Raffia Inds. Ltd.
381. Gujarat Sidhee Cement Ltd.
382. Gujarat State Fertilizers & Chemicals Ltd.
383. Gujarat Themis Biosyn Ltd.
384. Gulshan Polyols Ltd.
385. Gupta Synthetics Ltd.
386. H B L Power Systems Ltd.
387. H E G Ltd.
388. H M T Ltd.
389. Haldyn Glass Ltd.
390. Hardcastle & Waud Mfg. Co. Ltd.
391. Haria Exports Ltd.
392. Harrisons Malayalam Ltd.
393. Hind Aluminium Inds. Ltd.
394. Hinduja Foundries Ltd.
395. Hitachi Home & Life Solutions Ltd.
396. Igarashi Motors India Ltd.
397. International Paper A P P M Ltd.
398. Kansai Nerolac Paints Ltd.
399. Kokuyo Camlin Ltd.
400. Linde India Ltd.
401. Ludlow Jute & Specialities Ltd.
402. Lykis Ltd.
403. Merck Ltd.
404. Morganite Crucible (India) Ltd.
405. Munjal Auto Inds. Ltd.
406. Parrys Sugar Industries Ltd.
407. Radico Khaitan Ltd.
408. Reliance Industries Ltd.
409. Resonance Specialties Ltd.
410. Rhodia Specialty Chemicals India Ltd.
411. Sanofi India Ltd.
412. Setco Automotive Ltd.
413. Shiva Texyarn Ltd.
414. Shri Lakshmi Cotsyn Ltd.
415. Styrolution A B S (India) Ltd.
416. Syschem (India) Ltd.
417. Trident Ltd.
418. Uflex Ltd.
419. Veljan Denison Ltd.
420. Vikas Granaries Ltd.
421. Windsor Machines Ltd.
422. Zydus Wellness Ltd.

List of Publications

Papers Published in Refereed International Journals:

1. Chadha S. & Sharma, A. K. (2016) "An empirical study on capital structure in Indian manufacturing sector" Global Business Review, Vol. 17, No. 2, pp. 411 - 424 (Sage Publications) (ABDC listed & Scopus indexed journal).
2. Chadha S. & Sharma, A. K. (2015) "Determinants of capital structure: an empirical evaluation from India" Journal of Advances in Management Research, Vol. 12, No. 1, pp. 3 - 14 (Emerald Publications).
3. Chadha S. & Sharma, A. K. (2015) "Capital Structure and Firm Performance: Empirical Evidence from India" Vision – The Journal of Business Perspective, Vol. 19, No. 4, pp. 295 - 302 (Sage Publications).
4. Goel U., Chadha S. & Sharma, A. K. (2015) " Operating liquidity and financial leverage: Evidences from Indian machinery industry" Procedia – Social and Behavioral Sciences, Vol. 189 (2015), pp. 344 - 350 (Elsevier Publications).

Papers Presented and Published in Refereed International Conference:

1. Chadha S. & Sharma A.K. (2015), "Does Ownership Structure affect Capital Structure: Evidence from India", paper presented in the International Conference on Advances in Management Technology organized by MNNIT, Allahabad in January 29-31, 2015 (proceedings published by McGraw Hill).
2. Chadha S. & Sharma, A. K. (2015) "Capital Structure Trends and Trade-off Vs. Pecking order Theory Applicability Test: Empirical Evidence from India" paper presented in the Global Conference on Managing in Recovering Markets being organised by Management Development Institute (MDI), Gurgaon, India in March 11-13, 2015 (Published).